Delhi Public School, Bhilai

Midterm Examination 2024
(17 September 2024)

Class: 12 | Subject: English (Core)
Maximum Marks: 80 | Duration: 3 Hours

General Instructions

- *The paper is divided into three sections: A, B, and C. All the sections are compulsory.*
- *Specific instructions, wherever necessary, are given. Follow them strictly.*
- *Read the division of the marks as "number of question(s) ×mark(s)=total."*

SECTION A (READING SKILLS) 22

I. Read the passage below carefully and answer the questions that follow it: ***12***

[1] Young adults often find their lives full of stress and overwhelming because they are burdened with numerous responsibilities. For them, dogs can prove their ultimate companions. There are several reasons for this, which we are going to discuss below.

[2] To begin with, dogs are known for their loyalty. We find that they do not judge us, criticize us, or hold any grudges against us. No matter how flawed or imperfect we may be, our dogs will always love us unconditionally. This kind of unwavering support and affection can be incredibly comforting for the young adults struggling to find their places in the world.

[3] Secondly, dogs are great icebreakers. They have a way of bringing people together whether they are walking them in a park or simply hanging out at home. For the young adults feeling isolated or disconnected from their peers, having a dog by their side can be a great way to connect with other people and form new friendships.

[4] Thirdly, dogs require regular exercise in order to stay healthy and happy. It implies that the young adults who own dogs are more likely to engage in physical activities themselves. In fact, one's getting out with a dog (whether it is going for a run, playing frisbee, or simply taking a stroll) can be a great way to refresh one's mood.

[5] Fourthly, dogs are great emotional-support animals for those struggling with mental health issues such as anxiety and depression. Their very presence can provide their owners with a sense of comfort. Their ability to sense their owners' emotions, further, can be incredibly comforting. For the young adults with mental health challenges, having a dog as a companion can be a life-changing experience.

[6] Lastly, owning a dog comes with a great deal of responsibility and self-care. A dog requires regular feeding, grooming, exercise, and attention— which can be a great way for the young adults feeling lonely to develop a sense of responsibility and self-discipline. Additionally, having a dog as a companion can encourage them to take better care of themselves (such as making sure that they get enough sleep, eat healthy, and engage in regular exercise).

[7] For all the above reasons, to sum up, dogs can make wonderful companions for the young adults who feel lonely and full of stress in their world.

a. The significance of owning a dog for a young adult who is striving for acceptance in society is that the dog shows how to _____. 1

b. Which activity/activities help(s) the young adults owning a dog to develop a sense of responsibility? 1

i. walking the dog daily
ii. feeding it regularly

PTO

iii. engaging the services of a dog trainer
iv. both (i) and (ii)

c. In paragraph 6, *grooming* means _____. 1
i. 'keeping a dog in a room'
ii. 'attending a wedding'
iii. 'cleaning and maintaining the appearance of a dog'
iv. 'feeding a dog'

d. The tone of the article is 1
i. critical but supportive.
ii. indifferent and bored.
iii. positive and informative.
iv. humorous and casual.

e. The aim of the article is to 1
i. explain the advantages of having a dog.
ii. provide advice on how to get a dog.
iii. discuss how to take proper care of a dog.
iv. promote animal rights.

f. Fill in the blank: 1
criticized : praised :: lightened : _____

g. Complete the following: 2
Owning a dog brings a sense of responsibility because . . . .

h. Support the view that dogs provide a sense of comfort for those struggling with mental health issues. 2

i. Explain that dogs are great icebreakers. 2

II. Read the passage below carefully and answer the questions that follow it: ***10***

[1] The people below 20 and above 50 years of age are more likely to believe fake news. Those who are new to the use of the Internet still do not grasp the concept of fake information on the platforms based on it— reveals the survey *Countering Misinformation in India*. It presents various analyses of the data collected from over ten thousand people.

[2] At least 40% believe the "misinformation" received on social media if it comes with leading backgrounds and evidence, while 34% believe the information when it is shared by a trustworthy website.

[3] The dominant factor which drives one to forward such information, according to almost 50%, is their belief that it may benefit others and help them in their safety. Further, several believe that traditional media cannot be trusted. That is why they have their faith in the contents shared on social media.

[4] All the same, newspapers still remain the top source of information for most of the people. At least 53% of the people trust what is generally perceived as neutral media and only 29% trust social media.

[5] However, the survey surprisingly shows the ignorance of 45% of the people of the existence of fact-checking organizations. Further, most of the people do not know the fact that journalists have to verify their data before reporting them. Whereas for 26% it is the responsibility of the media to curb or identify fake news, for the others it is an individual's responsibility to identify it.

[6] The survey has found that first-time users of the Internet platforms are more susceptible to fake news than others are. There is a need, therefore, to build capacities and create a national civic digital literacy strategic plan.

a. Under traditional media, we find _____. 1

i. Instagram ii. newspapers iii. Facebook iv. email

b. One factor that prompts people to believe fake news is that it 1

i. supports their point of view. ii. is harmless

iii. is from a reliable website. iv. has more likes and shares.

c. What are the intentions of the people who share information? 1

d. What percentage of the people know the existence of fact-checking organizations? 1

e. The problem faced by new entrants to social media is _____. 1

f. What categories of people fall prey to fake news? 1

g. Give two reasons for people turning to social media. 2

h. With data, show how people view neutral media and social media? 2

SECTION B (CREATIVE WRITING SKILLS) 18

III. **Answer *only one* of the following:** **1×4**

a. You are Amit Verma / Lakshita Verma. You are the president of the Silver Oak Society, Raipur–492 002. Write a notice, in not more than fifty words, informing the residents of the appointment of the security guards at gates 2, 3, and 4 and an increase of a thousand rupees in the annual maintenance charges. Mention the other relevant details as well.

b. You are Akash Naipaul / Ashi Naipaul. You are the secretary of the Vishal Housing Society, Korba–495 677. Write a notice, in not more than fifty words, inviting the residents to the Hotel Chirag for the annual get-together on 28 October 2024. Mention the other relevant details as well.

IV. **Answer *only one* of the following:** **1×4**

a. You belong to Crown Public School, Kanpur–208 001. Your principal, Mr. Valmiki Sharan, wants to invite the students' parents or guardians to the inauguration of the astronomy park. He wants you to draft the invitation, in not more than fifty words, mentioning the date, hours, venue, etc. Use the *card format*.

b. You are Dr. Sumit Rawat / Dr. Sunita Rawat, director, Sri Krishna Institute of Public Administration, Ranchi–834 001. You have been invited to inaugurate the science exhibition at Newton Public School, Harmu, Ranchi–834 003. Write a formal letter of acceptance, in not more than fifty words.

V. **Answer *only one* of the following:** **1×5**

a. You are Sushil Sharma /Sushila Sharma. You have seen the following advertisement in *The Hindu*. You want to apply for the post. Write, therefore, a letter about it (enclosing your latest CV), in about 120–150 words.

Hotel Greenwich Meridian

Asaf Ali Road, New Delhi–100 002

Applications are invited for a post of receptionist.

Eligibility Criteria

- a graduate from a UGC-recognized university
- a PGDCA
- good interpersonal skills
- fluent in English and Hindi
- 24–26 years of age

Apply within fifteen days with a detailed CV.

Manager

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b. You are Mahesh Ekka / Meena Ekka, of 21 Shastri Nagar, Bhilai–490 023. You are very disturbed to see India's lacklustre performance at the Paris Olympic Games 2024, despite being the most populous nation in the world (see the report below). Write a letter in 120–150 words to the editor of *The Times of India*, Chhotapara, Raipur– 492 00, discussing the problem and suggesting some ways to solve it.

THE INDEPENDENT

World's most populous nation finishes 71st at Paris Olympic Games 2024

Namita Singh

Paris, 11 August 2024

India sent a contingent of 117 athletes to Paris, yet has a paltry haul of five bronze medals and Chopra's solitary silver to show. It ranks, as of today, seventy-first in the medal table, below Hong Kong, Taiwan, North Korea, Cuba and Saint Lucia— a Caribbean island of just 180,000 people.

***VI.* Answer *only one* of the following:** **1×5**

a. You are Rahul Soni or Ruchika Soni. Your school organized a book week. You have been told to write a report on the week-long activities. Write the report in 120–150 words. You may use the following cues along with your ideas:

- an exhibition of books for sale (by Cambridge University Press)
- meet-the-author sessions
- a book cover making contest
- a book-related quiz

b. You are Manoj Mishra / Anuja Mishra. You see that the newspapers today have more of full-page advertisements than news items. Write an article, in 120–150 words, on how these advertisements take away the very purpose of a newspaper and mislead its readers. Suggest how journalism can become more responsible. You may use the points given below (along with your own ideas):

Impact of Advertisements

- news becoming secondary
- newspapers losing credibility and appeal
- merely as a promotional medium
- a gradual decline in newspaper readership

Suggestions

- news to be given more importance than advertisements
- a separate section only for advertisements

SECTION C (LITERATURE) — 40

***VII.* Attempt *only one* of the following extracts:** **6×1**

A. Read the following extract and answer the questions:

It would be an exotic moment
without rush, without engines,
we would all be together
in a sudden strangeness.

Fishermen in the cold sea
would not harm whales
and the man gathering salt
would look at his hurt hands.
["Keeping Quiet"]

a. Choose the correct option with reference to A and B. 1

A. There is an urgent need for mankind to introspect and live in harmony.
B. We should put an end to all destructive activities.

i. A is true, but B is false.
ii. B is true, but A is false.
iii. Both A and B are true.
iv. Both A and B are false.

b. The speaker's tone is _____. 1

i. sarcastic ii. submissive iii. urging iv. hurting

c. The figure of speech used in "sudden strangeness" is _____. 1

d. Fill in the blank with *only one word*. 1

The fishermen and the man gathering salt in the poem do unpleasant work for their _____.

e. Explain "It would be an exotic moment." 1

f. Fill in the blank with *only one word* with reference to the context. 1

The moment when everyone keeps silent will be _____.

B. Read the following extract and answer the questions:

And such too is the grandeur of the dooms
We have imagined for the mighty dead;
All lovely tales that we have heard or read;
An endless fountain of immortal drink,
Pouring unto us from the heaven's brink.
["A Thing of Beauty"]

a. Fill in the blank with *only one word*. 1

The phrase "the grandeur of the dooms" relates to the poet's concept of _____.

b. The expression "such too" suggests the continuation of a list. Which of the following is not on the poet's list: 1

i. the sun ii. daffodils iii. trees iv. husk-rose blooms ?

c. Complete the analogy with only one word. 1

powerful : mighty :: edge : _____

d. Choose the correct option with reference to A and B. 1

A. The lovely tales in the above lines are forms of beauty.
B. The endless fountain and the immortal drink refer to permanence.

i. A and B are thematically related.
ii. A and B are not related at all.

e. For the mighty dead, we have imagined _____. 1

f. The fountain is _____. 1

i. real ii. metaphorical iii. literal iv. political

PTO

VIII. **Attempt *only one* of the following extracts:** **4×1=4**

A. Read the following extract and answer the questions that follow:

> The reason the programme has been so successful is because it's impossible to go anywhere near the South Pole and not be affected by it. It's easy to be blasé about polar ice-caps melting while sitting in the comfort zone of our respective latitude and longitude, but when you can visibly see glaciers retreating and ice shelves collapsing, you begin to realise that the threat of global warming is very real.
>
> ["Journey to the End of the Earth"]

a. The reason for the success of the programme is 1

i. the participation of young students. ii. the journey to Antarctica.
iii. the exposure to reality. iv. it was impossible to go near south pole.

b. Complete the following sentence: 1

The warning that can be inferred from the above extract is_____.

c. State whether the following statement is TRUE or FALSE: 1

The author says that even if we are near the South Pole, we cannot be affected by it.

d. Draw an inference from the line "It's easy to be blasé about polar ice-caps melting while sitting in the comfort zone." 1

B. Read the following extract and answer the questions that follow:

> From that day onwards it was celebration time for all the tigers inhabiting Pratibandapuram.
>
> The State banned tiger hunting by anyone except the Maharaja. A proclamation was issued to the effect that if anyone dared to fling so much as a stone at a tiger, all his wealth and property would be confiscated.
>
> The Maharaja vowed he would attend to all other matters only after killing the hundred tigers. Initially the king seemed well set to realise his ambition.
>
> ["The Tiger King"]

a. The last paragraph reflects the Tiger King's _____. 1

i. courage ii. determination iii. selfishness iv. kindness

b. Complete the following sentence: 1

"The State banned tiger hunting by anyone except the Maharaja" because_____.

c. The second paragraph shows that the Tiger King is a/an 1

i. autocrat. ii. democrat. iii. environmentalist. iv. economist.

d. State whether the following statement is TRUE or FALSE: 1

The Tiger King's ambition is to save people from the tigers inhabiting Pratibandapuram.

IX. **Attempt *only one* of the following extracts:** **6×1=6**

A. Read the following extract and answer the questions that follow:

> He had gone to the December 1916 annual convention of the Indian National Congress party in Lucknow. There were 2,301 delegates and many visitors. During the proceedings, Gandhi recounted, "a peasant came up to me looking like any other peasant in India, poor and emaciated, and said, 'I am Rajkumar Shukla. I am from Champaran, and I want you to come to my district'!'' Gandhi had never heard of the place. It was in the foothills of the towering Himalayas, near the kingdom of Nepal. ["Indigo"]

a. Which of the following do you infer from the last sentence? 1

i. Champaran was a major city.
ii. Champaran was a popular destination.
iii. Gandhi wanted the Indian National Congress to be in Champaran.

PTO

iv. There was a problem in Champaran which needed Gandhi's attention.

b. Select a suitable word from the extract to complete the analogy: 1
adventurous : risk-taking :: starved : _____

c. Choose the correct option with reference to A and B. 1

A. Raj Kumar Shukla met Gandhi during the proceedings of the annual convention of the Indian National Congress in Lucknow.
B. Raj Kumar Shukla was a lawyer from Champaran.

i. A is true, but B is false.
ii. B is true, but A is false.
iii. Both A and B are true.
iv. Both A and B are false.

d. The purpose of Raj Kumar Shukla's visit was to _____. 1

e. The pronoun "He" in the first line refers to 1

i. Gandhi. ii. Raj Kumar Shukla.
iii. Gandhi's friend iv. Louis Fischer.

f. Fill in the blank with only one word. 1

Raj Kumar Shukla belonged to the district called _____.

B. Read the following extract and answer the questions that follow:

I heard M. Hamel say to me, "I won't scold you, little Franz; you must feel bad enough. See how it is! Every day we have said to ourselves, 'Bah! I've plenty of time. I'll learn it tomorrow.' And now you see where we've come out. Ah, that's the great trouble with Alsace; she puts off learning till tomorrow. Now those fellows out there will have the right to say to you, 'How is it; you pretend to be Frenchmen, and yet you can neither speak nor write your own language?' But you are not the worst, poor little Franz. We've all a great deal to reproach ourselves with." ["The Last Lesson"]

a. In the last sentence, the tone expresses _____. 1

i. kindness ii. regret iii. happiness iv. enthusiasm

b. Which option conveys the meaning of *reproach* (as used in the extract): 1

i. The player received a reprimand for a breach of rules.
ii. The students approached the management with their demand for a canteen.
iii. The clerk received a letter of appreciation for his innovative ideas.
iv. She could not find a way to broach the subject with her boss.

c. State whether the following statement is TRUE or FALSE: 1

M. Hamel endorses the belief that there is plenty of time to learn French.

d. The great trouble of Alsace is that _____. 1

e. By "those fellows," M. Hamel means _____. 1

i. the Prussians ii. the French iii. the elders iv. the children

f. The sentence arousing a sense of patriotism is _____. 1

X. Answer *any five* of the following questions, each in 40–50 words: 5×2=10

a. Explain "Will they make them sing in German, even the pigeons?" ["The Last Lesson"]

b. "Father laughed, but there was terror in my heart. . . ." What does the statement speak of the father? ["Deep Water"]

c. Why is Mukesh's dream compared to a mirage? ["Lost Spring"]

PTO

d. How can you say that the rattrap peddler is a philosopher? ["The Rattrap"]

e. What was the first contract between the landlords and the peasants? ["Indigo"]

f. What two contrasts do we find between the speaker's mother and the children? ["My Mother at Sixty-Six"]

XI. Answer *any two* of the following questions, each in 40–50 words: **2×2=4**

a. What is the significance of Sam's letter to Charley? ["The Third Level"]
b. How are the crown princes of the Indian states satirized? ["The Tiger King"]
c. "On the seventh day after that, two things happened." What were they? ["The Enemy"]

XII. Answer *only one* of the following questions in 120–150 words: **1×5=5**

a. You are Sukesh Dewangan / Sukanya Dewangan. You have read "Deep Water." You have found the story full of motivation. You want to motivate your classmates through a speech. You may begin it this way:

Dear Friends

The lesson "Deep Water" has a great message for us all. . . .

Thank you.

b. You are Saheb-e-Alam. You struggled very hard for a good education. Eventually, you succeeded and now you are the CEO of a multinational company. When you go back to Seemapuri, the people come out to welcome you. They request you to address their children, who are ragpickers, so that they may be inspired by your phenomenal rise from a ragpicker to the present post. You may begin it this way:

Dear Children

Long ago, I was a ragpicker like you. . . .

Thank you.

XIII. Answer *only one* of the following questions in 120–150 words: **1×5=5**

a. You are Arihant Panda / Kamini Panda. You have read "The Enemy." The character of Hana has moved you much. Record your feelings in your diary. You may begin this way:

Day
Date

Dear Diary

Yesterday, I read the short story "The Enemy." The character of Hana . . . .

Name

b. You are Pankaj Aneja / Pankaja Aneja. You have read "The Tiger King." You admire the character of the dewan. Record your feelings in your diary. You may begin this way:

Day
Date

Dear Diary

Yesterday, I read the short story "The Tiger King." The character of the dewan . . . .

Name

SET – B

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 25.09.2024 **MIDTERM EXAMINATION 2024** **Time : 3 Hrs.**

Class : XII **SUBJECT : PHYSICS** **Max. Marks : 70**

General Instructions:

1. There are 33 questions in all. All questions are compulsory.
2. This question paper has **five sections** : Section A, Section B, Section C, Section D and Section E.
3. All the sections are compulsory.
4. **Section A** contains sixteen questions, twelve MCQ and four Assertion Reasoning based of **1 mark each, Section B** contains five questions of **two marks each**, **Section C** contains seven questions of three marks each, **Section D** contains two case study based questions of four marks each and **Section E** contains three long answer question of five marks each
5. There is no overall choice. However, an internal choice has been provided in one question in Section B, One question in section C one question in each CBQ in Section D and all three question of Section E. You have attempt only one choices in such question.
6. Use of calculator is not allowed.

SECTION - A

1. A 24 μF capacitor is charged by a 500 V battery. Electrostatic energy stored by the capacitor will be
(A) 0.5 J (B) 2 J (C) 3 J (D) 25 J (1)

2. A current carrying circular loop of magnetic moment (M) is suspended in a vertical plane in an external magnetic field (B) such that its plane is normal to B . The work done in rotating this loop by 60^0 about an axis perpendicular to B is:
(A) - 0.5 MB (B) 0.5 MB (C) - MB (D) MB (1)

3. The magnetic flux through a coil of resistance 3Ω increases with time as : $\varphi = 3t^2 - 6t + 5$ mWb. Find the magnitude of induced current through the coil at t = 2s.
(A) 0.2mA (B) 0.5 mA (C) 2 mA (D) 4mA (1)

4. An inductor of resistance 2Ω and self inductance 20 mH is connected across an ac source of angular frequency 100 $rads^{-1}$. The phase angle between the voltage and the current is :
(A) 30° (B) 45° (C) 60° (D) 90° (1)

5. A circular current carrying coil produces a magnetic field B at its centre. The coil is rewound so as to have three turns and same current is passed through it. The new magnetic field at the centre is
(A) 3B (B) B / 3 (C) B / 9 (D) 9B (1)

6. The ratio of contributions made by the electric field and magnetic field components to the intensity of an EM wave is :
(A) c : 1 (B) 1 : c (C) 1 : 1 (D) c^2 : 1 (1)

7. For a fixed potential difference applied across a conductor, the drift speed of free electrons does not depend upon.
(A) mass of the electrons. (B) free electron density in the conductor
(C) length of the conductor. (D) temperature of the conductor (1)

8. Which one of the following is not affected by the presence of a magnetic field?
(A) A stationary charge
(B) A moving charge
(C) A current carrying conductor
(D) A rectangular current loop with its plane parallel to the field (1)

9. In bringing an electron towards another electron, the electrostatic potential energy of the system
(A) increases (B) decreases (C) remain unchanged (D) become zero (1)

10. Three capacitors 3μF, 6μF and 6μFare connected in series to a source of 120 V. The potential difference (in volt) across the 3μF capacitor will be:
(A) 30 (B) 40 (C) 50 (D) 60 (1)

11. The crystal structure of solids are investigated by using
(A) infrared rays (B) UV rays (C) γ- rays (D) X-rays (1)

Contd...2

12. Two point charges + 16q and -4q are located at x = 0 and x = L. The location of the point from x = 0 on x-axis at which the resultant electric field due to these charges is zero is :
(A) 0.5 L (B) L (C) 2 L (D) 4 L (1)

For Question 13 to 16, two statements are given - one labelled Assertion (A) another labelled Reason (R). Select the correct answer to these questions from the options as given below.

(A) If both Assertion and Reason are true and Reason is correct explanation of Assertion.
(B) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(C) If Assertion is true but Reason is false.
(D) If both Assertion and Reason are false.

13. **Assertion (A) :**An electrostatic field line form closed loop.
Reason (R): Electrostatic field is non conservative field. (1)

14. **Assertion (A) :** The current density (σ) at a point in a conducting wire is the direction of electric field (E) at that point.
Reason (R) : A conducting wire obeys Ohm's law. (1)

15. **Assertion (A) :** When radius of a circular loop carrying current is doubled, its magnetic moment becomes four times.
Reason (R) : Magnetic moment depends on no of turns of the loop. (1)

16. **Assertion (A) :** Electromagnetic waves carry energy and momentum.
Reason (R) : Electromagnetic waves are longitudinal in nature. (1)

SECTION – B

17. A current of 1 A flows through an inductor connected to 200 V dc source. When it is connected to a 200 V, 50 Hz source, only 0.5 A current flows. Calculate the self inductance of the inductor. (2)

18. A cell is connected across an external resistance 12Ω and supplies 0.25 A current. When the external resistance is increased by 4Ω, the current reduces to a 0.2 A.
Calculate (i) the emf and (ii) the internal resistance of cell. (2)

19. Define displacement current. Write its expression. (2)

20. Deduce an expression for mutual inductance of two long coaxial solenoids wound over one another. (2)

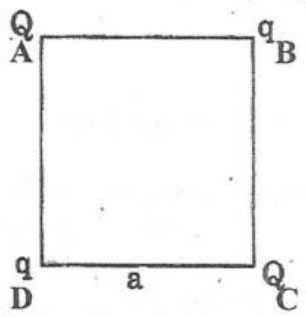
OR

Derive an expression for self inductance of a long solenoid.

21. Define drift velocity. How does the drift velocity of electrons in a metallic conductor vary with the increase in temperature? (2)

SECTION – C

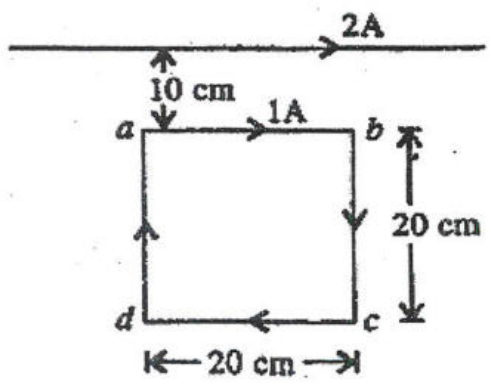
22. Four point charges Q, q, Q and q are placed at the corners of a square of side 'a' as shown in the figure. Find the resultant electric force on a charge Q placed at A. (3)



23. (a) Define the term 'conductivity' of a metallic wire.
(b) Using the concept of free electrons in a conductor, derive the expression for the conductivity of a wire in terms of number density and relaxation time. (3)

Contd...3

24. A square loop of side 20 cm carrying a current of 1 A is kept near an infinite long straight wire carrying a current of 2 A in the same plane as shown in the figure. Calculate the magnitude and direction of the net force exerted on the loop due to the current carrying conductor. (3)



25. Define magnetic susceptibility. Identify the following magnetic materials having susceptibility
(a) $\chi_m = -0.00012$ (b) $\chi_m = 10^{-5}$
OR (1+2)
State Curie law in magnetism. Draw the variation of susceptibility with temperature for (a) diamagnetic and (b) paramagnetic materials.

26. Write any two sources of energy loss in a transformer. How can they be reduced? (1 +2)

27. State Kirchhoff's rules. Using these rules, derive the condition of balance for wheat-stone bridge. (1+2)

28. Write the principle of A.C. generator. A 100 turn coil of area $0.1m^2$ rotates at half a revolution per second. It is placed in a magnetic field 0.01 T perpendicular to the axis of rotation of the coil. Calculate the maximum voltage generated in the coil. (1+2)

SECTION – D

Section D contains 2 case study-based questions of 4 marks each.
Read the following paragraph and answer the following questions:

29. Case Study – HEATING EFFECT OF CURRENT

Whenever the current is passed through a conductor, then it becomes hot after some time i.e. the electric energy is converted into heat energy. This phenomenon is called heating effect of current or Joule's heating law. Thus, the electrical energy supplied by the source of e.m.f. is converted into heat. In a purely resistive circuit, the entire energy of source appears as heat. The heat produced in a resistor R in time t when current I passes through it is given by $H = I^2Rt$ (1x 4=4)

(i) Two heaters A and B have power rating of 1 kW and 2 kW, respectively. Those two are first connected in parallel and then in series to a fixed power source. The ratio of power outputs for these two cases is :
(A) 1 :1 (B) 9 : 2 (C) 1 : 2 (D) 2 : 3

(ii) An electric heating element consumes 200 W, when connected to a 100 V line. If the line voltage becomes 150 V, the power consumed will be :
(A) 300 W (B) 450 W (C) 500 W (D) 600 W

(iii) Four heating coils 1, 2, 3 and 4 of area A_1, A_2, A_3 and A_4 such that $A_1 > A_2 > A_3 > A_4$ made of same material and of same length are connected one by one to source of electricity. Which one of the coils will produce heat at a greater rate?
(A) 1 (B) 2 (C) 3 (D) 4

(iv) Four bulbs 40 W, 60 W, 100 W and 200 W are connected to 220 V mains. Which bulb will glow brightly, if they are connected in series ?
(A) 100 W (B) 60 W (C) 40 W (D) 200 W
OR
Four bulbs 40 W, 60 W, 100 W and 200 W are connected to 220 V mains. Which bulb will glow brightly, if they are connected in parallel ?
(A) 60 W (B) 40 W (C) 200 W (D) 100 W

Contd...4

30. Case Study – **ELECTRICAL CAPACITANCE**

Electrical capacitance of a conductor is related to its ability to store the electric charge or energy. When a conductor is given some charge, its electric potential increases. If a charge Q given to the conductor raises its potential by V, then it is found that $Q \propto V$ or $Q = CV$ where C is a constant of proportionality and is called electrical capacitance of the conductor.). Usually, a capacitor consists of a system of two conductors separated by an insulating medium. Often the two conductors are charged by connecting them to the two terminals of a battery. Capacitance of an insulated conductor is increased considerably by bringing near it an uncharged conductor connected to earth. (1x4=4)

(i) A parallel plate capacitor is charged and then isolated. The effect of increasing the plate separation on charge, potential and capacitance respectively are
(A) Charge remains constant, potential decreases & capacitance increases
(B) Charge remains constant, potential increases & Capacitance decreases
(C) Charge increases, potential increases & Capacitance decreases
(D) Charge decreases, potential decreases & Capacitance increases.

(ii) A parallel plate capacitor has two square plates with equal and opposite charges. The surface charge densities on the plates are $+\sigma$ and $-\sigma$ respectively. In the region between the plates the magnitude of the electric field is:

(A) $\frac{\sigma}{2\varepsilon_0}$ (B) $\frac{\sigma}{\varepsilon_0}$ (C) 0 (D) none of these

(iii) In a parallel plate capacitor, the capacity increases if:
(A) area of the plate decreases (B) distance between the plates increases
(C) area of the plate increases (D) dielectric constant decreases.

(iv) The plates P_1 and P_2 of a 5μF capacitor are at potentials 50 V and - 50 V respectively. The charge on plate P_1 will be :
(A) 5 mC (B) 0 (C) 0.05 mC (D) 0.5 mC

OR

The capacitance of a parallel plate capacitor is 20μF when the distance between its plates is 5cm. If the distance between the plates is halved and a dielectric slab of constant 6 is introduced between the plates, the capacitance will become:
(A) 20μF (B) 60μF (C) 120μF (D) 240μF

SECTION – E

Section E contains 3 long answer questions of 5 marks each.

31. (a) Show that in a.c. circuit containing only inductor, voltage is leading over current by 90^0.
(b) Draw graph showing the variation of inductive reactance with frequency.
(c) Obtain the resonant frequency (ω_r) of a series LCR circuit with L=2.0 H, C=32μF and R = 10 Ω. (2+1+2)

OR

(a) Show that in a.c. circuit containing only capacitor, current is leading over voltage by 90^0.
(b) Draw graph showing the variation of capacitive reactance with frequency.
(c) A series LCR circuit is made by taking R= 100Ω , L = 2/π H, C= 100/π μF .This combination is connected to an a.c. source of 220V , 50 Hz. Find the power factor of the circuit.

32. (a) State Biot-Savart law. Using this law, find an expression for the magnetic field at the centre of a circular coil of N-turns, radius 'a', carrying current I.
(b) A voltmeter of a certain range is constructed by connecting a resistance of 980 Ω in series with a galvanometer. When the resistance of 470Ω is connected in series, the range gets halved. Find the resistance of the galvanometer. (3+2)

OR

(a) State Ampere's circuital law. Using this law, find an expression for the magnetic field due to a current carrying straight wire at a distance 'a'.
(b) To increase the current sensitivity of a moving coil galvanometer by 50%, its resistance is increased so that the new resistance becomes twice its initial resistance. By what percentage does its voltage sensitivity change ?

33. (a) Define electric flux. Use Gauss' law to find the electric field due to a uniformly charged infinitely large plane thin sheet with surface charge density σ.
(b) A metallic spherical shell has an inner radius(r) and outer radius (R).Net charge on the shell is +Q. A charge q is placed at the centre of the shell. What will be the surface charge density on the (i) inner surface, and (ii) outer surface of the shell ? (3+2)

OR

(a) Define electric field intensity. Derive an expression for the electric field intensity at a point on equatorial line of a dipole.
(b) Find the magnitude and direction of electric field intensity due to an electric dipole of length 2a at the mid point of the line joining the two charges.

DELHI PUBLIC SCHOOL, BHILAI
Midterm Examination-2024
Subject: Chemistry
SET-A

Date: 23.09.2024
Class: XII
Name: _____

Time: 3 Hrs
M:M: 70
Roll No. _____

General Instructions:

Read the following instructions carefully and follow them:

(i) *This question paper contains **33** questions. All questions are compulsory.*

(ii) *This question paper is divided into five sections- **Section-A, B, C, D** and **E.***

(iii) ***Section-A** – questions number **1** to **16** are multiple choice type questions. Each question carries **1** mark.*

(iv) ***Section-B** – questions number **17** to **21** are very short answer type question carries **2** marks.*

(v) ***Section-C** – questions number **22** to **28** are short answer type questions. Each question carries **3**marks.*

(vi) ***Section-D** – questions number **29** and **30** are case-based questions. Each question carries **4** marks.*

(vii) ***Section-E** – questions number **31** to **33** are long answer type questions. Each question carries **5**marks.*

(viii) *There is no overall choice given in the question paper. However, an internal choice has been provided in few questions in all the sections except Section-A.*

(ix) *Use of calculators is not allowed.*

SECTION-A

Questions no. 1 to 16 are Multiple Choice type questions, carrying 1 mark each. **(16 ×1 = 16)**

1. Which of the following is a colligative property?
   (a) Vapour pressure (b) Boiling point (c) Osmotic pressure (d) All of the above
2. An electrochemical cell can behave like an electrolytic cell when:
   (a) $E_{cell}=0$ (b) $E_{cell}>E_{ext}$ (c) $E_{ext}>E_{cell}$ (d) $E_{cell} = E_{ext}$
3. Transition metals are known to make interstitial compounds. Formation of interstitial compounds make the transition metal:
   (a) more hard (b) more soft (c) more ductile (d) more metallic
4. The reaction involving the treatment of benzene diazonium chloride with copper powder and HCl is treated as:
   (a) Sandmeyer's reaction (b) Gattermann's reaction
   (c) Ulmann's reaction (d) Kolbe's reaction
5. DNA and RNA contain four bases each. Which of the following bases is not present in RNA?
   (a) Adenine (b) Uracil (c) Thymine (d) Cytosine
6. The quantity of charge required to obtain one mole of aluminium from Al_2O_3 is:
   (a) 1F (2) 6F (3) 2F (4) 3F
7. The value of Henry's constant K_H is:
   (a) Greater for gases with higher solubility (b) Greater for gases with lower solubility
   (c) Constant for all gases (d) Not related to the solubility of gases
8. Auto-oxidation of chloroform in air and light produces a poisonous gas known as:
   (a) phosphine (b) mustard gas (c) phosgene (d) tear gas
9. Nucleic acids are the polymers of:
   (a) Nucleosides (b) Bases (c) Sugars (d) Nucleotides
10. Potassium permanganate is used as:
    (a) as a reducing agent (b) as a corrosion inhibitors
    (c) as a bleaching agent in textile industry (d) in the preparation of azo compound
11. Monochlorination of toluene in sunlight followed by hydrolysis with aqueous NaOH yields:
    (a) benzyl alcohol (b) m-cresol (c) 2, 4-dihydroxy toluene (d) o-cresol

12. Phenol does not undergo nucleophilic substitution reaction easily due to:

(a) acidic nature of phenol (b) partial double bound character of c-c bond

(c) Instability of phenoxide ion (d) Partial double bond character of C-OH bond.

For questions 13 to 16, two statements are given-one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A)

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A)

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

13. Assertion (A): Abnormal molecular masses are evaluated when the substances undergo dissociation or association in solution.

Reason (R) : In case of dissociation or association of solute in the solution observed colligative property becomes abnormal

14. Assertion (A): Inversion of configuration is observed in S_N2 reaction.

Reason (R) : The reaction proceeds with the formation of carbocation.

15. Assertion (A) : An ether is more volatile than an alcohol of comparable molecular mass.

Reason (R) : Ethers are polar in nature

16. Assertion (A) : Vitamins A,D, E and K are stored in liver and adipose tissue.

Reason (R) : Vitamins A, D, E and K are fat-soluble.

SECTION-B

17. (a) Out of molality and molarity, which is better concentration term and why? **(1 + 1 = 2)**

(b) What would happen when red blood cells are placed in saline water?

OR

Give reason for the following

(a) Measurement of osmotic pressure method is preferred for the determination of molar masses of macromolecules such as proteins and polymers.

(b) Elevation of boiling point of 1 M KCl solution is nearly double than that of 1 M sugar solution.

18. Using E^0 values of X and Y given below, predict which is better for coating the surface of Iron to prevent corrosion and why? Given: **(2)**

$E^0_{Y2+/Y} = -0.14$ V $\quad E^0_{Fe2+/Fe} = -0.44$ V $\quad E^0_{X^{2+}/X} = -2.36$ V

19. What is lanthanoid contraction? Why actinoids exhibit a greater range of oxidation states then lanthanoids? **(1 + 1 = 2)**

20. Identify the major product formed when 2-cyclohexyl chloroethane undergoes a dehydrohalogenation reaction. Name the reagent which is used to carry out the reaction. **(2)**

21. (a) Define glycosidic linkage. **(2)**

(b) Write the structural difference between starch and cellulose.

SECTION-C

22. (a) X and Y are two electrolytes. On dilution molar conductivity of 'X' increases 2.5 times while that 'Y' increases 25 times. Which of the two is a weak electrolyte and why?

(b) Write the name of the cell which is generally used in hearing aids. Write the reactions taking place at the anode and cathode and the overall cell reaction. **(1+ 2 = 3)**

23. 45 g of ethylene glycol ($C_2H_6O_2$) is mixed with 600 g of water. Calculate (a) freezing point depression and (b) the freezing point of the solution. [K_F=1.86 K Kg mol^{-1}, Atomic mass C=12, H = 1, O = 16] **(3)**

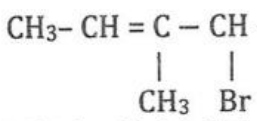
24. When chromite are $FeCr_2O_4$ is fused with sodium carbonate in presence of air, a yellow coloured compound (A) is obtained which on acidification with dilute sulphuric acid gives a compound (B). Compound (B) on reaction with KCl forms an orange coloured crystalline compound (C). Write the formula of the compounds (A), (B) and (C). Also write the reactions. **(3)**

25. How will you bring about the following conversions? (any three) **(3 × 1 = 3)**

(a) Bromobenzene to 2-bromo-acetophenone (b) Ethanol to propanenitrile

(c) 2-Chloropropane to Propan-1-ol (d) Aniline to chlorobenzene

26. (a) Write IUPAC name of



(b) Which alkyl halide from the following pair would you expect to react more rapidly by S_N2 mechanism and why? **(1 + 2 = 3)**

$CH_3\,CH_2CH_2CH_2\,Br$ **Or** $CH_3\,CH_2\,CH\,(Br)\,CH_3$

27. Write the structure of product when D-Glucose reacts with the following: **(1 + 1 + 1 = 3)**

(a) HI (b) Conc. HNO_3 (c) Br_2 water

28. (i) Write the name of the vitamin responsible for the coagulation of blood.

(ii) Which of the two components of starch is water soluble?

(iii) Mention the type of linkages responsible for the formation of the following:

(a) Primary structure of protein

(b) α-helix formation **(1 + 1 + 1 = 3)**

SECTION-D

The following questions are case-based questions. Read the case carefully and answer the questions that follow.

29. Williamson synthesis is one of the best methods for the preparation of ethers. It involves the treatment of an alkyl halide with a suitable sodium alkoxide. Williamson's synthesis involves nucleophilic substitution of the halogen atom of an alkyl halide by an alkoxide group as shown below:

$R - O^-Na^+ + R'X \rightarrow R - O - R' + NaX$

When alkyl halide used in the reaction is primary, Williamson's synthesis proceeds via S_N2 mechanism leading to the formation of an ether.

This method is a versatile method for the synthesis of both symmetrical and unsymmetrical ethers. The cleavage of simple alkyl ethers by acids occur only under drastic conditions therefore, they have mainly been used, not as protecting groups, but rather as a means of functionalisation to obtain more favourable properties for analytical techniques.

Answer the following questions.

i) Name the alkyl halide and sodium alkoxide used to synthesise tert-butyl ethyl ether.

ii) What happens when benzyl ethyl ether reacts with HI.

iii) Why is Williamson's synthesis not applicable when the alkyl halide used is tertiary?

OR

$(CH_3)_3\,C - O - CH_3$ on reaction with HI gives ?$(CH_3)_3\,C - I$ and $CH_3 - OH$ as the main products and not $(CH_3)_3\,C - OH$ and $CH_3 - I$, Give reason. **(1 + 1 + 2 = 4)**

30. Binary solutions can be of nine different types depending upon the nature of the solute and solvent whether solid, liquid or gas. They may be further classified as solid, liquid and gaseous solutions based on the component which acts as the solvent. However, the liquid solutions are the most important. Both solids and gases dissolve in liquids resulting in homogeneous mixtures, i.e. solutions. The solubility is governed by number of factors such as nature of solute and solvent, temperature, pressure etc. The concentrations of the solutions can be expressed in different ways such as molarity, molality, mole fraction etc. **(1 + 1 + 2 = 4)**

Answer the following questions:

(i) What is the physical state of solvent in amalgam of mercury with sodium.

(ii) On what factor does the maximum amount of a solid solute that can be dissolved in a specified amount of a given liquid solvent not depend upon?

(iii) Define: (i) Solubility of solid in a liquid (ii) Mole fraction

OR

Why do gases always tend to be less soluble in liquids as the temperature is raised?

SECTION-E

31. Attempt any five of the following: **(5)**

(a) Write the formula of an oxo-anion of manganese in which it shows the oxidation state equal to its group number.

(b) Why $E^0_{M^{2+}/M}$ value for copper is positive (+0.34 V)?

(c) Name a transition metal which does not exhibit variation in oxidation state in its compounds.

(d) Complete and balance the following equation:

$MnO^-_4 + H^+ + NO^-_2 \rightarrow$

(e) How does the colour of $Cr_2O_7^{2-}$ change when treated with an alkali?

(f) Write the number of unpaired elections in Cr^{3+} (Atomic number of Cr = 24)

(g) Transition metals exhibit higher enthalpies of atomization. Why?

32. (a) (i) Calculate emf of the following cell at 25^0C:

$Mg(s) \mid Mg^{2+}(0.001M) \mid\mid Cu^{2+}(0.0001\ M) / Cu(s)$

Given: $E^0_{Mg^{2+}/Mg} = -2.37\ V$ $E^0_{Cu2+/Cu} = +0.34V$

(ii) State Faraday's first law of electrolysis. How much charge is required for the reduction of 1 mol MnO^-_4 to Mn^{2+}? **(3 + 2 = 5)**

OR

(b) (i) The conductivity of 0.2 M KCl at 298 K is 0.0248 Scm^{-1}. Calculate its molar conductivity.

(ii) State Kohlrausch law.

(iii) Calculate the $\Delta_r G^0$ and log K_c for the following cell reaction.

$2\ Cr\ (S) + 3Cd^{2+}\ (s) \rightleftharpoons 2Cr^{+3} + 3Cd\ (s)$

$E^0_{Cr3+/Cr} = -0.74\ V$ $E^0_{Cd^{2+}/Cd} = -0.40V$ **(1 + 1 + 3 =5)**

33. (a) Suggest suitable mechanism for the following reaction **(3 + 1 + 1 = 5)**

$$CH_3CH_2OH \xrightarrow{H^+} CH_2 = CH_2$$

(b) Give a chemical test to distinguish between phenol and ethanol.

(c) Write structure of the compound whose IUPAC name is 2-Ethoxy – 3 – methylpentane

OR

(a) Write the equations involved in the following reactions: **(2 + 2 + 1 = 5)**

(i) Kolbe's reaction

(ii) Friedel Crafts alkylation of anisole

(b) Name the different reagents required to perform the following reactions.

(i) Oxidation of primary alcohol to carboxylic acid

(ii) Dehydrogenation of ethanol to ethanal

(c) Arrange the following compounds in the increasing order of their acid strengths:

4-Nitrophenol, Phenol, 2, 4, 6 – Trinitrophenol

❁❁❁❁❁

SET-A

DELHI PUBLIC SCHOOL, BHILAI (C.G.
FIRST TERM EXAMINATION, 2024
BIOLOGY

DATE : 19-09-2024
CLASS : XII

Time : 3 Hours
M.M : 70

General Instructions :

1) This question paper contains 33 questions. All questions are compulsory.
2) This question paper is divided into 5 sections – A,B, C, D and E.
3) In Section A – Questions no.1 to 16 are multiple choice (MCQ) type questions, carrying 1 mark each.
4) In Section B – Questions no.17 to 21 are very short answer (VSA) type questions, carrying 2 marks each.
5) In Section C – Questions no.22 to 28 are short answer type (SA) type questions, carrying 3 marks each.
6) In Section D – Questions no.29 and 30 are case-based questions carrying 4 marks each. Each question has subparts with internal choice in one subpart.
7) In Section E – Questions no. 31 to 33 are long answer (LA) type questions carrying 5 marks each.
8) There is no overall choice. However, an internal choice has been provided in 1 question in Section B, 1 question in Section C, 2 questions in Section D and 3 questions in Section E. A candidate has to attempt only one of the alternatives in such questions.
9) Wherever necessary, neat and properly labelled diagram should be drawn.

SECTION A

1) Identify the blank spaces A,B,C and D in the following table and select the correct option. (1)

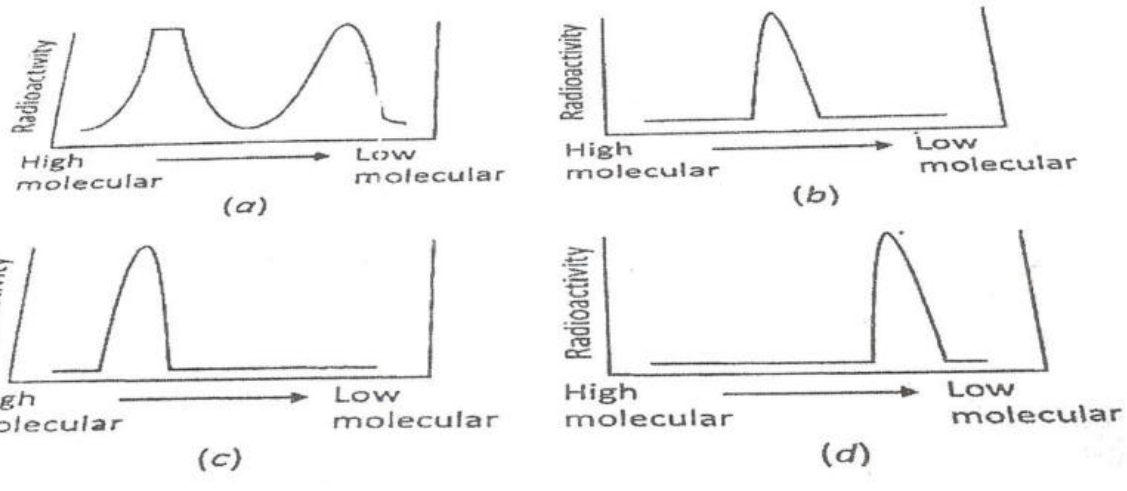
Type of microbe	Scientific name	Commercial product
Bacterium	A	Streptokinase
B	*Aspergillus niger*	Citric acid
Fungus	*Trichoderma polysporum*	C
Bacterium	D	Butyric acid

(a) A-Streptococcus B-Fungus C-Cyclosporin A D- Clostridium butylicum
(b) A-Clostridium butylicum B-Bacterium C-Fungus D- Cyclosporin A
(c) A-Streptococcus B-Yeast C-Cyclosporin A D- Lactobacillus
(d) A-Streptococcus B-Bacterium C-Statins D- Clostridium butylicum

2) A stretch of euchromatin has 200 nucleosomes. How many base pairs will there be in the stretch and what would be the length of the typical euchromatin? (1)
(a) 20,000 bp and $13,000\times10^{-9}$m (b) 10,000 bp and $10,000\times10^{-9}$m
(c) 40,000 bp and $13,600\times10^{-9}$m (d) 40,000 bp and $13,900\times10^{-9}$m

3) Interferons are most effective in making non infected cells resistant against the spread of which of the following diseases in humans? (1)
(a) Ascariasis (b) Ringworm (c) Amoebiasis (d) AIDS

4) Replication was allowed to takeplace in the presence of radioactive deoxynucleotides precursors in E.coli that was a mutant for DNA ligase. Newly synthesized radioactive DNA was purified and strands were separated by denaturation. These were centrifuged using density gradient centrifugation. Which of the followi ıg would be a correct result? (1)



5) Evolutionary divergence is development of a (1)

a) Common set of functions in groups of different ancestry

b) Dissimilar set of functions in closely related groups

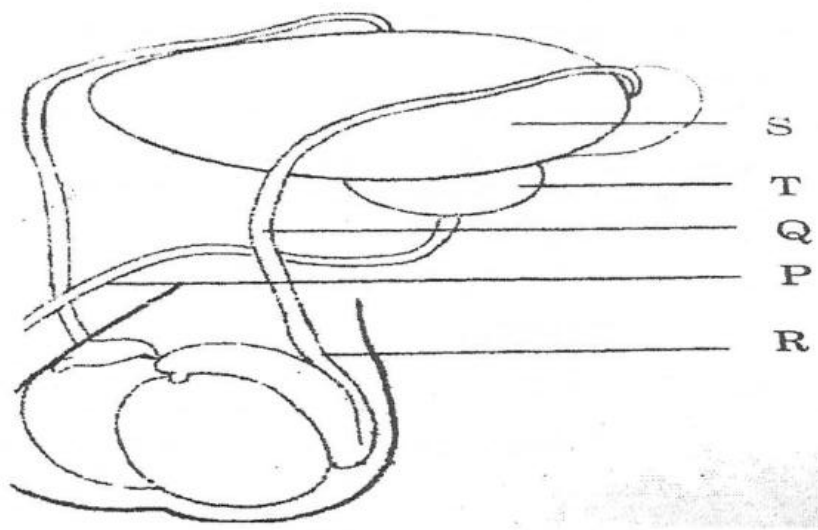
c) Common set of structures in closely related groups

d) Dissimilar set of functions in unrelated groups.

6) Aneuploidy is (1)

(a) 2n+1 (b) n+1 (c) n-1 (d) 3n

7) A human male decides to adopt a surgical method for contraception. Identify the point in the diagram where a cut would be made and tied. (1)



a) Point S (b) Point R (c) Point Q (d) Point P

8) Which of the following exhibit more species diversity? (1)

(a) Gymnosperms (b) Algae (c) Bryophytes (d) Fungi

9) Intensely lactating mothers do not generally conceive due to the ? (1)

(a) Suppression of gonadotropins (b) Hyper secretion of gonadotropins

(c) Suppression of gametic transport (b) Suppression of fertilisation

10) Seminal plasma, the fluid part of semen, is contributed by

(i) Seminal vescile (ii) Prostate (iii) Urethra (iv) Bulbourethral gland

(a) (i) and (ii) (b) (i), (ii) and (iv) (c) (ii), (iii) and (iv) (d) (i) and (iv)

11) Complete linkage has been reported in (1)

(a) Maize (b) Human female (c) Female Drosophila (d) Male Drosophila

12) It is said that Mendel proposed that the factor controlling any character is discrete and independent. His proposition was based on the : (1)

(a) Results of F_3 generation of a cross

(b) Observations that the offspring of a cross made between the plants having two contrasting characters shows only one character without any blending.

(c) Self pollination of F_1 offsprings

(d) Cross pollination of F_1 generation with recessive parents.

In each of the following questions, a statement of Assertion (A) is given followed by corresponding statement of Reason (R). Of the statements, mark the correct answer as (1)

(a) If both A and R are true and R is the correct explanation of A.

(b) If both A and R are true, but R is not the correct explanation of A.

(c) If A is true, but R is false.

(d) If both A and R are false.

13) Assertion (A) : tRNA acts as an adapter molecule (1)

Reason (R) : tRNA recognizes codon sequence in mRNA during translation.

14) Assertion (A) : In a monohybrid cross, F_1 generation indicate dominant characters. (1)
Reason (R) : Dominance occurs only in heterozygous state.

15) Assertion (A) : S.L. Miller created electric discharge in a closed flask containing CH_4, H_2, NH_3 and H_2O (1)
Reason (R) : He observed the formation of DNA and RNA.

16) Assertion (A) : Zona pellucida is a cellular layer of ovum in human female. (1)
Reason (R) : Corona radiata is a non cellular layer of ovum.

SECTION B

17) (a) How is placenta formed in the human female. (2)
(b) Name any two hormones which are secreted by it and are also present in a non-pregnant woman.

18) By using Punnett square depict the genotypes and phenotypes of test crosses where green pod colour (G) is dominant over yellow pod colour (g) in garden pea with unknown genotype (2)

19) How did Dr. David Tilman relate experimentally the stability of a community and its species richness. (2)

20) (a) Identify any two marsupials from the list given below (2)
(i) Lemur (ii) spotted cuscus (iii) Flying phalanger (iv) Bobcat (v) Mole
(b) When can adaptive radiation be referred to as convergent evolution? Give an example.

21) Identify A,B,C and D in the following table (2)

	Scientific name of the plant	Drug	Effect on the human body
(a)	Papaver somniferum	A	Depressant/slows down body function
(b)	Cannabis sativa	Cannabinoids	B
(c)	Erythroxylum coca	C	D

(OR)

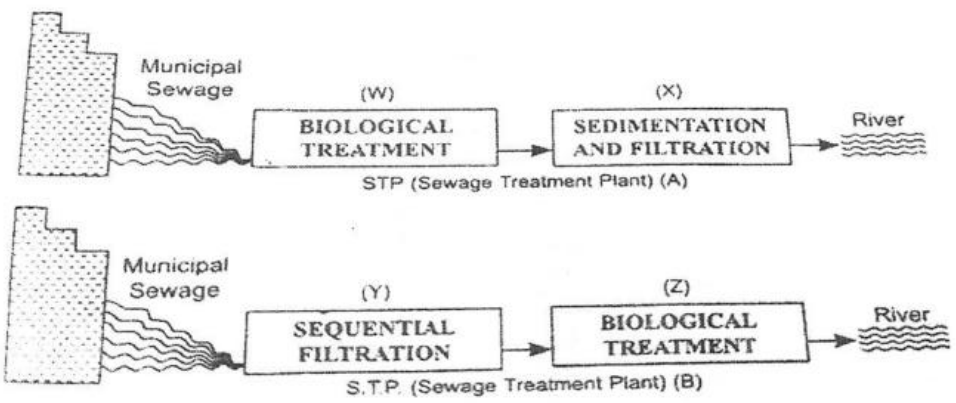
How do cytokine barriers and monocyte provide immunity in humans?

SECTION C

22) Expand and explain the following techniques used in the 'Test Tube Baby' programme. (3)
(a) GIFT (b) ZIFT (c) IUI

23) Frogs, Toads, salamanders and newts are not as prevalent as they once were. Researchers say amphibians are facing a rapid decline across the world. As a biology student what method would you suggest that can protect such endangered species from getting extinct? (3)

24) Study given diagram of Sewage Treatment Plant (STP) and answer the questions that follow : (3)



(a) Which one of the two 'S.T.P'. (A) or (B) will be more effective in treating the human excreta in the municipal waste?
(b) Write the steps followed in carrying the treatment of the sewage in step(z), once the BOD of sewage is reduced significantly till it is passed on to the "anaerobic sludge digesters".

25) a) Name the infective state of Plasmodium which Anopheles mosquito take in along with the blood meal from an infected human. (3)
b) Why does the infection cause fever in humans?
c) Give a flow chart of the part of the lifecycle of this parasite passed in the insect.

PTO

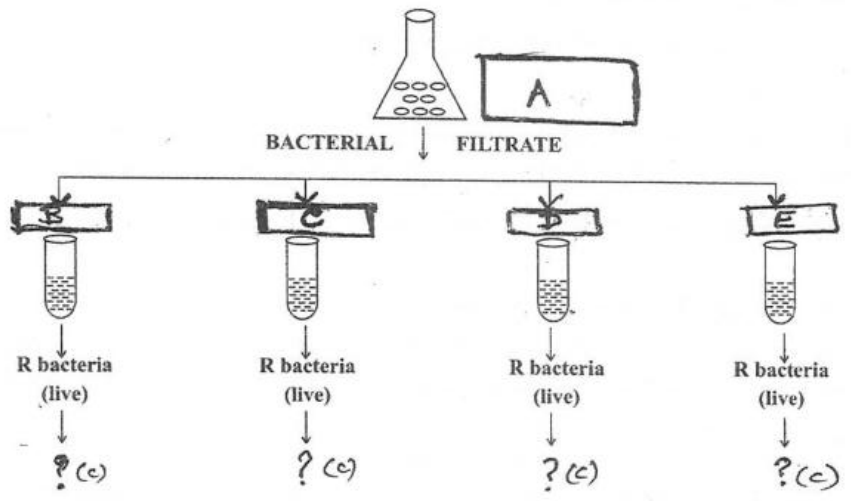
26) a) State any three phenomena in which the Hardy-Weinberg theorem may not hold true (3)

b) A population of 100 individuals has a frequency of allele 'A' 0.3 and a frequency of allele 'a' of 0.7. The frequency of heterozygous genotype (Aa) is 0.49. Is this population in Hardy-Weinberg equilibrium? Justify.

27) Explain the mechanism of sex determination in honey bee. (3)

(OR)

Given below are the illustration of the different steps of experiments conducted by Macleod, McCarty and Avery.



(a) Identify the label A and the chemicals used in B,C,D and E,

(b) Explain how the biochemical nature of the molecule was determined.

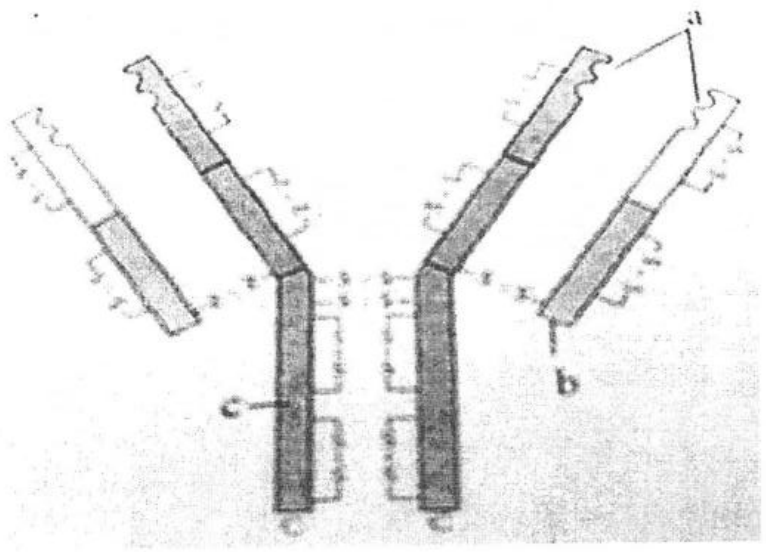
(c) What was the conclusion they arrived at after the experiment.

28) How is hnRNA processed to form mRNA? (3)

SECTION D

Question no. 29 and 30 are case based questions. Each question has subparts with internal choice in one support.

29) Refer to the given figure of antibody and answer the following questions. (4)



(a) Identify a,b and c in the given diagram

(b) Write the chemical nature of an antibody.

(c) Mention the type of immune response provided by an antibody.

(OR)

(c) Name the cells that produce antibodies in humans

30) Study the two cases carefully regarding the pattern of inheritance of disease. (4)

Case	Mother	Father	Children
Case I	With disease	Normal	Sons always with diseases
Case II	With disease	Normal	Sons and daughters could show disease

(a) Give two examples of case I diseases.

(b) On which chromosome case I disease are present on?

(c) If inheritance pattern of disease is as case II and both parents are carrier of disease then what are chances of pregnancy resulting in an affected child?

(OR)

(c) The possibility of a human female suffering from a hemophilia disease is rare. Why is it so?

SECTION E

31) (a) Classify the following scenarios as active/passive immunity and justify your answer. (5)

(i) A fetus receives antibodies from its mother through the placenta.

(ii) A person accidentally gets cut by a blade receives a tetanus shot.

(iii) A person receives a blood transfusion from a donor who has been vaccinated against a disease

(b) Zoya is bitten by an infected Anopheles mosquito in the morning. In the evening, another non-infected Anopheles mosquito bites Zoya and then bites Zaheer immediately. How likely is Zaheer to get malaria? Justify your answer.

(OR)

A patient is suffering from fatigue, high fever, and weight loss, and has been observing an increasing number and size of lumps in various regions of her body over a very short time.

(a) What could she be suffering from?

(b) Mention FOUR ways in which the disease identified in (a) is caused and FOUR techniques that can be used to diagnose it.

32) Shown below is a nucleotide sequence and the genetic code. **5-ATGCGTAGACTCGTA-3′** (5)

First Base	Second Base: U	Second Base: C	Second Base: A	Second Base: G	Third Base
U	UUU Phe, UUC Phe, UUA Leu, UUG Leu	UCU Ser, UCC Ser, UCA Ser, UCG Ser	UAU Tyr, UAC Tyr, UAA Stop, UAG Stop	UGU Tyr, UGC Tyr, UGA Stop, UGG Trp	U C A G
C	CUU Ieu, CUC Ieu, CUA Ieu, CUG Ieu	CCU Pro, CCC Pro, CCA Pro, CCG Pro	CAU His, CAC His, CAA Gln, CAG Gln	CGU Arg, CGC Arg, CGA Arg, CGG Arg	U C A G
A	AUU Ile, AUC Ile, AUA Ile, AUG Met	ACU Thr, ACC Thr, ACA Thr, ACG Thr	AAU Asn, AAC Asn, AAA Lys, AAG Lys	AGU Ser, AGC Ser, AGA Arg, AGG Arg	U C A G
G	GUU Val, GUC Val, GUA Val, GUG Val	GCU Ala, GCC Ala, GCA Ala, GCG Ala	GAU Asp, GAC Asp, GAA Glu, GAG Glu	GGU Gly, GGC Gly, GGA Gly, GGG Gly	U C A G

(a) Identify the protein sequence formed by this sequence.

(b) Draw the tRNA molecule for the third codon with its polarity labeled. Give a reason to support the polarity identified.

(c) The first genuine base in the nucleotide sequence changes to cytosine. Identify the type of mutation caused by this change.

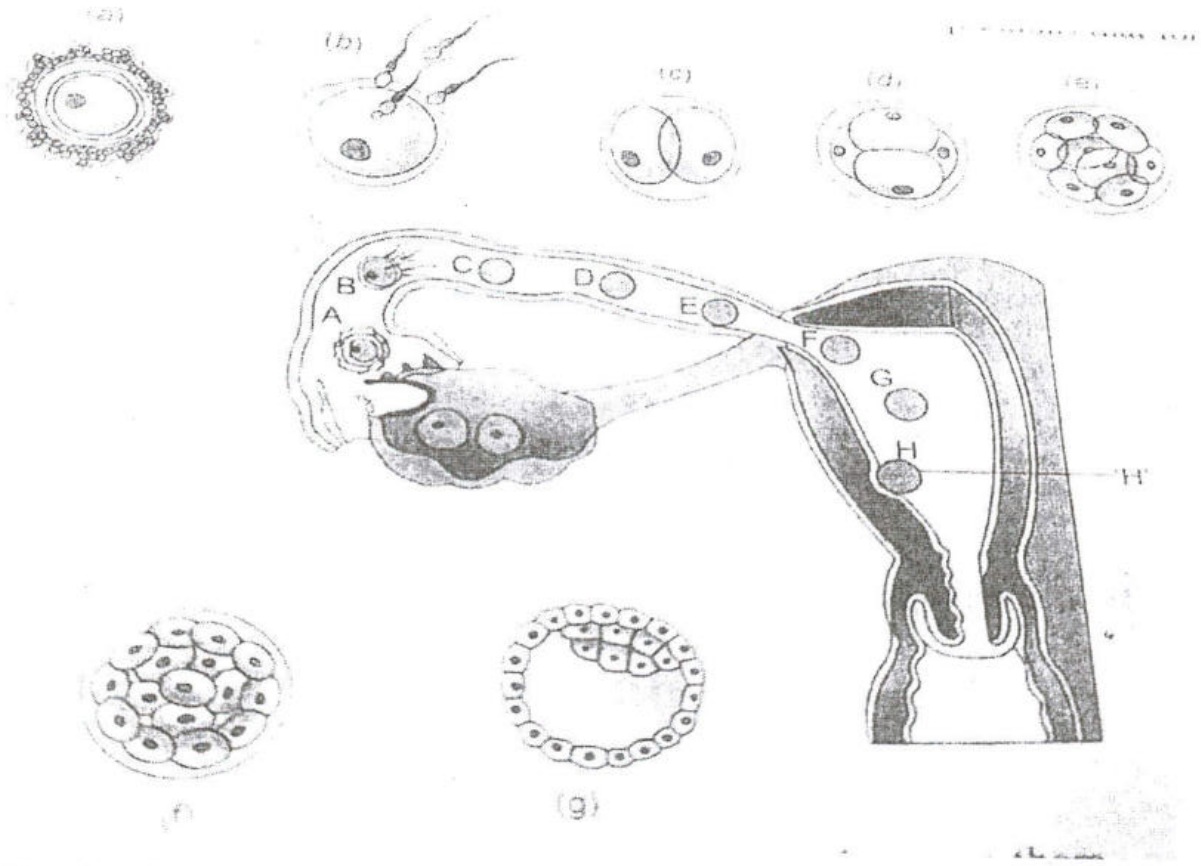
(d) Will the mutated sequence form a mRNA and protein? Justify.

(OR)

(a) Draw a schematic representation of the genes involved in the lac operon. Regulation of lac operon can be visualized as regulation of enzyme synthesis by its substrate. Explain the statement.

XII

33) Study the figure given below of a human female reproductive tract showing the transport of ovum, its fertilization and answer the questions that follow. (5)



(i) Identify the embryonic stages 'e' and 'g' and differentiate between them.

(ii) Describe the process of implantation as shown in figure 'H'.

(OR)

(i) Differentiate between Follicular phase and Luteal phase of the Menstrual cycle in human females on the basis of the following criteria :

(a) Days of their occurrence in the cycle.

(b) Stage of the follicle.

(c) Hormones influencing the phases

(d) State of endometrium

(ii) Write the effect of high concentration of LH on a mature Graafian follicle.

****

1) Geo
2) Biotech.
3) IP.
4) Maths.
5) App. Maths.
6) Eng.
7) Acc.
8) Phy.
9) Chem.
10) Bo. St.
11) G. K.
12) P. E.
13) Eco.
14) EG.
15) Comp. Sci.
16) Pol. Sc.
17) H. Sc.

SET – A

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 21.09.2024

MIDTERM EXAMINATION 2024

Time : 3 Hrs.

Class : XII

SUBJECT : GEOGRAPHY (029)

M.M. : 70

General Instructions:

1. This question paper contains **30** questions. All questions are compulsory.
2. This question paper is divided into five sections. Sections-**A, B, C, D and E.**
3. **Section A** - Question number **1 to 17** are Multiple Choice type questions carrying 1 mark each.
4. **Section B**- Question number **18 and 19** are Source based questions carrying 3 marks each.
5. **Section C**- Question number **20 to 23** are Short Answer type questions carrying 3 marks each. Answer to these questions shall be written in 80 to 100 words.
6. **Section D** Question number **24 to 28** are Long Answer type questions carrying 5 marks each. Answer to these questions shall be written in 120 to 150 words.
7. **Section E** Question number **29 and 30** are Map based questions.

SECTION – A

Q.1 There are two statements marked as Assertion(A) and Reason(R). (1)
Mark your answer as per the codes provided below.

Assertion (A) : Settlements can be of various types.
Reason (R) : Various physical factors affect the growth of settlements.

(A) Both A and R are true and A is the correct explanation of R
(B) Both A and R are true and R is the correct explanation of A
(C) A is true but R is false
(D) A is false but R is true

Q.2 Consider the following and choose the correct answer with the help of given codes (1)

	River		Sources
1	Gold Collar job	I	the Employee of secondary sector
2	Blue collar job	II	the employee of service sector
3	Red collar job	III	the workers who work outside from home in agricultural land
4	White collar job	IV	Research and Development

Options:

	I	II	III	IV
(1)	1	2	3	4
(2)	4	1	3	2
(3)	4	3	2	1
(4)	2	3	4	1

Q.3 Heritage homes are found in which from the following state of India? (1)
(A) Goa (B) Karnataka (C) Tamil Nadu (D) Kerala

Q.4 Consider the following statements and choose the correct answer with the help of given Option: (1)

Statement 1 : Intensive Subsistence Agriculture dominated by Wet paddy cultivation.
Statement 2: The yield per unit area is high but per labour productivity is low in Intensive subsistence agriculture.

Options :
(A) Both the statements are true.
(B) Only statement I is true.
(C) Only statement II is true
(D) Both the statements are wrong

Q.5 Which of the following is NOT a key dimension of Human Development? (1)
(A) Health (B) Education (C) Economic Growth (D) Standard of Living

Q6. The concept of Neo determinism was put forwarded by (1)
(A) Ritter (B) Griffith Taylor (C) Prof Amarthya Sen (D) Semple

Q.7 Which one of the following activities is related to quaternary sector? (1)
(A) Manufacturing computers (B) Paper and Raw pulp production
(C) University teaching (D) Printing books

Contd...2

Q.8 ITDP refers to which one of the following? (1)
(A) Integrated Tourism Development Programme
(B) Integrated Travel Development Programme
(C)Integrated Tribal Development Programme
(D) Integrated Transport Development Programme

Q.9 Which one from the following is not correct? (1)
(A) The salary of KPO employees are much higher
(B) KPO employee focus on quantity
(C) BPO provides the services like Customer care, technical support and telemarketing
(D) The salary of BPO employee are lesser than of KPO

Q.10 The publication of 'The Population Bomb' by Ehrlich in 1968 and 'The Limits to Growth' by Meadows and others in 1972 were discussing about..? (1)
(A) Housing (B) Poverty (C) Labours (D) Environment

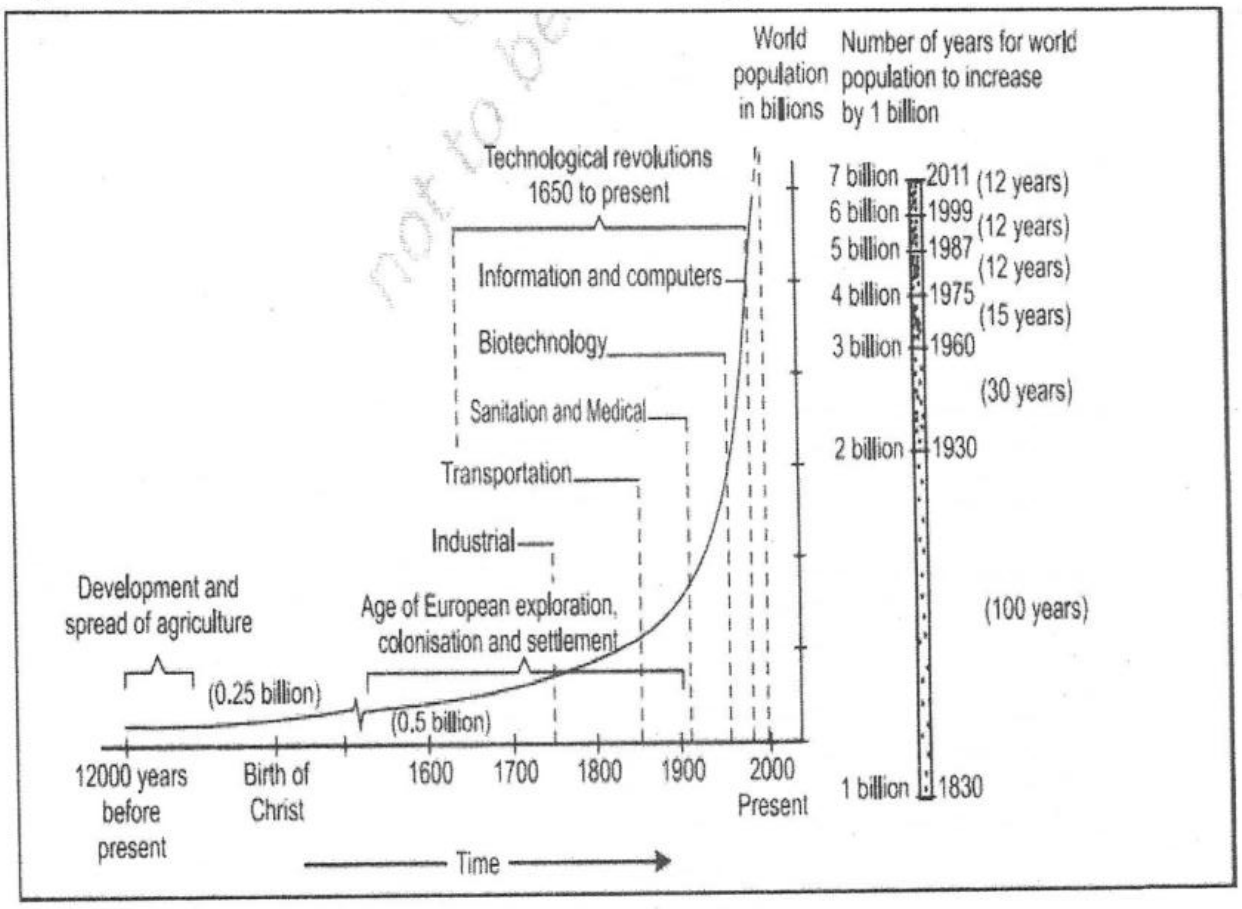
Q.11 Neeru – Meeru program belongs to which state? (1)
(A) Gujarat (B) Rajasthan (C) Punjab (D) Andhra Pradesh

Q.12 Migrates who move into a new place are called, (1)
(A) Emigrants (B) NRI (C) Immigrants (D) None

Q.13 Which one from the following is not correctly matched? (1)
(A) Velds – South Africa (B) Canterbury – Australia
(C) Pampas – Argentina (D) Prairies – Canada

Q.14 Which of the following is NOT considered a physical factor affecting mining? (1)
(A) Size of the deposit (B) Demand for the mineral
(C) Grade of the deposit (D) Mode of occurrence of the deposit

Study the given graph carefully and answer the following questions:



Q.15 How much time was taken for the population of the world to be 2 billion from 1 billion? (1)
(A) 15 years (B) 12 years (C) 215 years (D) 100 years

Q.16 When Industrial revolution was started? (1)
(A) After 1850 AD (B) After 1750 AD (C) After 1600 AD (D) Before 1750 AD

Q.17 How much time was taken for doubling of population from 2 to 4 billion? (1)
(A) 24 years (B) 100 years (C) 45 years (D) 27 years

Contd...3

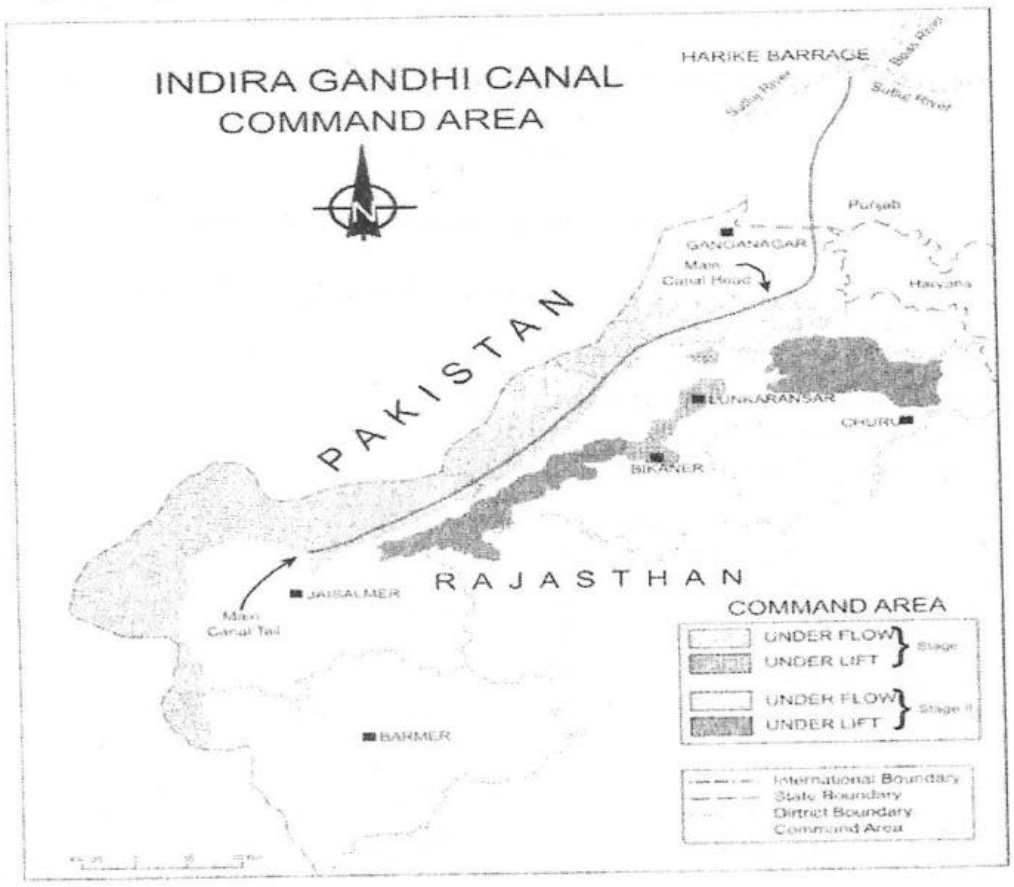
SECTION – B

Q.18 Read the given Passage carefully and answer the questions that follow: (1*3=3)

Quaternary activities involve knowledge-based services and the creation and use of information. This sector includes research and development, information technology, financial planning, and consultancy services. The quaternary sector is characterized by its focus on innovation and high – level expertise, playing a crucial role in driving technological advancement and economic progress. In developed economies, quaternary activities are increasingly becoming a significant component of the overall economic structure.

(a) What is the primary focus of quaternary activities??
(b) 'Name two examples of quaternary activities.
(c) Discuss how quaternary activities contribute to technological advancement.

Q.19 Study the given map carefully and answer the questions that follow (1*3=3)



(a) Mention the source of origin of this canal.
(b) Why is the areas to the east of the Canal under lift irrigation?
(c) Explain the economic significance of this canal for the command area.

SECTION – C

Q.20 "The non-conventional sources of energy will provide more sustained, eco – friendly and cheaper energy, if the initial cost is taken care of." Examine the statement. (3)

Q.21 Who proposed Neodeterminism? Explain about this concept.

OR

Differentiate between 'naturalisation of human' and 'humanisation of nature'. (3)

Q.22 Differentiate between Nomadic Herding and Commercial Livestock Rearing..

OR

B. Dairy farms are usually located near urban areas. Give reason (3)

Q.23 Discuss the concept of "Land Degradation" and mention two causes in the Indian context. (3)

SECTION – D

Q.24 "Water conservation methods are diverse and vary in effectiveness depending on the context and implementation" Describe the various methods of water conservation and their effectiveness in India.. (5)

Contd...4

Q.25 "The Europeans colonised many parts in the world and they introduced some other forms of agriculture " Discuss the important characteristic features of plantation agriculture. (5)

Q.26 (a) 'The growth in tourism industry is more because of various developments." What are the main attractions of tourist in the world? Explain **any five**.. (5)

OR

(b) Explain the importance of high-tech industries and reason for them being attracted to the peripheral areas of major metropolitan cities.

Q.27 (a) Distinguish between HDI and HPI. (5)

OR

(b) Describe the relationship between health and human development. Illustrate your answer with relevant examples.

Q.28 (a) Illustrate and explain the stages of Demographic Transition (5)

OR

(b) Explain the geographical factors that influence the distribution of population in India.

SECTION – E

Question numbers 29 & 30 are Map based questions having 5 sub – parts each.

29. Identify the geographical features shown on the outline map of the world.
(A) An area of dairy farming.
(B) An area of nomadic herding.
(C) An area of extensive commercial grain farming.
(D) An area of subsistence gathering.
(E) An area of mixed farming of the World

Q.30 Locate and label any five of the following geographical features on the Outline map of India with appropriate symbols: (5)

(A) State with highest population density
(B) Leading producing states of Tea
(C) Iron – ore mines : Bellary
(D) Manganese mines : Shimoga
(E) Coal mine: Neyveli

SET – B

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 21.09.2024

MIDTERM EXAMINATION 2024

Time : 3 Hrs.

Class : XII

SUBJECT : BIOTECHNOLOGY

M.M. : 70

General Instructions :

- All questions are compulsory.
- Question Paper consists of **Five sections : Section A, B, C, D and E.**
- **Section – A** has **16 questions** of **1 mark each.**
- **Section – B** has **5 questions** of **2 marks each.**
- **Section – C** has **7 questions** of **3 marks each.**
- **Section – D** has **2 Case based questions** of **4 marks each.**
- **Section – E** has **3 questions** of **5 marks each.**

Section – A

01. Corn steep liquor in animal cell culture is used as
(A) Nitrogen source (B) Sulphur source (C) Antifoam agent (D) Iron source (01)

02. Protoplast are cultured in
(A) Solid medium (B) Suspension cultures (C) Roller bottles (D) Spinner cultures (01)

03. The most widely used medium in plant cell culture is
(A) MS medium (B) LB Medium (C) B 5 Medium (D) B 6 Medium (01)

04. Animal cell in cell culture should be centrifuged at
(A) 20° C (B) 35° C (C) 15° C (D) 10° C (01)

05. Restriction enzyme was first discovered by
(A) W Arber, H. Smith and D Nathans (B) W Arber and George Gay.
(C) W Arber, H Smith and Stanley Cohen (D) Herbert Boyer, Annie Chang and Paul Berg (01)

06. DNA ligase is isolated from
(A) T_4 lamda phage (B) T_3 lamda phage (C) M13 phage (D) E. Coli (01)

07. An industrially important secondary metabolite which is used as red pigment in dye for silk is obtained from
(A) Datura Stramonium (B) Lithospermum erythrorhizon
(C) Taxus spp (D) Digitalis lanata (01)

08. A 100 kb DNA fragment has to cloned in a host cell vector used is
(A) Plasmid (B) Cosmid (C) Bacteriophange M13 (D) BAC (01)

09. The air used in the fermentation process is sterilized by
(A) Steam sterilization (B) Filter sterilization (C) Chemical sterilization (D) Dry sterilization (01)

10. Genetically modified crops with improved agronomic traits is responsible for
(A) First green revolution (B) Second green revolution
(C) Third green revolution (D) Fourth green revolution (01)

11. The animal cell line used in the production of Interleukin 2 is
(A) CHO cells (B) Bacterial cells (C) Yeast cells (D) Hybridoma cells (01)

12. The growth rate of animal cell culture is
(A) 15 to 16 hours (B) 18 to 24 hours (C) 3 to 4 hours (D) 1 hour (01)

For question number 13 to 16, two statements are given one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to the questions from the amongst the following options:

(A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) Assertion is true but Reason is false.
(d) Assertion is false but Reason is true.

13. **Assertion (A) :** Humulin acts in 15 minutes whereas classical insulin takes 3 hours.
Reason (R) : Hybridoma technology can facilitate the development of faster acting proteins like humulin. (01)

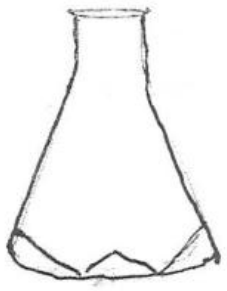
Contd...2

14. **Assertion (A) :** It is very difficult to produce hybrids in inter generic crosses.
Reason (R) : The abnormal development of endosperm leads to the death of hybrid embryo. (01)

15. **Assertion (A) :** Nucleases enzymes are of two kinds exonucleases and endonucleases.
Reason (R) : Endonucleases remove nucleotides from the ends of DNA. (01)

16. **Assertion (A) :** Animal cells in vitro divide till they fill the surface and then stop growing.
Reason (R) : Animals can be grown up to limited generations. (01)

Section : B

17. 

Name the vessel given above. Where is it used ? State an application of it? (02)

18. Why DNA sequencing technologies are automated ? Write the structure of ddNTP. (02)

19. Explain any two methods of introducing exogeneous DNA directly into host cells. (02)

20. Why are inverted microscopes and low speed centrifuge used in animal cell culture ? (02)

21. How do plants protect themselves from abiotic stress? (02)

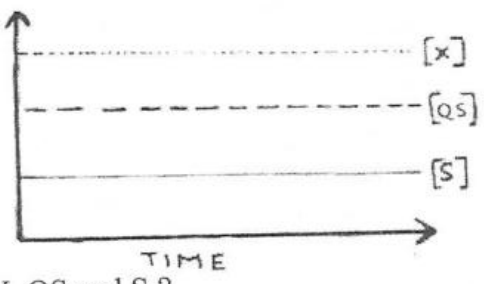
OR

How are transgenic tomatoes 'Flavr Savr' produced ? What is the speciality of these tomatoes? (02)

Section : C

22. What is tPA ? Explain the production of it with the help of diagram. (03)

23. What is Bt Cotton ? How is it produced? Do they kill butterflies if not why? (03)

24. 

(a) What is X, QS and S ?
(b) What does this graph represent ?
(c) Explain the process and why it is better than other cultures. (03)

25. Explain the use of the following:
(a) Herceptin (b) EPO (c) OKT3 (03)

26. 

(a) What does the figure deficit ?
(b) Explain the steps of this technique. (03)

Contd...3

27. (a) What is the recognition sequence of EcoRI restriction enzyme? What is the microbial source of it ?
(b) How do bacteria protects its DNA from bacteriophages ? (03)

28. Explain the types of media used in microbial cell culture. (03)

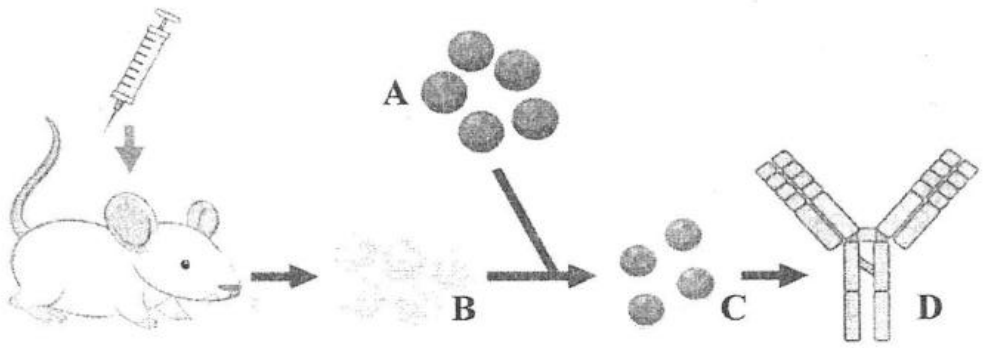
OR

Explain **any three** methods of introducing rDNA into host cell.

Section : D

Case Based Study :

29.

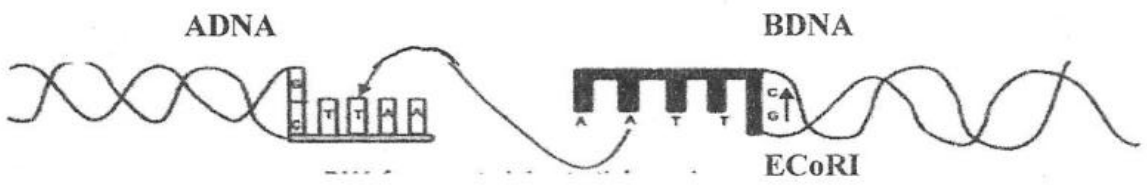


(i) What does the above figure depict. Label A, B C, and D.
(ii) How is the fusion done ?
(iii) State the functions of D. Who developed it ? (04)

OR

State the properties of C.

30.



(a) Write the name of A and B.
(b) What are restriction sites? Complete the palindrome recognised by E.CoRI.
(c) Which enzyme prevents religation and how ? (04)

OR

Which enzyme ligate the strands and how ?

Section : E

31. (a) What are vectors? List the properties of good vector.
(b) State the features of (a) PBR 322 (b) PUC 19 (c) Shuttle vectors (05)

OR

(a) What are artificial seeds? Explain the production of it.
(b) Explain the production of somatic hybrids and cybrids.

32. What are ES cells? Explain the features and production of chimeras. (05)

OR

State the importance and its regulation of the following in animal cell culture.
(a) pH (b) Temperature (c) Serum medium

33. Explain batch culture and fed batch culture with the help of graph. (05)

OR

How can you amplify a DNA sequence. Explain the steps with the help of diagram.

SET – A DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 21.09.2024 **MIDTERM EXAMINATION 2024** Time : 3 Hrs.

Class : XII **SUBJECT : MATHEMATICS (041)** M.M. : 80

General Instructions :

- The question paper contains five sections A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
- **Section A** has 18 MCQs and 2 Assertion Reason based questions of 1 mark each.
- **Section B** has 5 Very short Answer type questions of 2 marks each.
- **Section C** has 6 Short Answer type questions of 3 marks each.
- **Section D** has 4 Long answer type questions of 5 marks each.
- **Section E** has 3 Source based/case based/passage based/integrated units of assessment of 4 marks each with sub-parts.
- There is no overall choice. However, an internal choice has been provided in 2 questions in Section B, 3 questions in Section C, 2 questions in Section D and 2 questions in Section E.
- You have to attempt **only one** alternative in all such questions.
- Use of calculator is **NOT** permitted

SECTION – A (All questions are compulsory no internal choice is provided in this section)

1. Let L be the set of all lines in a plane and R be the relation in L defined as $R = \{(L_1, L_2): L_1 \text{ is perpendicular to } L_2\}$, then R is
   (A) an equivalence relation (B) reflexive, symmetric but not transitive
   (C) reflexive, transitive but not symmetric (D) symmetric but neither reflexive nor transitive

2. If $f: R - \{3\} \to R - \{1\}$ defined by $f(x) = \frac{x-2}{x-3}$ then f is
   (A) bijective (B) injective but not surjective
   (C) many one onto (D) one-one into

3. Let Z denote the set of integers then function $f: Z \to Z$ defined as $f(x) = x^3 - 1$ is
   (A) bijective (B) one-one but not onto
   (C) onto but not one-one (D) neither injective nor surjective

4. The value of $\begin{vmatrix} 8 & 2 & 7 \\ 12 & 3 & 5 \\ 16 & 4 & 3 \end{vmatrix}$ is

   (A) 0 (B) 2 (iii) 7 (iv) -2

5. If $A = \begin{bmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{bmatrix}$ then A^{-1} is

   (A) $abc\begin{bmatrix} \frac{1}{a} & 0 & 0 \\ 0 & \frac{1}{b} & 0 \\ 0 & 0 & \frac{1}{c} \end{bmatrix}$ (B) $\frac{1}{abc}\begin{bmatrix} \frac{1}{a} & 0 & 0 \\ 0 & \frac{1}{b} & 0 \\ 0 & 0 & \frac{1}{c} \end{bmatrix}$ (C) $abc\begin{bmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{bmatrix}$ (D) $\begin{bmatrix} \frac{1}{a} & 0 & 0 \\ 0 & \frac{1}{b} & 0 \\ 0 & 0 & \frac{1}{c} \end{bmatrix}$

6. If $A = \{a_{ij}\}$ is a scalar matrix, then which of the following is true?
   (A) $a_{ij} = 0 \; for \; all \; i,j$ (B) $a_{ij} \neq 0 \; for \; all \; i,j$
   (C) $a_{ij} = \begin{cases} 0, i \neq j \\ \alpha, i = j \end{cases}$ (D) $a_{ij} = \begin{cases} 0, i = j \\ \alpha, i \neq j \end{cases}$

7. Let $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ be a square matrix such that adj A = A, then a – b + c – d is equal to
   (A) 2a (B) 2b (C) 2c (D) 0

8. If A and B are Skew-symmetric matrices, then (AB + BA) is
   (A) a Skew-symmetric matrix (B) a Symmetric matrix (C) a null matrix (D) an identity matrix

9. If $y = \sin^{-1} x$, then $\frac{d^2y}{dx^2}$ is
   (A) sec y (B) secy tan y (C) $\sec^2 y \tan y$ (D) $\tan^2 y \sec y$

10. A function $f(x) = |1 - x + |x||$ is
    (A) discontinuous at x = 1 only (B) discontinuous at x= 0 only
    (C) discontinuous at x = 0, 1 (D) continuous everywhere

Contd...2

11. The rate of change of surface area of a sphere with respect to its radius r, when r = 4 cm is
(A) $64\pi cm^2/cm$ (B) $48\pi cm^2/cm$ (C) $32\pi cm^2/cm$ (D) $16\pi cm^2/cm$

12. $\int_{-a}^{a} fx)dx = 0, if$

(A) f(-x) = f(x) (B) f(-x) = -f(x) (C) f(a – x) = f(x) (D) f(a-x) = -f(x)

13. *The restrictions imposed on decision variables involved in an* objective function of a linear programming problem are called
(A) feasible solutions (B) optimal solutions (C) constraints (D) infeasible solutions

14. *Let* $I_1 = \int_1^2 \frac{dx}{\sqrt{1+x^2}}$ *and* $I_2 = \int_1^2 \frac{dx}{x}$, then
(A) $I_1 > I_2$ (B) $I_1 < I_2$ (C) $I_1 = I_2$ (D) $I_1 > 2I_2$

15. The value of $\int_0^2 x[x]dx$ is
(A) $\frac{7}{2}$ (B) $\frac{5}{2}$ (C) $\frac{3}{2}$ (D) $\frac{1}{2}$

16. If the function $f(x) = x^4 - 62x^2 + ax + 9$ attains its maximum value in the interval [0, 2] at x = 1, then the value of a is
(A) 124 (B) -124 (C) 120 (D) -120

17. Which of the following functions are strictly decreasing on $(0, \frac{\pi}{2})$?
(A) sin x (B) cos 2x (C) cos 3x (D) tan x

18. $\int \frac{\cos 2x}{(\sin x+\cos x)^2}\, dx$ is equal to
(A) $\frac{-1}{\sin x+\cos x} + C$ (B) $log|\sin x + \cos x| + C$
(C) $log|\sin x + \cos x| + C$ (D) $\frac{1}{(\sin x+\cos x)^2} + C$

Q. NO. 19 and 20 are ASSERTION (A) and REASON (R) type with the following options:
(A) A and R both are correct and R is the correct explanation of A.
(B) A and R both are correct and R is the not correct explanation of A.
(C) A is correct and R is false.
(D) A is false and R is correct.

19. **A:** $\int e^x \sin x\, dx = \frac{e^x}{2}(\sin x - \cos x) + C$
R: $\int e^x[f(x) + f'(x)]dx = e^x f(x) + C$

20. **A:** If $y = \log_7 x$, then $\frac{dy}{dx} = \frac{1}{x log_e 7}$
R: $\log_b a = \log_e a \log_b e$

SECTION – B (All questions are compulsory.
In case of internal choice attempt any one question only, also write steps in support of your answers)

21. Evaluate $\cot^2\{\text{cosec}^{-1} 3\} + \sin^2\{\cos^{-1}\frac{1}{3}\}$

OR

Express $\tan^{-1}\left(\frac{\cos x}{1+\sin x}\right), -\frac{\pi}{2} < x < \frac{\pi}{2}$ in simplest form.

22. Simplify $\tan\theta \begin{bmatrix} sec\theta & \tan\theta \\ \tan\theta & -\sec\theta \end{bmatrix} + \sec\theta \begin{bmatrix} -\tan\theta & -\sec\theta \\ -\sec\theta & \tan\theta \end{bmatrix}$

OR

A trust fund has ₹ 30000 that must be invested in two different types of bonds. The first bond pays 5% interest per year and the second bond pays 7% interest per year. Using matrix multiplication determine how to divide ₹ 30000 among the two types of bonds. If the trust fund must obtain an annual interest of ₹ 2000.

23. Check the differentiability of $f(x) = \begin{cases} x^2 + 1, 0 \le x < 1 \\ 3 - x, 1 \le x \le 2 \end{cases}$ at x = 1

24. Given $\frac{d}{dx}F(x) = \frac{1}{\sqrt{2x-x^2}}$ *and* $F(1) = 0, find\ F(x).$

25. Prove that f: R → R given by $f(x) = x^3 + 1$ is injective.

Contd...3

SECTION – C (All questions are compulsory.
In case of internal choice attempt any one question only, also write steps in support of your answers)

26. Find the values of a and b so that function f(x) defined as

$$f(x) = \begin{cases} \frac{x-2}{|x-2|} + a, x < 2 \\ a + b, \quad x = 2 \\ \frac{x-2}{|x-2|} + b, x > 2 \end{cases}$$ is a continuous function.

27. Find the intervals in which the function $f(x) = \frac{\log x}{x}$ is strictly increasing or strictly decreasing.

OR

If $x^p . y^q = (x + y)^{p+q}$ *then prove that* $\frac{d^2y}{dx^2} = 0$

28. Evaluate $\int \frac{2+sin2x}{1+cos2x} e^x \, dx$

OR

Evaluate $\int_0^{\frac{\pi}{4}} \frac{1}{sinx+cosx} \, dx$

29. Show that the relation R on the set A = $\{x \in Z: 0 \leq x \leq 12\}$ given by $R = \{(a, b): |a - b| \text{ is a multiple of } 4\}$ is an equivalence relation. Find the set of all elements related to 3.

30. Express the matrix A = $\begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ as the sum of a symmetric and a skew- symmetric matrix.

31. Find matrix A if, $\begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix} A \begin{bmatrix} 0 & 2 \\ 1 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 6 \\ 3 & -2 \end{bmatrix}$

OR

Show that the matrix A = $\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$ satisfies the equation $A^2 - 4A + I = 0$, where I is 2 × 2 identity matrix and O is 2 × 2 zero matrix. Using this equation find A^{-1}.

SECTION D (All questions are compulsory.
In case of internal choice attempt any one question only, also write steps in support of your answers)

32. The perimeter of a rectangular metallic sheet is 300 cm. It is rolled along one of its sides to form a cylinder, find the dimensions of the rectangular sheet so that volume of cylinder so formed is maximum.

OR

A point on the hypotenuse of a right-angled triangle is at distance a and b from the sides. Show that the minimum length of the hypotenuse is $\left(a^{\frac{2}{3}} + b^{\frac{2}{3}}\right)^{\frac{3}{2}}$.

33. Using integration, find the area of the region enclosed between the curve $y = \sqrt{4 - x^2}$ and the lines x = -1, x = 1 and the x-axis.

34. If A = $\begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1}. Use it to solve the system of equations

$2x - 3y + 5z = 11$
$3x + 2y - 4z = -5$
$x + y - 2z = -3$

OR

If F(x) = $\begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$

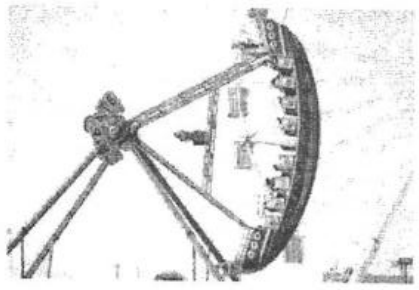
then prove that $[F(x)^{-1}] = F(-x)$

35. Solve the following LPP graphically
Minimize Z = 5x + 10y
subject to constraints
$x + 2y \leq 120$
$x + y \geq 60$
$x - 2y \geq 0$
and $x \geq 0, y \geq 0$

Contd...4

SECTION E – CASE BASED (All questions are compulsory.
In case of internal choice attempt any one question only, also write steps in support of your answers)

36. Raja visited the Exhibition along with his family. The Exhibition had a huge swing which attracted many children. Raja found that the swing traced the path of a parabola as given by $y = x^2$



Answer the following questions using the above information:
(i) If f: R → R be defined by $f(x) = x^2$ then check whether f is an injective function or not.
(ii) If f: R → R be defined by $f(x) = x^2$ then check whether f is a surjective function or not.
(iii) Let f:{1, 2, 3, ...} → (1, 4, 9, 16, ...} be defined by $f(x) = x^2$ then check whether f is an bijective function or not. Give suitable reasons.

OR

Let f: N→ R be defined by $f(x) = x^2$. Determine the range of the function f.

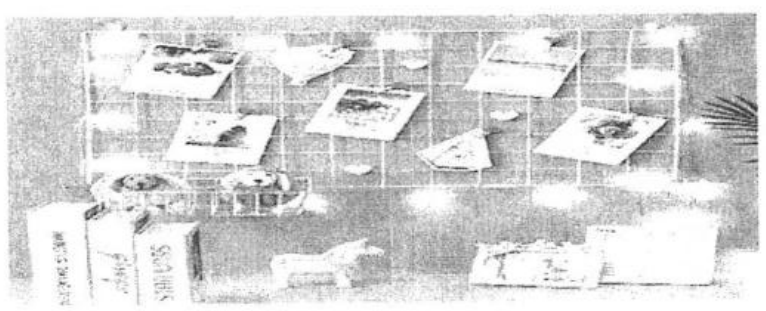
37. A firm produces bottles of disinfectant and a bathroom cleaner.
It can produce maximum of 600 bottles in a day.
It needs to produce at least 300 bottles everyday.
It takes 6 hours to produce a bottle of disinfectant and 2 hours for a bottle of bathroom cleaner.
At least 1200 hours of production time should be used daily. Manufacturing cost per bottle of disinfectant is ₹ 50 and ₹ 20 for a bottle of bathroom cleaner.

Based on above, answer the following questions
(i) What is the objective function ?
(ii) What are the linear constraints ?
(iii) If Z = 50x + 20y, then find the value of Z at (150, 150)

OR

If Z = 50x + 20y, then find the value of Z at (300, 0)

38. A rectangle is formed with a certain wire whose length x is decreasing at the rate of 3 cm/min and the width y is increasing at the rate of 2 cm/min.



Based on above information answer the following:
(i) Find the rate of change of perimeter when x = 4 cm and y = 6 cm
(ii) Find the rate of change of area of the rectangle when x = 10cm and y = 6cm.

SET – A

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 21.09.2024

Class : XII

MIDTERM EXAMINATION 2024

SUBJECT : APPLIED MATHEMATICS

Time : 3 Hrs.

M.M. : 80

GENERAL INSTRUCTIONS

1. This Question paper contains – **five sections** A, B, C, D and E. Each section is compulsory. However, there are internal choices in some questions.
2. Section A has 18 MCQ's and 02 Assertion – Reason based questions of 1 mark each.
3. Section B has 5 Very Short Answer (VSA) – type questions of 2 marks each.
4. Section C has 6 Short Answer (SA) – type questions of 3 marks each.
5. Section D has 4 Long Answer (LA) – type questions of 5 marks each.
6. Section E has 3 source based/case based/passage based/integrated units of assessment of 4 marks each with sub-parts.

SECTION – A

(This section comprises of Multiple Choice Questions (MCQ) of 1 mark each)

1. (8×14) in 12 hour clock is
   (A) 4 O' clock (B) 8 O' clock (C) 6 O' clock (D) 2 O' clock

2. If $A^2 - A + I = 0$, then A^{-1} is equal to
   (A) $A + I$ (B) $A - I$ (C) $A + 2I$ (D) $I - A$

3. A die is rolled thrice. If the event of getting an even number is a success, then the probability of getting atleast two successes is
   (A) $\frac{7}{8}$ (B) $\frac{1}{2}$ (C) $\frac{2}{3}$ (D) $\frac{11}{2}$

4. If $y = \frac{e^x + e^{-x}}{e^x - e^{-x}}$ then $\frac{dy}{dx}$ is equal to
   (A) y^2 (B) $1 - y^2$ (C) $y^2 - 1$ (D) $1 + y^2$

5. The graph of the inequality $2x + 3y > 6$ is
   (A) half plane that contains the origin
   (B) half plane that neither contains origin nor the points of the line $2x + 3y = 6$
   (C) whole XOY-plane excluding the points on the line $2x + 3y = 6$
   (D) entire XOY plane.

6. A fire in a factory delaying production for some time is
   (A) long term trend (B) Cyclical trend (C) Seasonal trend (D) Irregular trend

7. For a random variable X, $E(X) = 3$ and $E(X^2) = 11$. Then variance of X is
   (A) 8 (B) 5 (C) 2 (D) 1

8. In what ratio must a grocer mix two varieties of pulses costing ₹ 85 per kg and ₹ 100 per kg respectively so as to get a mixture worth ₹ 92 per kg?
   (A) 7 : 8 (B) 8 : 7 (C) 5 : 7 (D) 7 : 5

9. If A is a non-singular matrix, then
   (A) $|A| \neq |A'|$ (B) $|A^{-1}| \neq |A|^{-1}$ (C) $|AA'| \neq |A^2|$ (D) $|A| + |A'| \neq 0$

10. The trend line equation $y = a + bx$, 'a' is the
    (A) mean of x (B) mean of y (C) slope (D) none of these.

11. Corner points of the feasible region determined by the system of linear constraints are (0,3), (1,1) and (3,0). Let $Z = px + qy$, where $p,q > 0$. Condition on p and q so that the minimum of Z occurs at (3,0) and (1,1) is
    (A) $p = 2q$ (B) $p = \frac{q}{2}$ (C) $p = 3q$ (D) $p = q$

12. The speed of a boat in still water is 500% more than the speed of the current. The respective ratio between the speed of the boat downstream and speed of the boat upstream is
    (A) 9: 2 (B) 7: 3 (C) 7 : 5 (D) 9 : 4.

Contd...2

13. If $y = f(x^2)$ and $f'(x) = e^{\sqrt{x}}$, then $\frac{dy}{dx}$ is equal to

(A) $2xe^{2\sqrt{x}}$ (B) $2xe^{x}$ (C) $4xe^{\sqrt{x}}$ (D) $4xe^{x}$

14. If for two matrices A and B, AB = A and BA = B, then $(B^2 + B)$ equals

(A) 2A (B) 0 (C) 2I (D) 2B

15. Pipe A is 2 times slower than pipe B and takes 9 min more time than pipe B. How much time will pipe A take to fill the tank?

(A) 18min (B) 12min (C) 10min (D) 15min

16. For the given five values 15, 24, 18, 33, 42, the three years moving averages are

(A) 19, 22, 33 (B) 19, 25, 31 (C) 19, 30, 31 (D) 19, 25, 33

17. P is $2\frac{1}{3}$ times as fast as Q. If P gives Q a start of 80m, how long should the race course be so that both of them reach at the same time?

(A) 150m (B) 170m (C) 140m (D) 160m

18. If the matrix $\begin{bmatrix} 0 & -1 & 3x \\ 1 & y & -5 \\ -6 & 5 & 0 \end{bmatrix}$ is skew-symmetric, then

(A) x = -2, y = 0 (B) x = 2, y = 0 (C) x = -2, y = 1 (D) x = 2, y = -1

Assertion Reason Based Questions

In the following questions, a statement of Assertion(A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices

(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true and R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

19. **Assertion (A)** : If two positive numbers are such that their sum is 16 and sum of their cubes is minimum, then the numbers are 8, 8.
Reason (R) : If f be a function defined on an interval I and $c \in I$ and let f be twice differentiable at c, then x = c is a point of local minima, if f'(c) = 0 and f"(c) > 0 and f (c) is the local minimum value of f.

20. **Assertion (A)** : Two dice are thrown simultaneously. There are 11 possible outcomes and each has a probability $\frac{1}{11}$.
Reason (R) : Three events A, B, C are said to be independent, if $P(A \cap B \cap C) = P(A).P(B).P(C)$.

SECTION – B

(This section comprises of very short answer type questions (VSA) of 2 marks each)

21. Using properties of determinants, prove that

$$\begin{vmatrix} 3a & -a+b & -a+c \\ -b+a & 3b & -b+c \\ -c+a & -c+b & 3c \end{vmatrix} = 3(a + b + c)(ab + bc + ca).$$

22. Determine the binomial distribution whose mean is 20 and standard deviation is 4.

OR

Two cards are drawn successively with replacement from a well shuffled pack of 52 cards, find the probability distribution of number of kings.

23. In a 100m race, A runs at a speed of $\frac{5}{6}$ m/s. If A gives B a start 4m and still beats him by 12s, what is the speed of B?

OR

Two pipes A and B can fill a tank in 24min and 32min, respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 18min?

Contd...3

24. The cost function for a certain commodity is $C(x) = 12 + 3x - \frac{1}{3}x^2$. Write down the total cost, fixed cost, variable cost and average cost when 3 units are produced.

25. One kind of cake requires 200g of flour and 25g of fat and another kind of cake requires 100g of flour and 50g of fat. Formulate a linear programming problem to make maximum number of cakes if 5kg of flour and 1kg of fat is available and there is no shortage of other ingredients.

SECTION - C
(This comprises of short answer type questions (SA) of 3 marks each)

26. Obtain the 3-year moving averages for the following series of observations:

Year	1995	1996	1997	1998	1999	2000	2001	2002
Annual sale (in Lakhs)	3.6	4.3	4.3	3.4	4.4	5.4	3.4	2.4

27. Solve the LPP graphically
Minimise $Z = 5x + 7y$ subject to the constraints
$2x + y \geq 8$
$x + 2y \geq 10,\ x,y \geq 0.$

OR

Solve graphically
Maximise $Z = 5x + 2y$ subject to the constraints
$x - 2y \leq 2$
$3x + 2y \leq 12$
$-3x + 2y \leq 3,\ x,y \geq 0.$

28. Find the values of x for which $f(x) = (x(x-2))^2$ is an increasing function. Also find the points on the curve, where the tangent is parallel to x-axis.

OR

Show that the function $f(x) = 4x^3 - 18x^2 + 27x - 7$ has neither maxima nor minima.

29. Two vessels A and B contain milk and water in the ratio 7 : 5 and 17 : 7 respectively. In what ratio mixtures from two vessels should be mixed to get a new mixture containing milk and water in the ratio 5 : 3?

30. Fit a straight line trend by the method of least squares and tabulate the trend values from the following data:

Year	2005	2006	2007	2008	2009	2010
Profit (in Lakhs)	5	7	9	10	12	17

31. If a young man rides motor cycle at 25km/hr, he has to spend ₹ 2 per kilometre on petrol, if he rides at a faster speed of 40km/hr, the petrol cost increases to ₹ 5 per kilometre. He has ₹ 100 to spend on petrol and wishes to find the maximum distance he can travel within one hour. Express this as a linear programming problem and solve it graphically.

SECTION – D
(This section comprises of long answer type questions (LA) of 5 marks each)

32. If $A = \begin{bmatrix} 1 & 2 & -3 \\ 2 & 3 & 2 \\ 3 & -3 & -4 \end{bmatrix}$, find A^{-1}. Using A^{-1}, solve the system of linear equations:

$x + 2y - 3z = -4,\ 2x + 3y + 2z = 2,\ 3x - 3y - 4z = 11.$

OR

If $B = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$, find $B^2 - 5B + 4I$ and hence find a matrix X such that

$B^2 - 5B + 4I + X = 0.$

Contd...4

33. Three numbers are selected at random (without replacement) from first six positive integers. If X denotes the smallest of the three numbers obtained, find the probability distribution of X. Also, find the mean of the distribution.

34. Of all the closed right circular cylindrical cans of volume 128π cm^3, find the dimensions of the can which has minimum surface area.

OR

A window has the shape of a rectangle surmounted by an equilateral triangle. If the perimeter of the window is 12m, find the dimensions of the rectangle that will produce the largest area of the window.

35. (i) Solve the inequality $|3x| \geq |6 - 3x|$.
(ii) The length of a rectangle is three times its breadth. If the minimum perimeter of the rectangle is 160 cm, then find the shortest value of its breadth.

SECTION E

(This section comprises of 3 case- study/passage based questions of 4 marks each with sub parts. The first two case study questions have three sub parts (i), (ii), (iii) of marks 1, 1, 2 respectively. The third case study question has two sub parts of 2 marks each.)

36. **CASE STUDY – 1**

A rectangular hall is to be developed for the meeting of farmers in an agriculture college to make them aware of the new techniques in cultivation. It is given that the floor having length 'x' and breadth 'y', has a fixed perimeter P.

(i) Write the relationship between 'x', 'y' and 'P'.
(ii) Express the area of the floor 'A' as a function of 'x'.
(iii) Find the value of 'x' in terms of 'P', so that the area of the floor is maximum.

OR

Find the maximum value of the floor in terms of 'P'?

37. **CASE STUDY – 2**

On the occasion of Children's Day, Class teacher of III – B, decided to distribute some chocolates to students.
If there were 8 students less, every student would have got 10 more chocolates. However, if there were 16 students more, everyone would have got 10 chocolates less.
If the number of students in the class is 'x' and the total number of chocolates given to each student be 'y', answer the following questions.

(i) Write a system of linear equations to represent the above information.
(ii) Write the above system of linear equations as a matrix equation of the form $AX = B$
(iii) If A represents the coefficient matrix, find A^{-1}.

OR

Find the values of 'x' and 'y'.

38. **CASE STUDY – 3**

Shubham is rowing a boat. He takes 8hours to row 48km upstream whereas he takes 4 hours to go the same distance downstream. Based on the above information, answer the following questions.

(i) Find Shubham's speed of rowing in still water and the speed of the stream.
(ii) If the stream is flowing at a speed of 6km/hr, Shubham rows a certain distance upstream in 4.5hrs and returns in 2.5hrs. Find the speed of the boat.

SET – A

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll NO. : .....

Date : 19.09.2024

MIDTERM EXAMINATION 2024

Time : 3 Hrs.

Class : XII

SUBJECT : ENGINEERING GRAPHICS

M.M. : 70

General Instructions :

i. Attempt all questions. Give your answer according to question.
ii. Internal choice is given in some questions.
iii. Use both side of drawing sheet if necessary.
iv. All dimensions are in mm.
v. Missing and mismatching dimension if any may be suitably assumed.
vi. Follow the SP: 46-2003 revised codes with first angle method of projection.

Q 1 to Q 20 – Answer the following multiple choice questions.
Print the correct choice on your drawing sheet: (1×20=20)

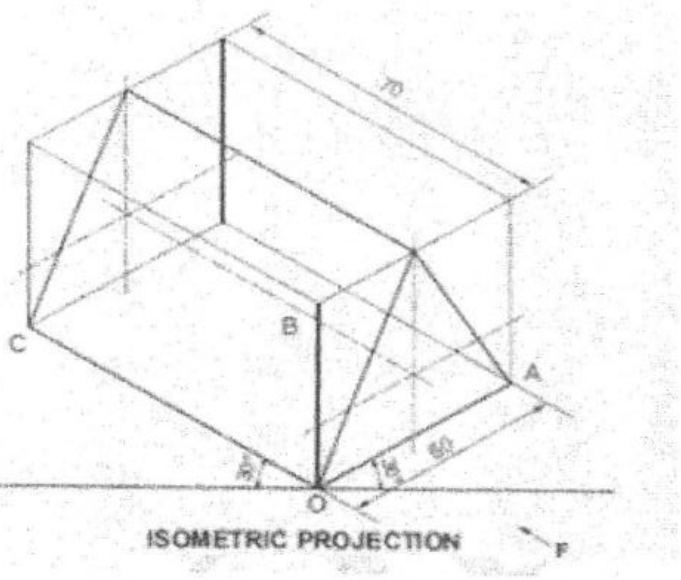
1. The distance of a point on a thread to the corresponding point of the next thread, measured parallel to axis is known as:
(A) Pitch (B) Flank (C) Root (D) Lead

2. Name the type of line which is used for dimensioning.
(A) Small dash line (B) Chain line (C) Wavy line (D) Thin continuous line

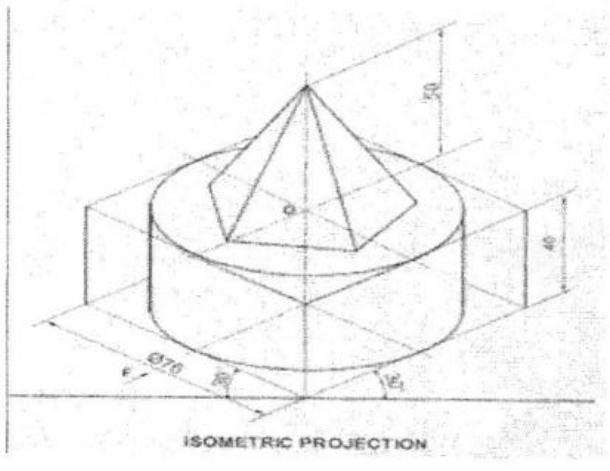
3. The full form of B.S.W thread.
(A) Britain standard whit worth (B) British standard whit worth
(C) Britian standard whit worth (D)British standard whit worth.

4. Which one among the following represents a permanent fastener?
(A) Nut (B) Rivet (C) screw (D) Bolt

5. In isometric projection, the four centre method is used to construct
(A) an ellipse (B) an involute (C) a parabola (D) a hyperbola

6. 

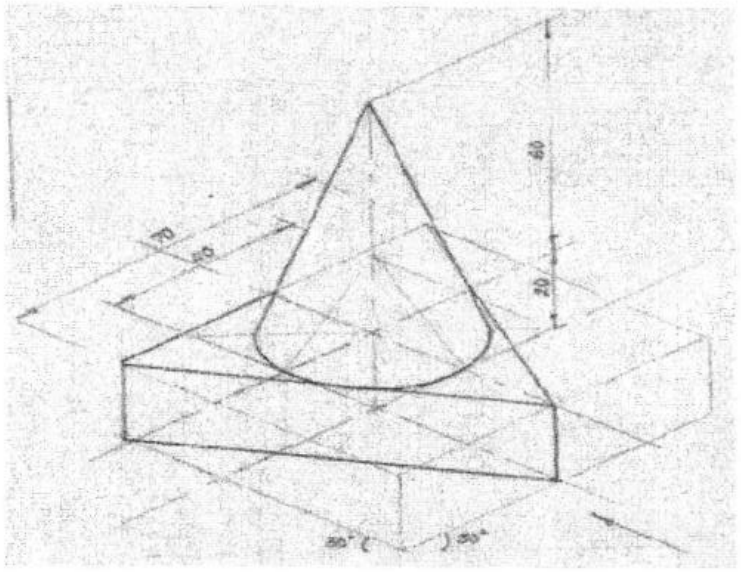
(A) The axis of the solid is perpendicular to the H.P
(B) The axis of the solid is perpendicular to the V.P
(C) The axis of the solid is parallel to the V.P
(D) The axis of the solid is parallel to both the H.P and V.P.

7. 

(A) The diameter of the cylinder is more than 76mm.
(B) The diameter of the cylinder is less than 76mm.
(C) The diameter of the cylinder is equal to 76mm.
(D)The diameter of the cylinder is double of 76mm.

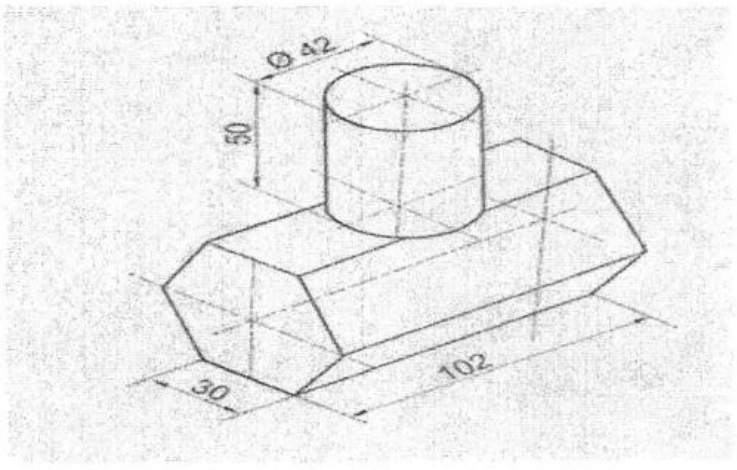
Contd...2

8.



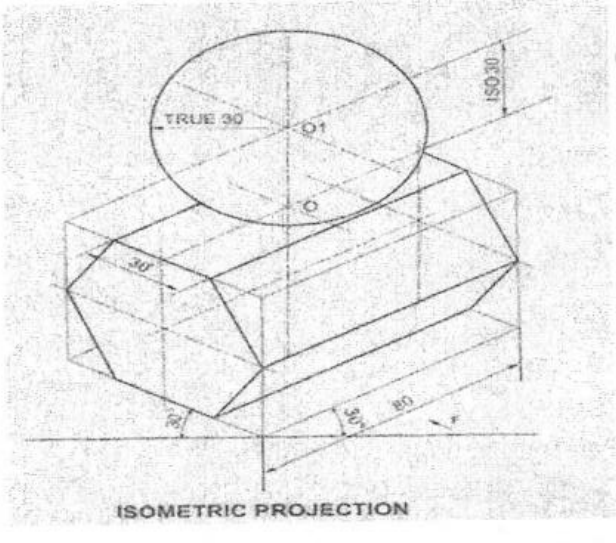
(A) Both the solids are vertical & one of the base edges of the prism is parallel to V.P. & nearer to the observer.
(B) Both the solids are vertical & one of the base edges of the prism is parallel to V.P. & away from the observer.
(C) Both the solids are vertical & one of the base edges of the prism is perpendicular to the V.P.
(D) Both the solids are vertical & two of the base edges of the prism are parallel to V.P.

9.



(A) A vertical cylinder of base diameter 42 mm is placed centrally on a hexagonal prism which is resting on HP with one of its long edges on it.
(B) A vertical cylinder of base diameter 42 mm is placed centrally on a pentagonal prism which is resting on HP with one of its long edges on it.
(C) A vertical cylinder of base diameter 42 mm is placed centrally on a pentagonal prism which is resting on HP with one of its rectangular faces on it.
(D) A vertical cylinder of base diameter 42 mm is placed centrally on a hexagonal prism which is resting on HP with one of its rectangular faces on it.

10.



(A) The isometric projection of a sphere is a circle whose diameter is equal to the isometric diameter of the sphere.
(B) The isometric projection of a sphere is a circle whose diameter is equal to the true diameter of the sphere.
(C) The isometric projection of a sphere is a circle whose diameter is equal to half of the true diameter of the sphere.
(D) The isometric projection of a sphere is a circle whose diameter is equal to double of the true diameter of the sphere.

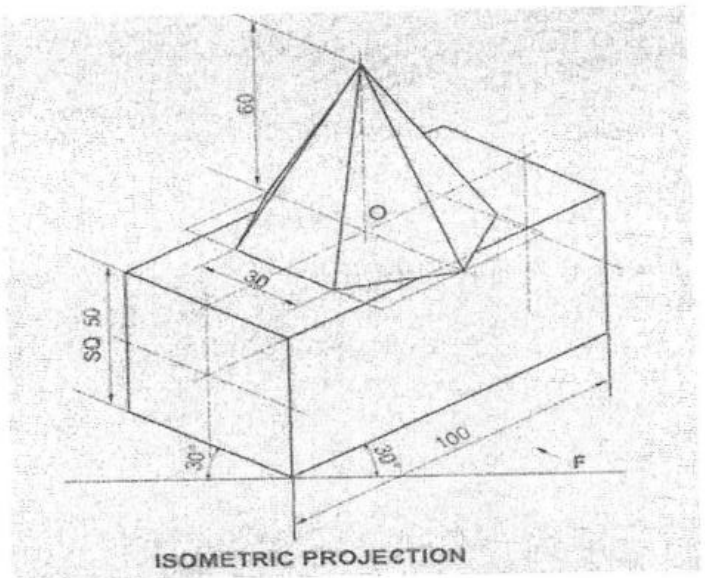
11. The portion of the shaft which rotates in the sleeve / bush of a bushed bearing is called as
(A) Journal (B) Axle (C) Rod (D) pipe

12. What is the thread angle of a Metric thread (Internal)?
(A) 35° (B) 40° (C) 55° (D) 60°

Contd...3

13. Which one of the following is not having external thread?
(A) Stud (B) Machine screw (C) Nut (D) Bolt

14.



ISOMETRIC PROJECTION

(A) A vertical pentagonal pyramid with one of its base edges parallel to VP is placed centrally on a horizontal square prism with its square ends parallel to VP.
(B) A vertical pentagonal pyramid with one of its base edges perpendicular to VP is placed centrally on a horizontal square prism with its square ends perpendicular to VP.
(C) A vertical hexagonal pyramid with two of its base edges perpendicular to VP is placed centrally on a horizontal square prism with its square ends perpendicular to VP.
(D) A vertical hexagonal pyramid with two of its base edges parallel to VP is placed centrally on a horizontal square prism with its square ends perpendicular to VP.

15. Select the correct sequence of drawing the isometric projection of a vertical straight cone placed centrally on top of a vertical triangular prism
(A) Draw three principal axes at 30°, 90° and 30° to the horizontal base line and copy the length of sides of helping figure's enclosing box on the respective principal axis and height of the prism on the third principal axis to form an enclosing box (cuboid) for triangular prism.
(B) Draw the direction of viewing and do the dimensioning.
(C) Draw the helping figure which is the base of vertical triangular prism (using isometric scale) and enclose it in a box, which is a rectangle.
(D) Copy the coordinates of the center and vertices of triangle from the helping figure to enclosing box of triangular prism. Visible edges of triangular prism are joined by thick lines and axis of prism is drawn with chain line.
(E) Draw the enclosing box for the base of cone on the top surface of the prism and construct an ellipse (by four center metho(D). Mark the height of the cone (apex) from the center of top surface of prism at 90°. Join the generators of the cone

(A) B, D, A, C, E (B) C, A, D, E, B (C) A, B, C, D, E (D) D, E, B, A, C

Q16. to 20: Read the following paragraph and answer the questions given below:

IMEX is the India's largest International Machine Tool Business Exhibition. INTERNATIONAL MACHINE TOOLS EXPO was being held at Pragati Maidan, New Delhi. Utility based machine tools and engineering products were being displayed in the expo. One of the Engineering Graphics teachers of a Delhi school has taken his students to the expo. Students were curious and elated to see the various engineering products which made the human life easy and comfortable. Some machine parts like machine screws and rivets caught the attention of students.

16. The basic difference between a machine screw and a rivet is
(A) The body of a machine screw has octagonal cross section whereas the body of a rivet has pentagonal cross section
(B) Machine screws are temporary fasteners whereas rivets are permanent fasteners
(C) Machine screws are used for joining only pipes whereas rivets are used for joining shafts
(D) Machine screws are useful in all the industrial applications whereas rivets are useful only in boilers.

17. Which among these is not the common shape of rivet head?
(A) Snap head (B) Collar head (C) Flat head (D) Pan head

18. The outer diameter of head in pan head rivet of diameter 'd' is
(A) 1.6d (B) 0.5d (C) 0.8d (D) 2d

19. The fastener used in boiler joint is (a) Snap head rivet (b) Round head screw (c) Stud with square neck (d) Square head bolt

Contd...4

20. The top view of a vertical flat heat rivet comprises of
(A) two visible squares. (B) one visible and one invisible (dotted) circle
(C) one visible and one invisible (dotted) square (D) two visible circles.

21.(a) Construct an isometric scale. (5)

(b) Draw the isometric projection of hexagonal prism resting on H.P. on one of its rectangular face keeping one of its base side parallel to V.P. and axis perpendicular to V.P. (base side 50 mm and axis 80 mm) (10)

22. Draw to scale 1:1, the Front View, Side view and Top View of a hexagonal nut of diameter 25 mm, keeping the axis perpendicular to H.P. and two opposite parallel faces are parallel to V.P. Give standard dimensions. (8)

OR

Draw to scale 1:1, the front view and side view of a Square headed bolt with square Nut for nominal diameter 25mm, keeping its axis parallel to both H.P. & V.P. Give standard dimensions. (8)

23. Figure –1 shows details of the parts of a Turnbuckle. Assemble these parts correctly and then draw its following views to scale 1:1, inserting 60mm threaded portion of each rod inside the body of Turnbuckle.
(a) Front view, upper half in section. (10)
(b) Top view. (07)
(c) Side view as viewed from left. (05)

Write heading and scale used. Draw projection symbol. Give important dimensions. (05)

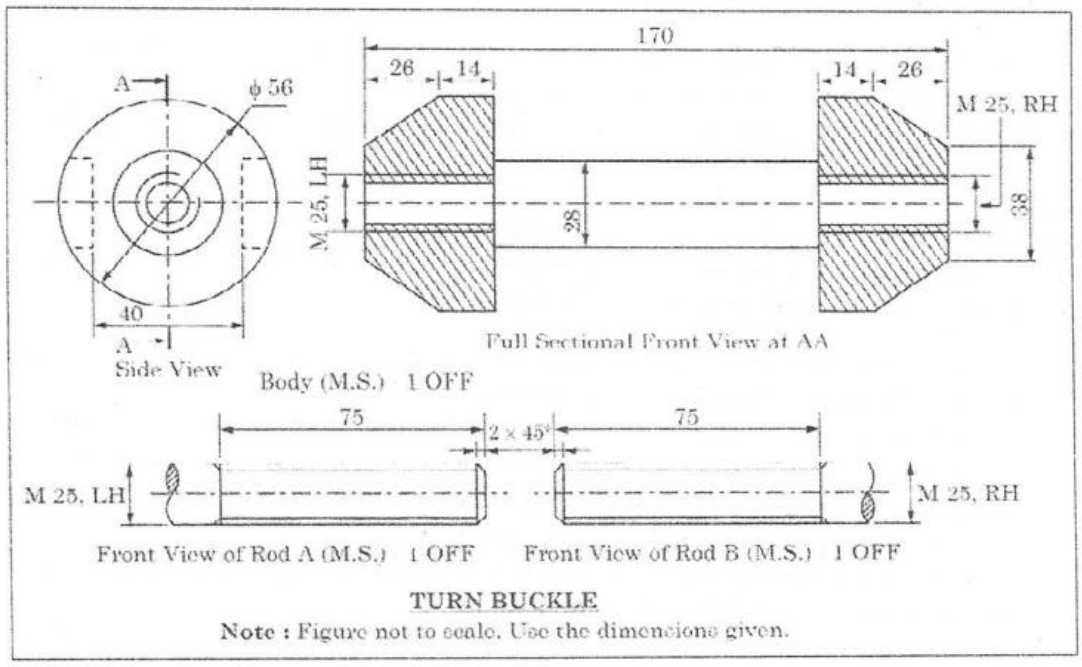


Figure – 1

OR

Figure – 2 shows the Orthographic views of the assembly of an Open Bearing. Disassemble the parts and then draw the following views of the following parts to scale 1:1, keeping the same positions of both the Base and the Bush, with respect to H.P. and V.P.
(a) BASE (i) Front view, showing right half in section. (ii) Top view. (09+06)
(b) BUSH (i) Full sectional front view. (ii) Top view. (03+03)

Print both and the titles. Give 6 important dimensions. Also draw the projection symbol. Give the scale used. (06)

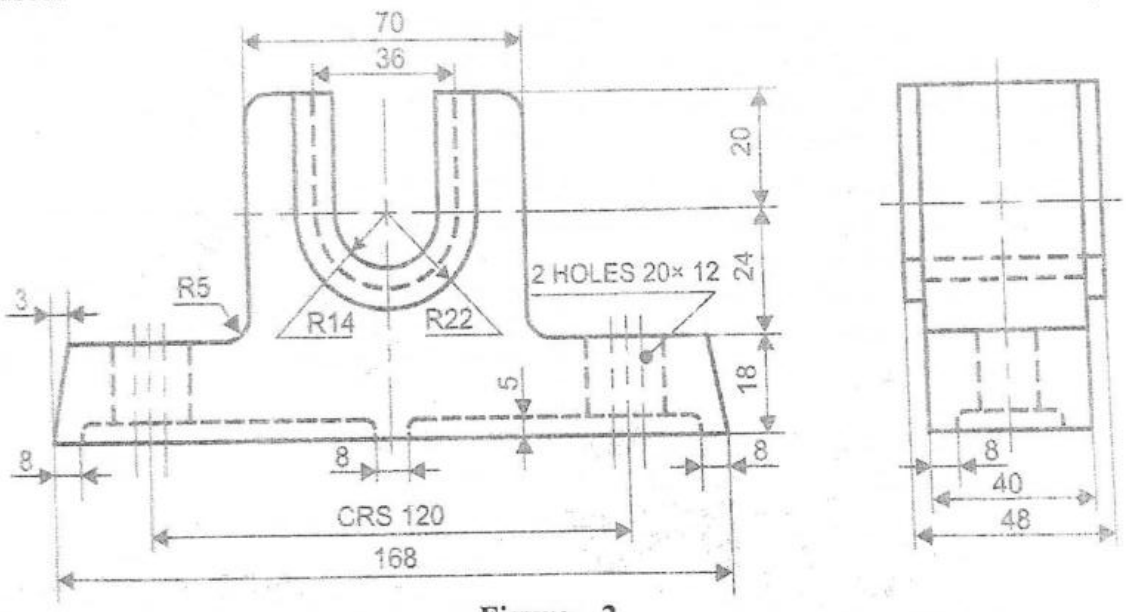


Figure – 2

SET – B

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 23.09.2024 | **MIDTERM EXAMINATION 2024** | **Time : 3 Hrs.**

Class : XII | **SUBJECT : BUSINESS STUDIES** | **M.M. : 80**

General Instructions:

1. The question paper contains 34 questions. Answers should be brief and to the point.
2. Answers to the questions carrying 3 marks may be from 50 to 75 words.
3. Answers to the questions carrying 4 marks may be about 150 words.
4. Answers to the questions carrying 6 marks may be about 200 words.
5. Attempt all parts of the questions together.

1. "An increase in interest rates will discourage borrowing and therefore will curtail growth of industries." Which component of business environment is highlighted here?
   (A) Economic environment (B) Social environment
   (C) Political environment (D) Legal environment (1)

2. Pawan wants to set up a factory of manufacturing decorative lamps and lights. He decides to use recycled material for the lights and packaging, wherever possible. He proposes to use a scientific and rational approach in all the decisions that he takes for setting up and running the factory. Identify the principle of scientific management that Pawan is planning to adopt in his organization.
   (A) Harmony, not discord (B) Cooperation, not individualism
   (C) Functional Foremanship (D) Science, not rule of thumb (1)

3. ---------- ensures that the subordinate performs tasks on behalf of the manager thereby reducing his workload and providing him with more time to concentrate on important matters.
   (A) Decentralisation (B) Delegation of Authority
   (C) Responsibility (D) Accountability (1)

4. 

   Identify the style of leadership displayed in the above image.
   (A) Democratic Style (B) Laissez Faire (C) Free Style (D) Autocratic Style (1)

5. Yamini received a special gold coin from her school management for exceptionally good board result of her students in her subject. Identify the need of Yamini being fulfilled as per Maslow's Need Hierarchy Theory.
   (A) Esteem Needs (B) Belongingness Needs
   (C) Self Actualisation Needs (D) Basic Physiological Needs (1)

6. Suman works as a Project Co-ordinator in an export house. Whenever the workload is high, she is able to convince her team by explaining to them the purpose, providing training and motivating them with additional rewards so as to be able to win their wholehearted cooperation. Identify the element of directing being described in the above lines.
   (A) Supervision (B) Motivation (C) Leadership (D) Communication (1)

7. Match the following :

COLUMN I	COLUMN II
A. Prescriptive	(i) Pervasive function
B. Evaluative	(ii) Judging accuracy of standards
C. Feature of controlling	(iii) Planning
D. Importance of controlling	(iv) Controlling

   (A) A(i), B(ii), C(iii), D(iv) (B) A(ii), B(iii), C(iv), D(i)
   (C) A(iii), B(iv), C(i), D(ii) (D) A(iv), B(i), C(ii), D(iii) (1)

8. **Statement I :** Preliminary screening refers to shortlisting of candidates.
   Statement II : The expenditure made on training is an investment not a wastage of funds. (1)
   Alternatives:
   (A)Statement I is correct and Statement II is incorrect.
   (B) Statement II is correct and Statement I is incorrect.
   (C) Both the statements are correct.
   (D) Both the statements are incorrect.

Contd...2

9. Jayant, an employee with Team Comp Pvt. Ltd. is given a target of assembling three computers per day. Due to his habit of doing things differently, an idea struck him which would reduce the assembling time of computers as well as the cost of production. His superintendent instead of appreciating his idea scolded him and asked him to complete as per standard methodology.
Which aspect of planning is highlighted in the above case?
(A) Planning leads to rigidity (B) Planning does not guarantee success
(C) Planning may not work in a dynamic environment (D) Planning reduces creativity (1)

10. Which dimension of business environment requires putting a statutory warning on the packets of tobacco products?
(A) Technological environment (B) Economical environment
(C) Political environment (D) Legal environment (1)

11. M.R. Sarthi, the Ex- Chairman of Swadesh Ltd., prepared his successor Mr. Shravan before retiring. Following the norms set up by himself, he handed over the reins of the company to the co-founder Mr. Shravan, who had the potential to bring about change in the behaviour of others. Name the concept of management which was the reason why Mr. Sarthi chose Mr. Shravan to be his successor.
(A) Motivation (B) Leadership (C) Communication (D) Staffing (1)

12. An automobile company Elite Motors is facing a problem of declining market share due to increased competition from other new and existing players in the market. Its competitors are introducing lower priced models for mass consumers who are price sensitive.

Identify the limitation of the function of management highlighted in the aforesaid statement.
(A) Planning leads to rigidity (B) Planning may not work in a dynamic environment
(C) Planning is a time consuming process (D) Planning does not guarantee success (1)

13. In a marketing firm, the financial manager pays more attention towards an increase of 3% in the marketing cost as compared to a 15% increase in the courier expenses. Identify the concept being used by the manager.
(A) Management by exception (B) Corrective action
(C) Critical point control (D) Deviation check (1)

14. Sudipta is running a tiffin service in Bengaluru under the name 'Corporate Dabba'. She always deals with the lazy personnel sternly to send the message that everyone is equal in the eyes of management. Identify the principle of management adopted by Sudipta.
(A) Order (B) Espirit De Corps (C) Equity (D) Discipline (1)

15. Robert, the Production Manager in a company using highly sophisticated machines and equipment intends that every employee in the organization should be fully trained before working with the machines and equipment. Which of the following methods of training should be used by the organization?
(A) Induction training (B) Vestibule (C) Apprenticeship (D) Job rotation (1)

16. "Management has to see that tasks are completed and goals are achieved with the least amount of resources at a minimum cost." Identify the two related concepts of management.
(A) Efficiency and effectiveness (B) Coordination and efficiency
(C) Planning and delegation (D) Efficiency and organizing (1)

17. Keeping in view the changes in the consumer demands and preferences. Kamal Bakery has reduced the sugar and fat content in its products. This approach of business shows that
(A) management is an intangible force (B) management is a multi-dimensional activity
(C) management is a group activity (D) management is a dynamic function (1)

18. A company has its registered office in Delhi, manufacturing unit at Gurgaon and marketing and sales department at Faridabad. The company manufactures consumer goods. The type of organization structure the company should adopt to achieve its target is _____
(A) Functional Structure (B) Formal organization structure
(C) Divisional Structure (D) Informal organization structure (1)

19. **Assertion (A) :** Planning is an exclusive function of top management not of any particular department.
Reason (R) : Planning is required at all levels of management as well as in all departments of the organization. (1)
(A) Both the Assertion (A) and Reason (R) are correct.
(B) Assertion (A) is true but Reason (R) is false.
(C) Assertion (A) is false but Reason (R) is true.
(D) Both the Assertion (A) and Reason (R) is false.

Contd...3

20. Twelve students work for the school library in the summer vacations. One afternoon they are told to unload a shipment of new releases, stock the bookshelves. One student supervises the work by grouping students, dividing the work, assigning each group their quota and developing reporting relationships among them.
Which function of management is highlighted in the aforesaid situation?
(A) Staffing (B) Controlling (C) Directing (D) Organising (1)

21. Ritu is the manager of the northern division of a large corporate house. At what level does she work in the organization? What are her basic functions?

OR (3)

An MNC has established a manufacturing concern producing LED bulbs in an underdeveloped rural area. Management wanted to take advantage of low labour costs by employing locals. The organization increased its production and started earning more profits. A school was started for the benefit of children of employees and other people in the area, offering free education. The employees wanted to work overtime but management did not allow it since it was able to meet the production targets in normal working hours.

Identify the objectives of management discussed above by quoting the relevant lines.

22. Symphony has applied for global patents for its new range of wall mounted water coolers named "Cloud". According to the company, it took almost 20 years to crack the technicalities of having a wall mounted air cooler that would need to draw fresh air for circulation as well as water.
The company officials believe that this product launch will bring strategic advantages for the company to be the pioneers as this appliance functions almost as a 1.5 tonne AC. However, it consumes much less power at around 250 watts. This will also help the company stay much ahead of competition in terms of innovation, thus strengthening the brand value of Symphony.

On the basis of the given information about Symphony, answer the following questions:
(a) Identify the feature of business environment discussed in the above case.
(b) Identify the dimension of business environment highlighted in the above case.
(c) Identify the significance of business environment discussed in the above case. (3)

23. 'The pros and cons of each alternative need to weighed.' Name and briefly explain the logical steps in the process of planning which are followed by a manager before performing the step highlighted in the above statement. (3)

24. Vibrant Ltd. Is engaged in manufacturing high end luxury pens. The target production is 600 units daily. The company had been successfully attaining this target until three months ago. Over the last few months, it has been observed that daily productions varies between 500-550 units.
(a) Identify the function of management, which has been highlighted in the above context.
(b) Discuss the first two steps involved in the process of the function identified above.

OR (3)

State the relationship between 'planning' 'and 'controlling' functions of management.

25. Three friends Akshat, Rishabh and Ansh, after completing their MBA from a reputed business school at Mumbai, were discussing the type of organization they would like to join. Akshat was very clear that he would like to take up a government job as it gives stability about the future income and work which will help him to work with greater zeal. It will also provide him with pension when he will retire from his service. Rishabh wanted to work in a company, which has appropriate skill development plans for its employees and helps the employees to grow to higher levels in the organization. In addition to this, the company should also provide facilities like housing, medical aid etc. Ansh said that he would prefer to work in an organization, which had the culture of individual autonomy, was considerate to employees and provided the employees with opportunity for personal and a meaningful work experience.

(a) Identify the various financial and non financial incentives discussed by the three friends in the above conversation.
(b) Explain any other non financial incentives which were not discussed by any one of them. (3+1)

26. Due to spread of Covid 19 pandemic, employees of almost all the companies were working online from their homes. In 2022 when most of the companies called them back to their offices and started working offline, Star Software Ltd. still asked their employees to work from home. Because of this, employees of Star Software Ltd., were feeling bored, hence for recreation, they formed a cricket club. They started meeting every Saturday and Sunday on a ground near their office building.
(a) Identify and state the type of organization formed by the employees of Star Software Ltd.
(b) Also, state any two advantages of the type of organization identified in (a) above. (2+2)

Contd...4

27. Give any four characteristics of management.

OR (4)

Hema is one of the most successful managers of her company, 'Kromaa Ltd. She uses her creativity and initiative in handling challenging situations at work. The knowledge gained by her during her student days at a renowned management institute as well as through her observation and experience over the years is applied by Hema in a skillful manner in the context of the realities of a given situation. She often reads books and other literature in various fields of management to keep her knowledge updated.

(a) An aspect of the nature of management is being highlighted in the above description. Identify and explain the aspect.

(b) Explain any two features of the aspect identified in part (A).

28. Flavours Ltd. was engaged in the business of making handmade chocolates. Lately, the business was expanding due to good quality and reasonable prices. As the demand was increasing, Flavours Ltd., decided to explore bakery products as well. In order to make bakery products the company directed its workforce to work overtime but this resulted in multiple problems. Due to increased work pressure the efficiency declined and the workers had to take orders from more than one superior. Workers were overburdened and their health was also affected. Gradually the quality of the products begins to decline and market share also went down. The company realized that they had implemented changes without waiting for the required infrastructure.

Identify and explain the principles/techniques of Taylor /Fayol referred to in the above para. (2+2)

29. Describe briefly any two single use and any two standing plans

OR (4)

Explain briefly any four limitations of planning.

30. Vikram – The Human Resource Manager, Umesh – The Assistant Manager and Ashok –The Marketing Head of Hitashi Enterprises Ltd., decided to leave the company. The Chief Executive Officer (CEO) of the company called the Human Resource Manager, Vikram and requested him to fill-up the vacancies before leaving the organization. Vikram suggested that his subordinate Prerna is very competent and trustworthy. If she could be moved up in the hierarchy, he would do the needful. The CEO agreed for the same. Prerna contacted Zenith Recruiters who advertised for the post of Marketing Head for Hitashi Enterprises Ltd. They were able to recruit a suitable candidate for the company. Umesh's vacancy was filled-up by screening the database of unsolicited applications lying in the office.

(a) Name the internal/external sources of recruitment used by Hitashi Enterprises Ltd. to fill – up the above stated vacancies.

(b) Write about any one difference between internal and external source of recruitment. (3+1)

31. Explain Maslow's Need Hierarchy Theory with assumptions.

OR (6)

Explain the following terms:

(a) Free rein leadership (b) Perquisites

(c) Technical jargon (d) Job enrichment

32. Shahana works as a corporate wedding coordinator in a wedding management company. She has been made overall incharge for organizing a jewellery exhibition for one of the clients of the company. For ensuring that the exhibition takes place successfully, she identifies the various activities involved and divides the whole work into various task groups like marketing committee, decoration committee and reception committee.

In order to facilitate coordination within and among committees, she appoints a supervisor for each group. Each member in the group is asked to report to their respective supervisors and all the supervisors are expected to work as per Shahana's order.

(a) Identify and explain the function of management being performed by Shahana.

(b) Describe briefly the various steps involved in the performance of the function of management as identified in part (a) of the question. (2+4)

33. Explain the following terms:

(a) Motion Study (b) Functional Foremanship

(c) Stability of Personnel (d) Fatigue Study (6)

34. What are the steps of Staffing? (6)

OR

Discuss the following methods of training:

(a) Internship training (b) Apprenticeship training

(c) Induction training (d) Vestibule training

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SET – A

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 19.09.2024

MIDTERM EXAMINATION 2024

Time : 3 Hrs.

Class : XII

SUBJECT : ECONOMICS

M.M. : 80

General instructions-

1. Question number 1 – 10 and question number 18 – 27 are 1 marks questions and are to be answered in one word/sentence.
2. Question number 11 - 12 and question number 28 – 29 are 3 marks questions and are to be answered in 60 – 80 words each.
3. Question number 13 – 15 and question number 30 – 32 are 4 marks questions and are to be answered in 80 – 100 words each.
4. Question number 16 – 17 and question number 33 – 34 are 6 marks questions and are to be answered in 100 – 120 words each.
5. All questions are compulsory.

SECTION – A (MACROECONOMICS)

Q.1 Central Bank as ……., manages public debt of the government.
(A) Custodian of foreign exchange (B) Agent (C) Financial (D) Supervisor (1)

Q.2 **Assertion (A) :** Demand deposits are considered as a convenient mode of payment for the execution of even the high value transactions.
Reason (R) : Demand deposits are non-withdrawable in nature and cannot be withdrawn against issue of cheques and other similar instrument of payment. (1)

Choose the correct alternative for the above –

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of the Assertion (A).
(C) Assertion (A) is true but Reason (R) is false.
(D) Both Assertion (A) and Reason (R) is false.

Q.3 **Assertion (A) :** Commercial banks are significant source of money supply in the economy.
Reason (R) : Commercial banks cannot issue notes and coins. (1)

Choose the correct alternative for the above –

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of the Assertion (A).
(C) Assertion (A) is true but Reason (R) is false.
(D) Both Assertion (A) and Reason (R) is false.

Q.4 Which of following is not a factor payment?
(A) Free uniform to defence personel (B) Salaries to the members of parliament
(C) Rent paid to the owner of a building (D) Scholarship given to the students (1)

Q.5 Which of the following components is/are not included in money supply?
(A) Stock of gold with RBI (B) Currency with private individuals
(C) Currency with individual firms (D) All the above (1)

Q.6 Which of the following is the example of flow variable ?
(A) Production of rice (B) Import of machinery
(C) Change in capital stock (D) All the above (1)

Q.7 Market price includes the impact of:
(A) Direct taxes (B) Indirect taxes (C) Subsidies (D) Both (B) and (C) (1)

Q.8 When nominal GDP is 840 and price index is 120, real GDP will be:
(A) 7 (B) 700 (C) 720 (D) 960 (1)

Q.9 If interest is Rs.90 lakhs, dividend Rs.20 lakhs, rent Rs.100 lakhs, corporate tax Rs.30 lakhs and undistributed profit is Rs.10 lakhs then operating surplus will be:
(A) ₹ 190 lakhs (B) ₹ 200 lakhs (C) ₹ 230 lakhs (D) ₹ 250 lakhs (1)

Q.10 Identify the incorrect features of money supply in an economy, from the following –
(I) It is measured during a period of time.
(II) It includes stock of money held by the government of a nation.
(III) It always represents the currency held with central bank of the nation.
(A) Only I (B) II and III (C) I and II (D) I, II and III (1)

Contd...2

Q.11 Read the following text carefully and briefly discuss the relevant functions of money indicated here –

Right from the beginning, money has been performing the various important functions in the society. Money facilitates transaction of goods and services. Producer sell their goods to wholesalers. Wholesaler intern sell their goods to the retailers and retailer sell their goods to customers. In the same way a section of society sells their services for money and with that money, buy goods and services which they need. (3)

Q.12 Explain factor income and transfer income with suitable example. (3)

OR

Discuss the concept of domestic territories in National income accounting.

Q.13 "Growth of Indian economy requires investment". In this context how reserve bank of India can use the instruments of bank rate and open market operations ? (4)

Q.14 Non–monetary transactions are not included in estimation of National income. Do you agree with this statement. Discuss with suitable example. (4)

OR

Calculate compensation of employees from the following –

	Items	**Value (in Crores)**
1.	Profit after tax	20
2.	Interest	45
3.	Gross Domestic product at market price	200
4.	Goods and service tax	10
5.	Consumption of fixed capital	50
6.	Rent	25
7.	Corporate tax	5

Q.15 Read the following information carefully and answer the questions:-

Can the GDP of a country be taken as an index of welfare of the people of that country? If a person has more income he/she can buy more goods and services and his/her material wellbeing improve. So it may seem reasonable to treat his/her income level as his/her level of wellbeing. GDP is sum total of value of goods and services created within the geographical boundary of a country in a particular year. It gets distributed among the people as income. So we may be tempted to treat higher level of GDP of a country as a index of greater wellbeing of the people of that country (to account for price changes we may take the value of real GDP instead of normal GDP.) (4)

(i) ..... is considered as a better index of welfare of the people:
(A) Actual GDP (B) Real GDP (C) Nominal GDP (D) Potential GDP

(ii) Environmental pollution related to production activity is an example of:
(A) Positive externality (B) Negative externality (C) Zero externality (D) None of these

(iii) Increase in real GDP means:
(A) Increase in the level of output in the economy (B) Greater availability of good per person
(C) Higher level of social welfare (D) All of these

(iv) Which of the following makes GDP an appropriate or inappropriate index of welfare?
(A) Distribution of GDP (B) Externalities (C) Non-monetary exchange (D) All of these

Q.16 (a) Define credit multiplier. What role does it play in the determining credit creation power of the banking system. Use a numerical illustration to explain. (4)
(b) Explain banker's to government function of central bank. (2)

OR

(a) To boost the falling demand in the economy, Reserve bank of India recently reduced Repo rate and Reverse repo rate. Elaborate the rationale behind the steps taken by the central bank.
(b) Explain banker's to bank function of central bank.

Q.17 Calculates National income by income method and expenditure method: (6)

	Items	**Value (in crore)**
(i)	Private final consumption expenditure	330
(ii)	Mixed income of self-employed	25
(iii)	Gross domestic fixed capital formation	50
(iv)	Opening stock	15
(v)	Compensation of employees	230
(vi)	Closing stock	25
(vii)	Government final consumption expenditure	80
(viii)	Operating surplus	180
(ix)	Consumption of fixed capital	10
(x)	Net indirect taxes	15
(xi)	Net factor income from abroad	−5
(xii)	Export	20
(xiii)	Imports	30

Contd...3

SECTION – B (INDIAN ECONOMY)

Q.18 An economy which is made to serve the interest of its rulers is called .....
(A) Agricultural economy (B) Colonial economy
(C) Industrial economy (D) Commercial economy (1)

Q.19 The second phase of green revolution started in
(A) Mid 60s (B) Mid 70s (C) Mid 80s (D) All of these (1)

Q.20 **Assertion (A) :** There was systematic de-industrialization of the Indian industry during the British rule.

Reason (R) : Indian economy was used as a source of raw material and a market for sale of final goods in order to exploit Indian economy. (1)

Choose the correct alternative for the above –

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
(B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of the Assertion (A).
(C) Assertion (A) is true but Reason (R) is false.
(D) Both Assertion (A) and Reason (R) is false.

Q.21 ..... is not a type of land reforms introduced by government after independence
(A) Land ceiling (B) Abolition of intermediaries
(C) Change in the ownership of landholding (D) Use of high yielding Variety seeds (1)

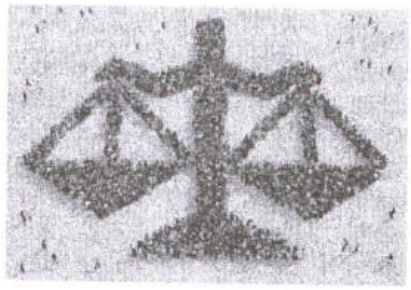
Q.22 Prior to 1991 more importance was given to :
(A) Public sector (B) Private sector (C) Both ((A) and b) (D) Neither of two (1)

Q.23 The architect of Indian planning was:
(A) Jawaharlal Nehru (B) P.C. Mahalanobis (C) Sardar Patel (D) B.R. Ambedkar (1)

Q.24 Upto....., Indian government followed an inward-looking trade strategy –
(A) 1990 (B) 1991 (C) 1992 (D) 1989 (1)

Q.25 One of the Maharatnas is :
(A) MTNL (B) Hindustan Aeronautics Limited
(C) Indian Oil Corporation Ltd. (D) Airport Authority of India (1)

Q.26 Observe the image given below and identify the planning objective highlighted



(A) Growth (B) Self-reliance (C) Modernization (D) Equity (1)

Q.27 Migration facilitates :
(A) Utilization of inactive skills of people (B) Skill formation
(C) Fuller utilization of skill (D) All the above (1)

Q.28 Describes any two salient feature of India pre- independence occupational structure. (3)

OR

Discuss two-fold motive of deindustrialisation of British rule during the colonial period.

Q.29 The railways affected the structure of the Indian economy positively as well as negatively. Do you agree? Explain. (3)

Q.30 Discuss the principal elements of new economic policies. (4)

Q.31 Explain the determinants of human capital formation **(any four)**. (4)

OR

Elaborate inter-dependence of human capital formation and economic growth.

Q.32 Why is agricultural diversification essential for sustainable livelihoods? Discuss crop diversification with examples. (4)

Q.33 What do you mean by planning objective? Discuss the various planning objectives in reference to agriculture sector. (6)

OR

Discuss Fiscal reforms and trade policy reforms under NEP 1991 the planning period.

Q.34 Explain: (a) Demonetization and its outcome.
(b) Steps by government in developing rural markets. (3x2=6)

SET-A

Name _____ Roll No. _____

DELHI PUBLIC SCHOOL, BHILAI

DATE: 25.09.2024
CLASS: XII

MIDTERM EXAMINATION 2024
SUBJECT – ACCOUNTANCY (055)

Time: 3 HRS.
Max. Marks: 80

GENERAL INSTRUCTIONS:

1. This question paper contains 34 questions. All questions are compulsory.
2. This question paper is divided into two parts, Parts A and B.
3. Questions Nos. 1 to 16 and 27 to 30 carry 1 mark each.
4. Question Nos. 17 to 20, 31 and 32 carries 3 marks each.
5. Question Nos. 21, 22 and 33 carries 4 marks each.
6. Question Nos. 23 to 26 and 34 carry 6 marks each.
7. There is no overall choice. However, an internal choice has been provided in 7 questions of one mark, 2 questions of three marks, 1 question of four marks and 2 questions of six marks.

Part – A
(Accounting for Partnership Firms)

1. There are two statements Assertion (A) and Reason (R):
   Assertion (A): The maximum number of partners in a partnership firm are 50.
   Reason (R): The maximum number of partners are prescribed by the Partnership Act, 1932.
   Choose the correct option from the following:
   (A) Both Assertion (A) and Reason (R) are correct, but Reason (R) is not the correct explanation of Assertion (A).
   (B) Both Assertion (A) and Reason (R) are correct and Reason (R) is the correct explanation of Assertion (A). (1)
   (C) Assertion (A) is correct, but Reason (R) is incorrect.
   (D) Assertion (A) is incorrect, but Reason (R) is correct.
2. (i) E, F, G and H are partners in a firm. They want to expand their business for which additional capital and more managerial experts are required. For this, they want to admit more partners in their firm. How many additional partners can be admitted by them?
   (A) 50 (B) 46 (C) 100 (D) 90 (1)

   (OR)

   (ii) Which of the following items is shown in the Capital Accounts of partners when capitals are maintained by fixed capital method:
   (A) Interest on Capitals (B) Drawings made
   (C) Capital Withdrawn (D) Share of Profit or Loss (1)
3. (i) Under which method of valuation of goodwill, normal rate of return is not considered?
   (A) Average Profit Method (B) Super Profit Method
   (C) Capitalisation of Average Profit Method (D) Capitalisation of Super Profit Method (1)

   (OR)

   (ii) Super Profit is equal to _____ less_____.
   (A) Normal Profit, Actual Profit (B) Actual Profit, Normal Profit
   (C) Average Profit, Net Assets (D) Total Assets, Outside Liabilities (1)

Read the following hypothetical situation and answer questions No. 4 and 5 on the basis of the given information:

Govind and Hari are partners in a firm sharing profits and losses in the ratio of 3:1. Their capitals were ₹ 1,60,000 and ₹ 1,00,000 respectively. As per partnership deed, they were entitled to interest on capital @ 10% p.a. The firm earned a profit of ₹ 13,000 for the year ended 31st March 2024.

4. Govind's interest on capital will be:
   (A) ₹ 5,000 (B) ₹ 8,000 (C) ₹ 16,000 (D) ₹ 10,000 (1)
5. Hari's share of Profit or Loss will be:
   (A) Nil (B) ₹ 9,750 Loss (C) ₹ 3,250 Loss (D) ₹ 9,750 Profit (1)
6. (i) If the existing profit-sharing ratio among X, Y and Z of 3:2:1 is changed to 1:2:3, then whose share will be unaffected?
   (A) X (B) Y (C) Z (D) X and Y (1)

   (OR)

   (ii) If the existing profit-sharing ratio among X, Y and Z of 5:4:1 is changed to 3:2:1, what will be the effect on Y's share?
   (A) 2/60 Sacrifice (B) 2/60 Gain (C) 2/30 Gain (D) 2/30 Sacrifice (1)

7. In case of change in profit-sharing ratio, when revised values are not to be recorded in the books, then steps to be followed are:
   (i) Pass a single adjustment entry.
   (ii) To find share of sacrifice/gain by partners.
   (iii) Calculation of the net effect of revaluation.
   (iv) Calculation of proportional amount of net effect of revaluation.
   Alternative Codes:
   (A) (ii), (iii), (iv), (i) (B) (iv), (iii), (ii), (i) (C) (iii), (iv), (i), (ii) (D) (iii), (ii), (iv), (i) (1)

8. (i) X and Z were partners in a firm with capitals of ₹ 45,000 each. They admitted Y as a new partner for 1/3rd share in the profits of the firm. Y brought ₹ 60,000 as his capital. Based on Y's share in the profits of the firm and his capital contribution, the goodwill of the firm will be:
   (A) ₹ 1,80,000 (B) ₹ 1,50,000 (C) ₹ 30,000 (D) ₹ 90,000 (1)

   (OR)

   (ii) C, D and E were partners in a firm sharing profits and losses in the ratio of 5 : 3 : 2. They admitted F as a new partner for 1/4 share in the profits which was sacrificed by C, D and E in the ratio of 2:1:2. C's new share in the profits will be:
   (A) 2/5 (B) 3/5 (C) 3/10 (D) 4/20 (1)

9. (i) A, B and C are partners sharing profits in the ratio of 3:2:1. A retires from the firm. B takes 1/6th share and C takes 2/6th share from A. The new profit-sharing ratio will be:
   (A) 5:3 (B) 6:10 (C) 9:7 (D) 1:1 (1)

   (OR)

   (ii) P, Q and R were partners sharing profits and losses in the ratio of 5:4:3. Q retired on 1st April 2024. P and R purchased his share of profit by giving him ₹ 1,20,000. ₹ 80,000 was paid by P and ₹ 40,000 by R. Gaining Ratio is:
   (A) 1:2 (B) 5:3 (C) 2:1 (D) 1:1 (1)

10. P, Q and R were partners in a firm. On 31st March 2024, R died. R's share was taken over by P. P's new share in the profits of the firm will be:
    (A) 2/3 (B) 1/3 (C) ½ (D) 3/4 (1)

11. On the death of a partner, his share in the profits of the firm till the date of his death is transferred to the:
    (A) Debit of Profit and Loss Account (B) Credit of Profit and Loss Account
    (C) Credit of his Capital Account (D) Debit of his Capital Account (1)

12. Read the following statements carefully and choose the correct alternative from the given codes:
    Statement 1: Payment to the executor of the deceased partner is always made through Deceased Partner's Capital Account.
    Statement 2: Share of Profit of the deceased partner is always adjusted through Profit and Loss Suspense Account.
    Alternative Codes:
    (A) Both the Statements are true. (B) Both the Statements are false.
    (C) Statement 1 is true and Statement 2 is false. (D) Statement 2 is true and Statement 1 is false. (1)

13. In which of the following cases is the business of a firm not dissolved by court?
    (A) When a partner becomes insane.
    (B) With the consent of all the partners.
    (C) When a partner becomes permanently incapable of performing his duties as a partner.
    (D) When a partner is guilty of misconduct which is likely to adversely affect the business of the firm. (1)

14. Pawan, Kavita and Gaurav were partners in a firm. The firm was dissolved. Creditors took over furniture of book value of ₹ 60,000 at 10% less than the book value in part settlement of their amount of ₹ 60,000. The balance amount was paid to them through cheque. The amount paid through cheque will be:
    (A) ₹ 6,000 (B) ₹ 5,000 (C) ₹ 54,000 (D) Nil (1)

15. There are two statements Assertion (A) and Reason (R):
    Assertion (A) : Court does not intervene in case of dissolution of partnership.
    Reason (R) : Dissolution of partnership takes place by mutual agreement among partners.
    Choose the correct option from the following:
    (A) Both Assertion (A) and Reason (R) are correct, but Reason (R) is not the correct explanation of Assertion (A).
    (B) Both Assertion (A) and Reason (R) are correct and Reason (R) is the correct explanation of Assertion (A).
    (C) Assertion (A) is correct, but Reason (R) is incorrect.
    (D) Assertion (A) is incorrect, but Reason (R) is correct. (1)

16. Which of the following will be transferred to Realisation Account at the time of dissolution of firm?
    (i) Provision for Doubtful Debts (ii) Loan by Partner
    (iii) General Reserve (iv) Goodwill
    (A) (i), (ii) and (iv) (B) (i), (iii) and (iv) (C) (i) and (iv) (D) (ii) and (iii) (1)

17. A, B and C are partners in a firm sharing profits and losses in the ratio of 5:3:2. From 1st April 2024, they decided to share future profits and losses in the ratio of 2:5:3. Their Balance Sheet showed a debit balance of ₹ 4,000 in Profit and Loss Account and a balance of ₹ 30,000 in Workmen Compensation Reserve Account. It was agreed that:
    (a) The goodwill of the firm be valued at ₹ 76,000.
    (b) A claim on account of Workmen Compensation to be accepted at ₹ 20,000.
    Pass necessary journal entries for the above. (3)

18. S and T were partners in a firm sharing profits and losses in the ratio of 3:2. They admitted U as a new partner in the firm. On U's admission, there existed a Provision for Bad and Doubtful Debts of ₹ 7,000. It was decided to write off ₹ 3,000 as bad debts. The remaining debtors were considered as good hence Provision for Doubtful Debts is not required. Pass necessary journal entries for the above transactions on admission of U. (3)

(OR)

Vijay and Sanjay are partners in a firm sharing profits and losses in the ratio of 3:2. They admitted Ajay into partnership with 1/4th share in the profits. Ajay brings in ₹ 30,000 for capital and the requisite amount of premium in cash. The goodwill of the firm is valued at ₹ 20,000. The new profit-sharing ratio will be 2:1:1. Pass necessary journal entries. (3)

19. Riyan, Surya and Tilak were in partnership sharing profits and losses equally. Riyan retired from the firm. After all necessary adjustments, his capital account showed a net credit balance of ₹ 3,00,000 as on 1st April 2021. The balance due to Riyan is to be paid in three equal installments annually together with interest @ 5% p.a. Prepare Riyan's Loan Account until he is paid the entire amount due to him. The firm closes its books on 31st March of every year. (3)

20. X, Y and Z are partners sharing profits and losses in the ratio of 4:3:2. Y died on 31st July, 2023. Accounts are closed on 31st March every year. Sales for the year 2022-23 amounted to ₹ 12,00,000. Sales of ₹ 4,50,000 amounted between the period from 1st April, 2023 to 31st July, 2023. The profit for the year 2022-23 amounted to ₹ 1,44,000. Calculate the profit share of Y in the current year till his death and pass necessary journal entry. (3)

21. A partnership firm earned net profits during the past three years as follows:

Year ended on	Amount (₹)
31st March 2024	4,60,000
31st March 2023	4,00,000
31st March 2022	3,40,000

Capital investment in the firm throughout the above-mentioned period has been ₹ 8,00,000. Having regard to the risk involved, 15% is considered to be a fair return on the capital. The remuneration of the partners during this period is estimated to be ₹ 2,00,000 per annum. Calculate the value of goodwill on the basis of two years' purchase of average super profit earned during the above mentioned three years. (4)

22. (i) A, B and C are partners sharing profits in the ratio of 2:2:1. Firm closes its accounts on 31st March every year. B died on 30th September, 2023. There was a balance of ₹ 96,000 in B's Capital Account in the beginning of the year. In the event of death of any partner, the partnership deed provides for the following:
    (a) Interest on capital will be calculated at the rate of 12% p.a.
    (b) The executor of deceased partner shall be paid ₹ 15,000 for his share of goodwill.
    (c) His share of Reserve Fund which is ₹ 10,000, shall be paid to his executor.
    (d) His share of profit till the date of death will be calculated on the basis of sales. It is also specified that the sales during the year 2022-23 were ₹ 8,00,000. The sales from 1st April, 2023 to 30th September 2023 were ₹ 1,50,000. The profit of the firm for the year ending 31st March 2023 was ₹ 1,00,000. (4)
    Prepare B's Capital Account to be presented to his executor.

(OR)

(ii) A, B and C carried on business in partnership, sharing profits and losses in the ratio of 4:3:1. The firm closes its books on 31st March every year. As per the terms of the Partnership Deed, on the death of any partner, the Goodwill of the firm will be calculated on the basis of 3 times the average profits of last four years. On 1st July 2024, A died. The profits for last four years were: 2020-21 ₹ 90,000; 2021-22 ₹ 1,00,000; 2022-23 ₹ 1,30,000; and 2023-24 ₹ 80,000. A's share of profit up to the date of death was to be calculated on the basis of previous year's profit.

(a) Calculate goodwill of the firm and A's share of goodwill.
(b) Calculate As's share in the profits of the firm till the date of his death.
(c) Pass necessary Journal Entries for the treatment of goodwill and for A's share of profit at the time of his death. (4)

23. (i) Gopal, Shankar and Tarun are partners in a firm sharing profits and losses in the ratio of 3:2:1. They had capitals of ₹ 3,00,000 (Cr.), ₹ 2,00,000 (Cr.) and ₹ 40,000 (Dr.) respectively as on 1st April 2023. Their Partnership Deed provides for the following:
(a) Interest on capital is to be allowed @ 5% p.a. to the partners with credit capital balance.
(b) Interest on drawings is to be charged @ 6% p.a. Each withdrew ₹ 500 in the middle of each month and Tarun withdrew an additional amount of ₹ 4,000 on 30th June 2023.
(c) Gopal is entitled to annual salary of ₹ 25,720 together with a commission of 10% on Net Profit after charging his own commission.
(d) Shankar is entitled to a salary of ₹ 7,500 per quarter.
(e) Tarun is entitled to a rent of ₹ 1,000 per month for the use of his premises by the firm.
Net Profit for the year 2023-24 before making any of the above adjustments amounted to ₹ 2,32,000. Prepare Profit and Loss Appropriation Account. (6)

(OR)

(ii) P, Q and R were partners with fixed capitals of ₹ 40,000; ₹ 32,000 and ₹ 24,000. After distributing the profit of ₹ 48,000 for the year ended 31st March 2024 in their agreed ratio of 3:1:1, it was observed that:
(a) Interest on capital was provided at 10% p.a. instead of 8% p.a.
(b) Salary of ₹ 12,000 was credited to P instead of Q.
You are required to pass a single adjustment entry in the beginning of the next year to rectify the above errors. (6)

24. The following is the Balance Sheet of A and B, who had been sharing profits in the ratio of 3:1, on 31st March 2024:

Liabilities		Amount	Assets	Amount
		₹		₹
Creditors		37,500	Cash	22,500
General Reserve		4,000	Bills Receivable	3,000
Capital Accounts:			Debtors	16,000
A	30,000		Stock	21,000
B	16,000	46,000	Land	25,000
		87,500		87,500

They agree to take C into partnership on 1st April 2024 on the following terms:
(a) That C pays ₹ 10,000 as his capital for 1/5th share in the future profits.
(b) That goodwill of the firm is valued at ₹ 20,000.
(c) That stock will be reduced by ₹ 2,100.
(d) 5% provision for doubtful debts will be created on debtors.
(e) Land is revalued at ₹ 30,000.
(f) Capital accounts of the partners will be readjusted on the basis of their profit-sharing ratio and any excess or deficiency shall be transferred to their current accounts.
Prepare Revaluation Account and Partners' Capital Accounts on C's admission. (6)

25. M, N and G were partners in a firm sharing profits and losses in the ratio of 5:3:2. On 31st March 2024, their Balance Sheet was as under:

Liabilities		Amount	Assets		Amount
		₹			₹
Sundry Creditors		55,000	Cash		40,000
General Reserve		30,000	Sundry Debtors	45,000	
Capital Accounts:			Less: Provision	(5,000)	40,000
M	1,50,000		Stock		50,000
N	1,25,000		Machinery		1,50,000
G	75,000	3,50,000	Patents		30,000
			Building		1,00,000
			Profit and Loss Account		25,000
		4,35,000			4,35,000

M retired on the above date and it was agreed that:

(a) Debtors of ₹ 2,000 will be written off as bad debts and a provision of 5% on debtors for bad and doubtful debts will be maintained.
(b) Patents will be completely written off and stock, machinery & building will be depreciated by 5%.
(c) An unrecorded creditor of ₹ 10,000 will be taken into account.
(d) N and G will share the future profits in the ratio of 2:3.
(e) Goodwill of the firm on M's retirement was valued at ₹ 3,00,000.

Pass necessary journal entries for the above transactions on retirement of M. (6)

26. Anmol and Raghav were partners in a firm sharing profits and losses in the ratio of 3:2. On 31st March 2024 their Balance Sheet was as follows:

Liabilities		Amount	Assets		Amount
		₹			₹
Creditors		90,000	Cash at Bank		20,000
Mrs. Anmol's Loan		30,000	Stock		24,000
Raghav's Loan		30,000	Investments		30,000
Investment Fluctuation Reserve		45,000	Debtors	20,000	
Capital Accounts:			Less: B/D Provision	(2,000)	18,000
Anmol	1,00,000		Plant		1,00,000
Raghav	97,000	1,97,000	Advertisement Suspense A/c		2,00,000
		3,92,000			3,92,000

The firm was dissolved on 31st March 2024 on the following terms:

(i) Debtors realised ₹ 17,000 and plant realised 10% more than the book value.
(ii) Anmol promised to pay Mrs. Anmol's Loan and took away stock at ₹ 20,000.
(iii) Raghav took away half of the investments at a discount of 10%. Remaining investments realised ₹ 4,500.
(iv) Creditors were paid off at a discount of 10%.
(v) Expenses of realisation amounted to ₹ 7,000.

Prepare Realisation Account on dissolution of the firm. (6)

Part – B

(Analysis of Financial Statements)

27. (i) Which of the following items is not shown under the heading 'Non-Current Liabilities' in the Balance Sheet of a company?

(A) 12% Debentures (B) Bonds
(C) Money Received against Share Warrants (D) Deferred Tax Liabilities (1)

(OR)

(ii) A company has an Operating Cycle of 8 months. It has Account Receivables amounting to ₹ 2,00,000 out of which ₹ 1,20,000 have a maturity period of 11 months. How would this information be presented in the Balance Sheet of the company?

(A) ₹ 80,000 as Current Assets and ₹ 1,20,000 as Non-Current Assets.
(B) ₹ 1,20,000 as Current Assets and ₹ 80,000 as Non-Current Assets.
(C) ₹ 2,00,000 as Non-Current Assets.
(D) ₹ 2,00,000 as Current Assets. (1)

28. (i) Ratios that are calculated for measuring the efficiency of operations of business based on effective utilisation of resources are known as:

(A) Liquidity Ratios (B) Turnover Ratios
(C) Solvency Ratios (D) Profitability Ratios (1)

(OR)

(ii) Which of the following are known as Efficiency Ratios?

(A) Liquidity Ratios (B) Solvency Ratios
(C) Activity Ratios (D) Profitability Ratios (1)

29. Which of the following is not a Solvency Ratio?

(A) Interest Coverage Ratio (B) Return on Investment
(C) Debt to Capital Employed Ratio (D) Total Assets to Debt Ratio (1)

30. Which of the following transactions will decrease the Debt-Equity Ratio of a company?

(A) Purchase of a Fixed Asset by taking long-term loan.
(B) Sale of Fixed Asset (Book Value ₹ 40,000) at a loss of ₹ 5,000.
(C) Issue of New Equity Shares.
(D) Redemption of Debentures for Cash. (1)

31. Under which major head and sub-head will the following items be presented in the Balance Sheet of a company as per Schedule III, Part I of the Companies Act, 2013?
    (i) Advance Received from Customers;
    (ii) Stores and Spares; and
    (iii) Securities Premium. (3)

32. (a) Explain briefly the importance of financial analysis for (i) Financial Manager, and (ii) Top Management. (3)

(OR)

(b) Explain briefly (i) Vertical Analysis, and (ii) Horizontal Analysis. (3)

33. X Ltd. has a Current ratio of 3·5 : 1 and Quick ratio of 2 : 1. If excess of Current Assets over Quick Assets is represented by inventories of ₹ 16,000 and prepaid expenses of ₹ 8,000, calculate Current Liabilities, Current Assets and Quick Assets of X Ltd. (4)

34. (a) The following are the Balance Sheets of Jay Ltd. as at 31st March 2024 and 2023. Prepare a Common Size Balance Sheet:

Particulars	Note No.	31.3.2024	31.3.2023
		₹	₹
I. EQUITY AND LIABILITIES			
1. Shareholders' Funds			
(a) Share Capital		25,00,000	20,00,000
(b) Reserves and Surplus		8,00,000	6,00,000
2. Current Liabilities			
Trade Payables		7,00,000	4,00,000
Total		40,00,000	30,00,000
II. ASSETS			
1. Non-Current Assets			
Property, Plant and Equipment and Intangible Assets			
(i) Property, Plant and Equipment		16,00,000	12,00,000
(ii) Intangible Assets		2,00,000	3,00,000
2. Current Assets			
(a) Inventories		8,00,000	3,00,000
(b) Trade Receivables		12,00,000	10,00,000
(c) Cash and Cash Equivalents		2,00,000	2,00,000
Total		40,00,000	30,00,000

(6)

(OR)

(a) Prepare a Comparative Statement of Profit and Loss of Kay Ltd. with the help of the following information extracted from their Statement of Profit and Loss:

Particulars	31.3.2024	31.3.2023
	₹	₹
Revenue from Operations	12,00,000	10,00,000
Employee Benefit Expenses (% of Total Revenue)	40%	30%
Other Income (% of Revenue from Operations)	25%	25%
Income Tax Rate	40%	40%

(6)

SET – B

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 21.09.2024
Class – XII

MIDTERM EXAMINATION 2024
SUBJECT : HOME SCIENCE

Time : 3 Hrs.
M.M. : 70

General Instructions :

1. All questions are compulsory.
2. There are total **35** questions.
3. Question paper is divided into three sections – A, B and C.
4. **Section A** has question no.1 to 18 (Objective type questions) and are of 1 mark each.
5. **Section B** has question no. 19 to 25 of 2 marks each and question no.26 to 29 of 3 marks each.
6. **Section C** has question no.30 to 33 of 4 marks each and question no.34 and 35 are of 5 marks each.
7. Internal choices are given in some questions.
8. Support your answers with suitable examples wherever required.

SECTION – A (OBJECTIVE TYPE QUESTIONS)

1. India is likely to be the _____ capital of world. (1)
   (A) Diarrhoea (B) Chicken pox (C) Diabetes (D) Hypertension

2. Your mother wants to purchase silver bangles. Which standardisation marks should she look for in them? (1)
   (A) FSSAI (B) Hallmark (C) Wool mark (D) ISI

3. Ergonomics is the judgement of adjustment of human and machine which involves application of human biological sciences combined with engineering science to achieve optimum mutual adjustment of human work, with the benefit being measured in terms of human efficiency and well-being. It is important for: (1)

   (I) Improving job effectiveness.
   (II) Improve social interaction of workers
   (III) Reducing productivity.
   (IV) Improving Economic infrastructure of the country

   Choose the correct option from the following:
   (A) (I) and (II) (B) (II) and (III) (C) (I) and (IV) (D) (III) and (IV)

   OR

   Match the following:

List I	**List II**
(A) Manufactured food	(1) Lactose free milk
(B) Medical food	(2) Bread
(C) Formulated food	(3) Probiotics
(D) Functional food	(4) Papad

   Choose the correct option from the following:

   (A) **(A) – (4), (B) – (1), (C) – (2), (D) – (3)** (B) **(A) – (2), (B) – (1), (C) – (4), (D) – (3)**
   (C) **(A) – (4), (B) – (1), (C) – (3), (D) – (2)** (D) **(A) – (3), (B) – (2), (C) – (4), (D) – (1)**

4. Danger zone for bacteria lies between: (1)
   (A) 5-60° C (B) 4-35° C (C) 9-60° C (D) 5-66° C

5. Codex India is located at: (1)
   (A) Ministry of Food Processing Industry (B) Department of Agriculture and Cooperation
   (C) Ministry of Health and Family Welfare (D) Directorate General of Health

6. Sheena wants to work in famous play school of the town. What qualities she must possess? (1)
   (I) An interest in child (II) Health status of child
   (III) Skills for creative activities (IV) Cooking skills

   Choose the correct options:
   (A) (I) and (II) (B) (II) and (III) (C) (II) and (IV) (D) (I) and (III)

Contd...2

7. The principle of early childhood education for pre-schools or nursery was given by which educationist? (1)
(A) Maria Montessori (B) John Dewey (C) Friedrich Froebel (D) Pestalozzi

8. The elderly are vulnerable group due to various reasons. (1)
Few reasons are:
(I) Decreased defence mechanism (II) Increased financial resources
(III) Improved physiological reserves (IV) Nuclear family system
Choose the correct option:
(A) (I) and (II) (B) (II) and (III) (C) (I) and (IV) (D) (II) and (IV)

9. Spinach is rich in_____. (1)
(A) Vitamin C (B) Potassium (C) Oxalate (D) Phosphorus

10. The sources of salmonella infection are: (1)
(A) Fresh vegetables (B) Raw milk and eggs. (C) Pulses (D) Contaminated Water

11. Plantation labour act was implemented in the year: (1)
(A) 1948 (B) 1951 (C) 1952 (D) 1961

12. Average weight of new born babies is: (1)
(A) 2.5 kg (B) 3.0 kg (C) 2.7 kg (D) 2.0 kg

For Questions 13 and 14, two statements are given. One labelled Assertion (A) and other labelled Reason (R). Select the correct answer to these questions from the options as given below :

(A Both Assertion (A) and Reason (R) are true and Reason (R) is correct explanation for Assertion (A).
(B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation for Assertion (A).
(C) Assertion (A) is true but Reason (R) is false.
(D) Assertion (A) is false but Reason (R) is true.

13. Given below are two statements labelled as Assertion (A) and reason (R).

Assertion (A) : New pathogens can be discovered in food with time.

Reason (R) : Changes in human susceptibility, increased globalisation of food leads to transfer and emergence of pathogens in foods. (1)

14. **Assertion (A) :** Elderly are considered vulnerable due to many reasons.

Reason (R) : There is increase in the number of elderly populations every year. (1)

CASE BASED QUESTIONS

Read the passage carefully and answer question no. 14 to18

Malnutrition is the underlying cause of at least 50 per cent of deaths of children under five years of age. The statistics for nutrition-related problems in our country reveal an alarming situation

- Almost one-third of the infants born in India are low birth weight babies. Low birth weight may have adverse effects throughout their growing years and may have adverse implications even in adult life. Low birth weight may even lead to child mortality.

- There is widespread prevalence of growth retardation among preschoolers (from socio–economically disadvantaged families) and almost half the children suffer from mild and moderate under nutrition.

- A large proportion of children (and adults) suffers from micronutrient deficiencies in varying degrees of severity. The micronutrients of most concern are iron, zinc, Vitamin A, iodine, folic acid, B12.

15. Which of the following is incorrect statement? (1)
(A) Enlarged thyroid known as goitre is the most common manifestation of iodine deficiency.
(B) Haemoglobin is required for carrying oxygen in the body.
(C) Due to Vitamin A deficiency growth of children are adversely affected.
(D) Protein deficiency is called as Marasmus.

Contd...3

16. Micro nutrient deficiencies are referred as: (1)
(A) Goitre (B) Hidden Hunger (C) Protein Energy Malnutrition (D) Anaemia

17. Which of the following is the immediate cause of under nutrition? (1)
(A) Inadequate dietary intake (B) Inadequate education
(C) Inadequate health services (D) Poor sanitation and hygiene

18. When the weight of the child is less than adequate for age, this is termed as: (1)
(A) Underweight (B) Stunting (C) Wasting (D) Protein Energy Malnutrition

SECTION – B (SHORT ANSWER QUESTIONS)

19. What are phytochemicals? (2)

20. Which group is said to be vulnerable group? (2)

21. What are cash crops? (2)

OR

Aarav wants to work in the day care centre. What four skills he must possess?

22. What can be the result of food-borne illness? (2)

23. Dietician helps an individual to maintain good nutritional status and health. With reference to the given statement discuss the role of dietician. (2)

24. How oxidative enzymes present in fresh fruits and vegetables reduces its shelf life? (2)

25. Why do we consider therapeutic diet as modification of normal diet? (2)

26. Why India is said to face 'the double burden of malnutrition'? (3)

27. What are the government initiatives in favour of women? (3)

28. What are the causes of obesity or weight gain? (3)

OR

Which efforts are made by the government for juvenile homes?

29. Give classification of foods based on their perishability. (3)

SECTION – C (LONG ANSWER QUESTIONS)

30. Why there is a need of nutritional assessment? (4)

31, How food-based strategy is better than medicinal approach? (4)

32. What are the four levels of food standards? (4)

33. (a) Define the term "micronutrient deficiency". (4)
(b) What are the major micronutrient deficiency diseases of public health concern?

OR

Reema has done her masters in ECCE. Now she wants to have a career in the same field but she is confused. Help her out by suggesting career avenues in the same field.

34. What are the functions of FSSAI? (5)

35. Mention the objectives of diet therapy. (5)

OR

Give the classification of processed foods on the basis of extent and type of processing. (**Any 5**)

DELHI PUBLIC SCHOOL, BHILAI

Date: 27.09.2024 | **Midterm Examination-2024** | **Time: 3 Hrs**

Class: XII | **Subject: Physical Education** | **M:M: 70**

Name: _____ | **SET-A** | **Roll No.: _____**

General Instructions:

(1) *This question paper consists of **5** sections and **37** questions.*

(2) ***Section-A** consists of questions **1-18** carrying **1** mark each and are multiple choice questions. All questions are compulsory.*

(3) ***Section-B** consists of questions **19-24** carrying **2** marks each and are very short answer types and should not exceed 60-90 words. Attempt any five.*

(4) ***Section-C** consists of questions **25-30** carrying **3** marks each and are short answer types and should not exceed **100-150** words. Attempt any five.*

(5) ***Section-D** consists of questions **31-33** carrying **4** marks each and are short answer types and should not exceed **150-180** words. There is internal choice available.*

(6) ***Section-E** consist of questions **34-37** carrying **5** marks each and are long answer types and should not exceed **200-300** words. Attempt any three.*

SECTION-A (Multiple Choice Questions (MCQs) **(1 × 18 = 18)**

Q.1. Which of the following is not a function of sports event management? **(1)**

(a) Organising (b) Directing (c) Supervising (d) Staffing

Q.2. Abnormal curve of the spine at the front is called **(1)**

(a) Scoliosis (b) Kyphosis (c) Lordosis (d) Psoriasis

Q.3. The symptoms of obesity includes **(1)**

(a) Gaining weight (b) Retardness (c) Laziness (d) All of these

Q.4. Which of the following organisations helps in promoting Adaptive Sports? **(1)**

(a) Special Olympics (b) Deaflympics (c) Paralympics (d) All of these

Q.5. Which one of the following is not example of macro mineral? **(1)**

(a) Copper (b) Calcium (c) Iodine (d) Cobalt

Q.6. Which of the following are water soluble vitamins? **(1)**

(a) vitamin D & K (b) vitamin B & C (c) vitamin A & E (d) vitamin A & C

Q.7. Who introduced Paralympics? **(1)**

(a) Sir Bradman (b) Sir C E Skinner (c) Sir Steve Redgrave (d) Sir Ludwig Guttmann

Q.8. Which of the following asana is not used for cure Asthama? **(1)**

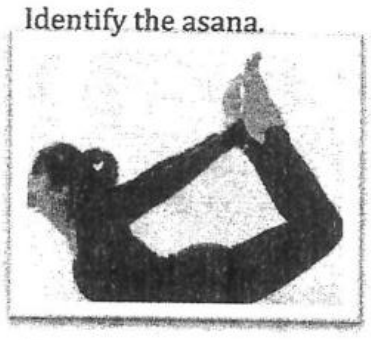
(a) Tadasana (b) Dhanurasana (c) Parvatasana (d) Bhujangasana

Q.9. Regular physical exercise results in _____ **(1)**

(a) improved functional status (b) quality of life

(c) improved cognitive abilities (d) All of these

Q.10. Identify the asana. **(1)**



(a) Paschimottanasana

(b) Halasana

(c) Vajrasana

(d) Dhanurasana

Q.11. How many matches will be played in the knock-out tournaments if there are 19 teams? **(1)**

(a) 18 (b) 17 (c) 20 (d) 16

Q.12. In which kind of deformity, the gap between ankles goes on increasing and an individual faces difficulty during walking and running? **(1)**

(a) Bow legs (b) Knock knee (c) Flat foot (d) Scoliosis

Q.13. There are _____ elements of yoga. **(1)**

(a) 6 (b) 7 (c) 8 (d) 9

Q.14. The following are macro nutrients, except **(1)**

(a) Carbohydrates (b) Fats (c) Vitamins (d) Proteins

Q.15. Where was the first special Olympic games held in 1968. **(1)**

(a) Shanghai (b) Los Angeles (c) Chicago (d) New York

Q.16. Match the following: (1)

	List-I (Committee)		List-II (Function)
(A)	Staffing	(i)	Organise an activity in order to reach a particular goal
(B)	Directing	(ii)	All the processes that leaders create to monitor success
(C)	Controlling	(iii)	Letting staff know what needs to be done
(D)	Planning	(iv)	Identifying key staff positions

Codes

	A	B	C	D		A	B	C	D
(a)	(i)	(ii)	(iii)	(iv)	(b)	(iv)	(iii)	(ii)	(i)
(c)	(ii)	(iii)	(iv)	(i)	(d)	(iii)	(iv)	(i)	(ii)

Q.17. (1)

	List-I (Postural Deformities)		List-II (Causes)
(A)	Knock Knee	(i)	weakness of muscles and ligaments
(B)	Round shoulders	(ii)	Use of poor quality footwear
(C)	Flat Foot	(iii)	carrying heavy load on shoulders
(D)	Bow legs	(iv)	Putting extra weight on leg muscles

Codes

	A	B	C	D		A	B	C	D
(a)	(i)	(iii)	(ii)	(iv)	(b)	(ii)	(i)	(iii)	(iv)
(c)	(iv)	(iii)	(ii)	(i)	(d)	(iii)	(iv)	(i)	(ii)

Q.18. Assertion (A): Risk of cancer can be reduced by eating more colourful vegetables, fruits and other plant foods that have certain phytochemicals in them. (1)

Reason (R): Non-nutritive components of diet is a part of balanced diet.

In the context of above two statements, which one of the following is correct.

Codes

(a) Both A and R are true, and R is the correct explanation of A.

(b) Both A and R are true, but R is not the correct explanation of A.

(c) A is true, but R is false.

(d) A is false, but R is true.

SECTION-B (Attempt any 5 questions)

Q.19. What do you understand by controlling? (2)

Q.20. What are causes of round shoulders? (2)

Q.21 What is Osteoporosis? (2)

Q.22. Which asanas are beneficial for curing asthma? (2)

Q.23. How Physical Activity develop social behaviour in CWSN. (2)

Q.24. What is balanced diet? (2)

SECTION-C (Attempt any 5 questions)

Q.25. Describe any three committees for the organisation of sports events. (3)

Q.26. What is the meaning of Female Athlete Triad? Explain any two. (3)

Q.27. What is Obesity? Write ways to prevent obesity. (3)

Q.28 Explain the procedure, benefits and contraindications of any one asana used to cure diabetes. Draw a stick diagram also. (3)

Q.29. What is Paralympics? Briefly explain its importance. (3)

Q.30. Explain any five essential elements of diet. (3)

SECTION-D (Internal Choices Available)

Q.31. Posture plays a very significant role in our daily activities. Correct posture means the balancing of body in accurate and proper manner. Various type of postural deformities can be identified in individuals. A postural deformity refers to the deformation in the skeletal structure or where the body parts are not aligned to each other. (4)

(i) Mention two causes of knock-knees.

(ii) Name one of the best exercises for correcting knock-knee deformity.

(iii) Knock-knee syndrome caused by the deficiency of _____.

(iv) Which asanas can be performed to cure knock-knee deformity?

OR

Knock-knees is known as _____.

Q.32. In relation to the pictures, answer the following questions. **(4)**

DIABETES

(i) In Type I diabetes, the body is unable to produce _____.

(ii) Name any one asana which is used to prevent and cure diabetes.

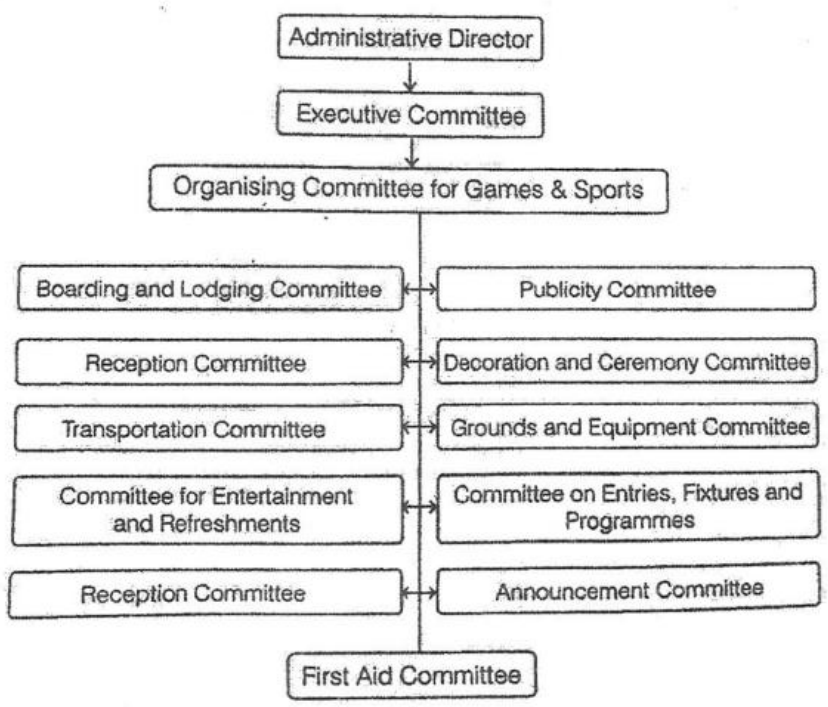
(iii) Mention any two symptoms of diabetes.

(iv) To prevent and cure diabetes, we should reduce the consumption of _____.

OR

Diabetes can lead to _____.

Q.33. While organising sports events for the Annual Sports Day. Arjun and Ravi being the captain and vice-captain of sports, formed various committees as shown below. **(4)**



On the basis of above given picture, answer the following questions.

(i) The members of _____ committee are responsible for welcoming guests and spectators.

(ii) The _____ committee is responsible for liaison with print media.

(iii) Purchase of sports equipment is a work of the _____ committee.

(iv) Publication of rules and regulations should be done _____.

OR

To prepare a proper score sheet for record is _____ responsibility.

SECTION-E (Attempt any 3 questions)

Q.34. Draw a knock-out fixture of 21 teams mentioning the steps involved. **(5)**

Q.35. Suggest physical exercise and asanas as corrective measure for 'Kyphosis and Lordosis'. **(5)**

Q.36. "Asanas can be used as preventive measure". Comment. **(5)**

Q.37. Explain five strategies to make physical activities accessible for children with special needs. **(5)**

❁❁❁❁❁

SET - A

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 19.09.2024

Class : XII

MIDTERM EXAMINATION 2024

SUBJECT : COMPUTER SCIENCE (083)

Time : 3 Hrs.

M.M. : 70

General Instructions:

- Please check this question paper contains 35questions.
- The paper is divided into 4 Sections –A, B,C, D and E.
- Section A, consists of 18 questions (1to18). Each question carries 1 Mark.
- Section B, consists of 7 questions (19to25). Each question carries 2 Marks.
- Section C, consists of 5 questions (26to30). Each question carries 3 Marks.
- Section D, consists of 2 questions (31to32). Each question carries 4 Marks.
- Section E, consists of 3 questions (33to35). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.

SECTION – A

(1 mark to be awarded for every correct answer)

1.	State **True** or **False** – "Variable declaration is implicit in Python."	(1)
2.	Which of the following is an invalid data type in Python? (A) Set (B) None (C) Integer (D) Real	(1)
3.	Given the following dictionaries dict_exam={"Exam":"AISSCE",Year":2023} dict_result={"Total":500,"Pass_Marks":165} Which statement will merge the contents of both dictionaries? (A) dict_exam.update(dict_result) (B) dict_exam+dict_result (C) dict_exam.add(dict_result) (D) dict_exam.merge(dict_result)	(1)
4.	Consider the given expression: **Not True** and **False** or **True** Which of the following will be correct output if the given expression is evaluated? (A) True (B) False (C) NONE (D) NULL	(1)
5.	Select the correct output of the code: a = "Year 2022 at All the best" a=a.split('2') b=a[0]+"."+a[1]+"."+a[3] print(b) (A) Year.0.atAllthebest (B) Year0.atAllthebest (C) Year.022.atAllthebest (D) Year.0.atallthebest	(1)
6.	Which of the following will delete key-value pair for key="Red" from a dictionary D1? (A) deleteD1("Red") (B) delD1["Red"] (C) del.D1["Red"] (D) D1.del["Red"]	(1)
7.	Fill in the blank: _____Command is used to remove primary key from a table in SQL. (A) update (B) remove (C) alter (D) drop	(1)
8.	State whether the following statement is **True** or **False** : An exception may be raised even if the program is syntactically correct.	(1)

9.	Which of the following statement(s) would give an error after executing the Following code?
	S="Welcome to class XII" #Statement1
	S="Thank you" #Statement2
	S[0]='@' #Statement3
	S=S+"Thank you" #Statement4
	print(S) #Statement5
	(A) Statement3 (B) Statement4 (C) Statement5 (D) Statement 4 and 5
		(1)

Contd...2

10.	Fill in the blank: _____is a non-key attribute, whose values are derived from the primary key of some other table. (A) Primary Key (B) Foreign Key (C) Candidate Key (D)Alternate Key	(1)
11.	The correct syntax of seek()is: (A) file_object.seek(offset[,reference_point]) (B) seek(offset[,reference_point]) (C) seek(offset,file_object) (D) seek.file_object(offset)	(1)
12.	Fill in the blank: The SELECT statement when combined with …… clause, returns records without repetition. (A) DESCRIBE (B) UNIQUE (C) DISTINCT (D) NULL	(1)

13.	What possible outputs(s) will be obtained when the following code is executed?
	`import random`
	`myNumber=random.randint(0,3)`
	`COLOR=["YELLOW","WHITE","BLACK","RED"]`
	`for I in range(1,myNumber):`
	`  print(COLOR[I],end="*")`
	`print()`
	(A)
	RED*
	WHITE*
	BLACK*
	(B) WHITE*
	BLACK*
	(C)
	WHITE*WHITE*
	BLACK*BLACK*
	(D)
	YELLOW*
	WHITE*WHITE*
	BLACK*BLACK*BLACK*
		(1)

14.	What will the following expression be evaluated to in Python? print(15.0/4+(8+3.0)) (A) 14.75 (B) 14.0 (C) 15 (D) 15.5	(1)

15.	Consider the code given below:
	`b=100`
	`def test(a):`
	`  _____  # missing statement`
	`  b=b+a`
	`  print(a,b)`
	`test(10)`
	`print(b)`
	Which of the following statements should be given in the blank for #Missing Statement, if the output produced is 110?
	(A) global a (B) global b=100 (C) global b (D) global a=100
		(1)

16.	To establish a connection between Python and SQL database, connect()is used. Which of the following arguments may not necessarily be given while calling connect()? (A) Host (B) database (C) user (D) password	(1)

Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as
(A) Both A and R are true and R is the correct explanation for A
(B) Both A and R are true and R is not the correct explanation for A
(C) A is True but R is False
(D) A is false but R is True

17.	**Assertion (A) :** If the arguments in a function call statement match the number and order of arguments as defined in the function definition, such arguments are called positional arguments. **Reasoning(R) :** During a function call, the argument list first contains default argument(s) followed by positional argument(s).	(1)

Contd…3

18.	**Assertion(A) :** CSV(Comma Separated Values) is a file format for data storage Which looks like a text file. **Reason(R) :** The information is organized with one record on each line and each field is separated by comma.	(1)
	SECTION B	

19.	Rao has written a code to input a number and check whether it is prime or not. His code is having errors. Rewrite the correct code and underline the corrections made.
	def prime():
	n=int(input("Enter number to check::")
	for i in range(2,n//2):
	if n%i=0:
	print("Number is not prime \n")
	break
	else:
	print("Number is prime\n')
		(2)

20.	Write a function countNow(PLACES) in Python, that takes the dictionary, PLACES as an argument and displays the names (in uppercase) of the places whose names are longer than 5 characters. For example, Consider the following dictionary PLACES={1:"Delhi",2:"London",3:"Paris",4:"NewYork",5:"Doha"} The output should be: LONDON NEWYORK **OR** Write a function, lenWords(STRING),that takes a string as an argument and returns a tuple containing length of each word of a string. For example, if the string is "Come let us have some fun", the Tuple will have (4,3,2,4,4,3)	(2)
21. (a)	Given is a Python string declaration: myexam="@@CBSEExamination2022@@" Write the output of: print(myexam[::-2])	(1)
	(b) Write the output of the code given below: my_dict={"name":"Aman","age":26} my_dict['age']=27 my_dict['address'] = "Delhi" print(my_dict.items())	(1)
22.	Explain the use of 'Foreign Key' in a Relational Database Management System. Give example to support your answer.	(2)

23.	Predicttheoutputofthe Pythoncodegivenbelow:
	def Diff(N1,N2):
	if N1>N2:
	return N1-N2
	else:
	return N2-N1
	NUM=[10,23,14,54,32]
	for CNT in range (4,0,-1):
	A=NUM[CNT]
	B=NUM[CNT-1]
	print(Diff(A,B),'#',end='')
	OR
	Predict the output of the Python code given below:
	tuple1=(11,22,33,44,55,66)
	list1=list(tuple1)
	new_list=[]
	for i in list1:
	if i%2==0:
	new_list.append(i)
	new_tuple=tuple(new_list)
	print(new_tuple)
		(2)

24.	Differentiate between COUNT() and COUNT(*) functions in SQL with Appropriate example.	(2)

Contd...4

25. Find the output of the following: (2)

```
a = [1, 2, 3]
try:
    print ("Second element =", a[1])
    print ("Fourth element =", a[3])
except:
    print ("An error occurred")
```

SECTION – C

26. Consider the following tables:– Bank_Account and Branch: (1+2)

Table:Bank_Account

ACode	Name	Type
A01	Amrita	Savings
A02	Parthodas	Current
A03	Miraben	Current

Table:Branch

ACode	City
A01	Delhi
A02	Mumbai
A01	Nagpur

What will be the output of the following statement?
SELECT* FROM Bank_Account NATURAL JOIN Branch;

(a) Write the output of the queries(i) to (iv) based on the table, TECH_COURSE given below:

Table:TECH_COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	Animation and VFX	12000	2022-07-02	101
C202	CADD	15000	2021-11-15	NULL
C203	DCA	10000	2020-10-01	102
C204	DDTP	9000	2021-09-15	104
C205	Mobile Application Development	18000	2022-11-01	101
C206	Digital Marketing	16000	2022-07-25	103

(i) SELECT DISTINCT TID FROM TECH_COURSE;
(ii) SELECT TID,COUNT(*),MIN(FEES)FROM TECH_COURSE GROUP BY TID HAVING COUNT(TID)>1;
(iii) SELECT CNAME FROM TECH_COURSE WHERE FEES>15000 ORDERBY CNAME;
(iv) SELECT AVG(FEES) FROM TECH_COURSE WHERE FEES BETWEEN 15000 AND 17000;

27. Write the output on execution of the following Python code: (3)

```
S="Racecar Car Radar"
L=S.split()
for W in L:
    x=W.upper()
    if x==x[::-1]:
       for I in x:
          print(I,end="*")
    else:
       for I in W:
          print(I,end="#")
    print()
```

Contd...5

28. Write a method COUNTLINES()in Python to read lines from text file 'TESTFILE.TXT' and display the lines which are not starting with any vowel. (3)

Example:

If the file content is as follows:

An apple a day keeps the doctor away. We all pray for everyone's safety.
A marked difference will come in our country.

The COUNTLINES()function should display the output as: The number of lines not starting with any vowel 1

OR

Write a function ETCount() in Python, which should read each character of a text file "TESTFILE.TXT" and then count and display the count of occurrence of alphabets E and T individually(including small cases e and t too).

Example:

If the file content is as follows:

Today is a pleasant day. It might rain today.
It is mentioned on weather sites

The ETCount( ) function should display the output as:
The number of E or e: 6
The number of T or t:9

29. Consider the table CLUB given below and write the SQL queries that follow. (3)

CID	CNAME	AGE	GENDER	SPORTS	PAY	DOAPP
5246	AMRITA	35	FEMALE	CHESS	900	2006-03-27
4687	SHYAM	37	MALE	CRICKET	1300	2004-04-15
1245	MEENA	23	FEMALE	VOLLEY BALL	1000	2007-06-18
1622	AMRIT	28	MALE	KARATE	1000	2007-09-05
1256	AMINA	36	FEMALE	CHESS	1100	2003-08-15
1720	MANJU	33	FEMALE	KARATE	1250	2004-04-10
2321	VIRAT	35	MALE	CRICKET	1050	2005-04-30

(i) Add the constraints, primary key to column CID in the existing table CLUB.
(ii) To change the SPORTS to FOOTBALL of the CLUB whose CID is 1720.
(iii) To delete the table CLUB from MySQL database along with its data.

30. Write a user defined function named Longlines() which reads the contents of a test file named 'LINES.TXT' and displays those lines from the file which have at least 10 words in it (3)

OR

Write a function count_D words() in python to count the words ending with a digit in a text file "Details.txt".

SECTION – D

31. Write SQL command for (a) to (d) on the basis of tables INTERIORS and NEWONES. (4)

Table: INTERIORS

NO	ITEMNAME	TYPE	DATEOFSTOCK	PRICE
1	Red rose	Double bed	23/02/02	32000
2	Soft touch	Baby cot	20/01/02	9000
3	Jerry's home	Baby cot	19/02/02	8500
4	Rough wood	Office Table	01/01/02	20000
5	Comfort zone	Double bed	12/01/02	15000
6	Jerry look	Baby cot	24/02/02	7000
7	Lion king	Office Table	20/02/02	16000
8	Royal tiger	Sofa	22/02/02	30000
9	Park sitting	Sofa	13/12/01	9000
10	Dine Paradise	Dining Table	19/02/02	11000

Table: NEWONES

NO	ITEMNAME	TYPE	DATEOFSTOCKS	PRICE	DISCOUNT
11	White wood	Double bed	23/03/03	20000	20
12	James 007	Sofa	20/02/03	15000	15
13	Tom look	Baby cot	21/02/13	7000	10

(a) To show all information about the sofas from the INTERIORS table.
(b) To list the ITEMNAME which are priced at more than 10,000 from the INTERIORS table.
(c) To list ITEMNAME and TYPE of those items, in which DATEOFSTOCK is before 22/01/02 from the INTERIORS table in the descending order of ITEMNAME.
(d)To display ITEMNAME and DATEOFSTOCK of those items, in which the discount Percentage is more than 15 from INTERIORS table.

32.	Vedansh is a Python programmer working in a school. For the Annual Sports Event, he has created a csv file named Result.csv, to store the results of students in different sports events. The structure of Result.csv is : [St_Id, St_Name, Game_Name, Result] Where St_Id is Student ID (integer) ST_name is Student Name (string) Game_Name is name of game in which student is participating(string) Result is result of the game whose value can be either 'Won', 'Lost' or 'Tie' For efficiently maintaining data of the event, Vedansh wants to write the following user defined functions: Accept() – to accept a record from the user and add it to the file Result.csv. The column headings should also be added on top of the csv file. wonCount() – to count the number of students who have won any event. As a Python expert, help him complete the task.	(4)

	SECTION – E	
33 (a)	What is the difference between 'wb' and 'ab' in context of binary file?	(5)
(b)	Write a function update() to update the record in the binary file "employee.dat", which consist of employee number, employee name and salary. The updation should be one on the basis of employee number entered by the user.	
(c)	Write a function delrecord() to delete the record from the binary file "employee.dat". The record should be deleted on the basis of employee number.	
	OR	
(a)	What is the difference between text file and binary file.	
(b)	Write a function Addrec() to add records in a A binary file "salary.DAT" has structure [employee id, employee name, salary].	
(c)	Write a function countrec() in Python that would read contents of the file "salary.DAT" and display the details of those employee whose salary is above 20000.	
34 (a)	Define the term Domain with respect to RDBMS. Give one example to support your answer.	(2)
(b)	Kabir wants to write a program in Python to insert the following record in the table named Student in MYSQL database, SCHOOL: • rno(Roll number)- integer • name(Name) - string • DOB (Date of birth) – Date • Fee – float Note the following to establish connectivity between Python and MySQL: • Username - root • Password - tiger • Host - localhost The values of fields rno, name, DOB and fee has to be accepted from the user. Help Kabir to write the program in Python.	(3)
	OR	
(a)	Give one difference between alternate key and candidate key.	
(b)	Sartaj has created a table named Student in MYSQL database, SCHOOL: • rno(Roll number)- integer • name(Name) - string • DOB (Date of birth) – Date • Fee – float Note the following to establish connectivity between Python and MySQL: • Username - root • Password - tiger Host – localhost Sartaj, now wants to display the records of students whose fee is more than 5000. Help Sartaj to write the program in Python.	

Contd...7

35 (a)	Predict the output of the following code:
	`def callon(b=20,a=10):`
	`  b=b+a`
	`  a=b-a`
	`  print(b,"#",a)`
	`  return b`
	`x=100`
	`y=200`
	`x=callon(x,y)`
	`print(x,"@",y)`
	`y=callon(y)`
	`print(x,"@",y)`
		(2)

(b)	(i) Ms. Veda created a table named Sports in MySQL database containing columns Game_id, P_Age and G_name. After creating the table, she realized that the attribute , category has to be added. Help her to write a command to add Category column. Thereafter, write the command to insert the following record in the table: Game_id:G42 P_Age: Above 18 G_name: Chess Category: Senior	(2)
	(ii) Write the SQL commands to perform the following tasks: (a) View the list of tables in the database, Exam. (b) View the structure of the table, Term1.	(1)

SET – A

DELHI PUBLIC SCHOOL, BHILAI

Name : .....

Roll No. : .....

Date : 21.09.2024

Class : XII

MIDTERM EXAMINATION 2024

SUBJECT : INFORMATICS PRACTICES

Time : 3 Hrs.

M.M. : 70

General Instructions:

(i) This question paper contains five sections. Section A to E.
(ii) All questions are compulsory.
(iii) Section A has 18 questions carrying 1 mark each.
(iv) Section B has 8 Very Short Answer type questions carrying 2 marks each.
(v) Section C has 3 Short Answer type questions carrying 3 marks each.
(vi) Section D has 3 Long Answer type questions carrying 5 marks each.
(vii) Section E has 3 questions carrying 4 marks each. One internal choice is given in Q.35 against part E only.
(viii) All programming questions are to be answered using Python language only.

Part – A

1. What will be the output of the following code? [18x1=18]
import pandas as pnd
pnd.Series([1,2], index = ['a', 'b', 'c'])
(A) Syntax Error (B) Index Error (C) Value Error (D) None of the above – mentioned

2. Amongst which of the following is/are not correct to access the individual items from data frame 'df'?
(A) df.iat[2,2] (B) df.loc[2,2] (C) df.at[2,2] (D) df[0,0]

3. To display the 3rd, 4th and 5th columns from the 6th to 9th rows of a Dataframe DF, you can write .....
(A) DF.loc[6:9, 3:5] (B) DF.loc[6:10,3:6] (C) DF.iloc[6:10,3:6] (D) DF.iloc[6:9,3:5]

4. To delete a column from Dataframe, use may use ..... statement.
(A) remove (B) del (C) drop (D) cancel

5. The axis 0 identifies a Dataframe's ..... .
(A) rows (B) columns (C) values (D) datatypes

6. To change the width of bars in the bar chart, which of the following arguments with float value is used?
(A) hwidth (B) width (C) breath (D) rwidth

7. Which of the following functions will create a vertical bar chart?
(A) plot() (B) bar() (C) plotbar() (D)barh()

8. To skip the first 6 rows of the CSV file, which argument will you give in read_csv()?
(A) skiprows = 6 (B) skip_rows = 6 (C) skip = 6 (D) noread = 6

9. The tuple represents a ..... in a table.
(A) attribute (B) column (C) record (D) axis

10. Which of the following is not correct about MYSQL?
(A) It is an open course. (B) It is an RDBMS.
(C) It is case sensitive. (D)It is ideal for both small and large applications.

11. Which of the following is a DDL command?
(A) SELECT (B) UPDATE (C) DELETE (D) CREATE

12. To arrange the rows in ascending or descending order in MYSQL, you can use ..... clause in the SELECT statement.
(A) sort by (B) order by (C) group by (D) align by

13. What will be returned by the given query?
SELECT ROUND(153.669,2);
(A) 153.60 (B) 153.66 (C) 153.67 (D) 153.70

14. Predict the output of the given MYSQL command:
select truncate(12345.4567,-2);
(A) 12300 (B) 12340 (C) 1245.45 (D) 12345.4500

15. Which clause is used with aggregate function?
(A) where (B) with (C) having (D) none

16. Which MYSQL function is used to count the number of rows in a table?
(A) count() (B) count(*) (C) sum() (D) max()

Contd...2

26. Create table **STUDENTS** with the following attributes: [2]

Column_Name	DataType	Length
Roll_No	Integer	
Name	Varchar	30
Address	Varchar	20
Pincode	Integer	
Phone	Varchar	10

Part – C

27. Give the output of the following MYSQL commands: [3]

(a) SELECT ROUND(1234.567,-3);
(b) SELECT SUBSTR('Gone with the wind',3,4);
(c) SELECT TRUNCATE(4567.9876,1);

28. Consider the table **DOCTOR** given below. Write commands in MYSQL for (i) to (iii) [3]

Table: **DOCTOR**

ID	DOC_NAME	DEPARTMENT	DATE_OF_JOIN	GENDER	SALARY
1	Amit Kumar	Orthopedics	1992-02-12	M	35000
2	Anita Hans	Paediatrics	1998-10-16	F	30000
3	Sunita Maini	Gynaecology	1991-08-23	F	40000
4	Jeo Thomas	Surgery	1994-10-20	M	55000
5	Gurpreet Kaur	Paediatrics	1999-11-24	F	52000
6	Anandini Burman	Oncology	1994-03-16	F	31000
7	Siddharth Dang	Surgery	1995-09-08	M	47000
8	Rama Mukherjee	Oncology	2000-06-27	F	54500

(i) Display the names and dates of joining of doctors of Oncology department.
(ii) Display the names and salaries of doctors in descending order of salaries.
(iii) Display the names and salaries of all the female's doctors who are getting salary above ₹ 50000.

29. Ms Kavita is working in an IT company, and she wants to create **line chart** from the given data provided to her: [3]
Months = [2,4,6,8,10]
Profit = [20000,30000,30000,45000,55000]

OR

Write a program to create a Histogram from the given data with 20 bins. Use labels, color, and title option.
Ages = [20,16,54,34,67,87,66,54,32,21,56,78,98,76,54,32,45,67,81,73,64,65]

Contd...4

Part – E

33. Consider the given Dataframe **EMPLOYEES** then write the Python code for: [4]

	Name	Designation	Salary	Bonus
E101	Atul	Manager	56000	15000
E102	Raj	Clerk	25000	7000
E103	Darpan	Analyst	35000	9000
E104	Anmol	Clerk	28000	13000
E105	Piyush	Manager	58000	12000

(a) Write a statement to display Name, Designation and Salary columns from the above employee DataFrame.
(b) Write a statement to display Name and Salary columns from the above DataFrame.
(c) Write a statement to display all the information from Employee ids 'E102' to 'E104' (Both are included).
(d) Write a statement to display the employee's name and bonus for those having Employee id as 'E101' and 'E103'.

34. Consider the following table named **EXAM** with details of marks. Write command of MySQL for (i) to (iv). [4]

Table EXAM

Adno	SName	Percentage	Clsection	Stream
R001	Sushant	90.2	12A	Science
R002	Vaidyanath	80.5	12B	Humanities
R003	Miara	68.9	12B	Science
R004	Niara	96.0	12A	Commerce
R005	Shinjini	88.9	12D	Commerce

(i) To display all information of the humanities students in descending order of percentage.
(ii) To display Adno, Name, Percentage and Stream of those students whose name is less than 6 characters long.
(iii) To add another column Bus_Fees with datatype and size as Decimal(8,2).
(iv) To increase percentage by 2% of all the Humanities students.

35. Write Python code to read the content of CSV file **'sports.csv'** then print the data in DataFrame format: [4]
CSV file content

```
SPORTS, COMPETITIONS, PRIZE_WON
TENNIS,     14,     9
FOOTBALL,  22,     16
```

OR

There is a table in MYSQL named "XIIK", which has the following columns:

ADMNO, NAME, HOUSE, MOBILE, AGE. The table is stored in a database DPSB, and PASSWORD is "BHILAI". Complete the given Python program to display the students' names in the CHENAB house. (Write the code in your answer sheet)

```
import ..... as sqltor
import ..... as pd
mycon = sqltor.connect(..... , ..... , ..... , .....)
query = "select ....."
STUDENTS = pd. read_sql(..... , .....)
print(STUDENTS)
```

DELHI PUBLIC SCHOOL, BHILAI

Date : 09.09.2024 **MIDTERM EXAMINATION 2024** **Time : 50 Minutes**

Class – XII **SUBJECT : GENERAL KNOWLEDGE** **Max. Marks : 50**

Name of the student: _____ Class/Sec.:_____ Roll No.:_____

Invigilator's Signature: _____ Marks obtained : _____/50

General Instructions:

- **All questions are compulsory. Answer all the questions by writing the correct option number in the space provided in the capital letter only.**
- **The question paper consists of 2 pages.**
- **There are 50 questions of 1 mark each.**

01. Bhoramdeo Temple is in –
(A) Bijapur (B) Raigarh (C) Kawardha (D) Korba

02. The real bleaching agent present in bleaching powder is-
(A) Oxygen (B) calcium (C) Chlorine (D) Sulphuric acid

03. The average monthly income of four earning members of a family is ₹ 7350. One member passes away and the average monthly income becomes ₹ 6500. What was the monthly income of the person, who is no more?
(A) ₹ 6928 (B) ₹ 8200 (C) ₹ 9900 (D) ₹ 13850

04. Naraka Chaturdashi comes before which Hindu festival?
(A) Deepavali (B) Holi (C) Janmashtami (D) Dussehra

05. The international date line passes through-
(A) Indian ocean (B) Pacific ocean (C) Atlantic ocean (D) Arabian sea

06. Which is different from the other three-
(A) Diabetes (B) Swine flu (C) Chicken pox (D) Malaria

07. A number is $\frac{5}{6}^{th}$ of the other number. If the sum of these two numbers is 22 less than 99, what is the smaller number?
(A) 54 (B) 45 (C) 42 (D) none of these

08. Who among the following first used the word 'swarajya' ?
(A) Raja Ram mohan Roy (B) Bal Gangadhar Tilak (C) Mahatma Gandhi (D) Swami Vivekananda

09. Which city in India is located at the bank of the river Yamuna?
(A) Agra (B) Bareilly (C) Varanasi (D) All of the above

10. Who authored the book titled 'Why the sky is blue ' ?
(A) Dr. H .J. Bhabha (B) Dr. C .V. Raman (C) Dr A. P. J. Abdul Kalam (D) none of the above

11. When did India's Chandrayan -3 land on the Moon?
(A) 23rd August 2023 (B) 15th August 2023 (C) 1st September 2023 (D) 31st August 2023

12. Nail polish remover contains –
(A) Acetone (B) Benzene (C) petroleum (D) acetic acid

13. 'Atal tunnel ' is situated in-
(A) Arunachal Pradesh (B) Jammu and Kashmir (C) Himachal Pradesh (D) Uttarakhand

14. If 36 farmers can do a piece of work in 24 hrs, in how many hours will 18 farmers do it?
(A) 36 (B) 42 (C) 48 (D) 56

15. From th following , select the combination of wrong pair-
(A) Netherlands-Euro (B) UAE-Dinar (C) Russia –Rouble (D) Nepal-Nepalese Rupee

16. The structural and functional unit of kidneys-
(A) nucleon (B) Ribosome (C) Nephron (D) Urochrome

17. What does the air bag used for safety of car driver, contains?
(A) sodium bicarbonate (B) sodium azide (C) sodium nitrite (D) sodium peroxide

18. Which one of the following sites of Indus valley civilization had an ancient dockyard?
(A) Kalibangan (B) Lothal (C) Rangpur (D) Harappa

19. A fruit seller buys lemons at 2 for a rupee and sells them at 5 for three rupees. What is his gain percent?
(A) 10% (B) 15 % (C) 20% (D) 25 %

20. Which language was used for spreading of Buddhism?
(A) Sanskrit (B) Prakrit (C) Pali (D) Hindi

21. 'Dandi March' in 1930 was to protest against-
(A) Atrocities on minority (B) Atrocities on the Harijans
(C) communal award (D) imposition of tax on Salt.

22. Harmanpreet Kaur is associated with which sport?
(A) Cricket (B) Football (C) Tennis (D) Hockey

Contd...2