**General Instructions:**

(i)  15-minute prior reading time allotted for Q-paper reading.

(ii) The question paper contains THREE sections-READING, WRITING and LITERATURE.

(iii) Attempt questions based on specific instructions for each part. Write the correct question number in your answer sheet to indicate the option/s being attempted.

### SECTION A: READING SKILLS (20 marks)

**I. Read the passage given below:** (10)

1. Giving soothes an individual with the vibration of joy. Unconditional giving is a natural principle and evident everywhere in nature which gives us solids, liquids and minerals. Water gives itself away for our agriculture and other uses. Trees give flowers, fruits and wood. Air gives us the very life-breath and the sun gives us light of life.

2. Even the animals give us milk, egg, meat, skin and various services. But what do we humans contribute to the cosmos in return? Isn't our role predominantly selfish and destructive? We expand civilisation to disturb ecological balance, spread pollution in the fresh natural atmosphere, indulge in ruthless deforestation, kill animals even for sport and consume all natural resources for our own selfish interest.

3. It is always great to make donations, but what about giving your own time? It's wonderful to drop off used clothing, books and toys at a shelter for the homeless, but what about spending an hour each week reading and playing with the deprived children? Come face-to-face with the person you are helping. It will make your giving more meaningful.

4. It is not about just the time that you give to the deprived children, but what you give to your family. Are you there when they need you? Or, is it always you who demand help and cooperation from the rest of your family members? How much do you care for the elderly that live with you or are far away from you? How do you utilise your spare moments? Isn't it that you just sit before the television and keep on flipping the channels trying to find something that suits your interest? Shut it down!...... You can use these precious spare moments making a 'Get Well Soon' card for your grandmother, or someone dear to you not in good spirits, or send a letter via Internet. Why be on the 'Facebook' all the time chatting with your friends whom you already meet daily at school?

5. The law of Karma is a natural law whereby we are paid back in the same coin. We have added much for our comforts but we have not been able to attain any tranquility. We are constantly haunted by excessive greed for grabbing which is severely disturbing peaceful coexistence. We rarely do what we can for preservation of nature and even our own fellow men. We have not moved much from the primitive selfish mentality where self-preservation was the law for survival.

6. What can we give back to the cosmos? We humans are predominantly gifted with mind and intellect. These are very sharp instruments indeed which can be used as surgeon's knife for healing or an instrument for killing. Instead of nurturing anger, jealousy, hatred, selfishness and animosity, we can spread love, care, kindness and benevolence to all, thereby transform the earthly vibration into a heavenly one. If not anything else, we can at least pray for the happiness and well being of all. We are here in the image of God. We have divine inheritance of love, wisdom and self-transformation. We may resolve to be engaged in divine enjoyment of nature and God's creation with love. Jesus said, "Those that give shall receive."

7. Instead of being always at the receiving end, let us abide the principle of giving by all means and see how things change for humanity at large.

**Based on your understanding of the passage, answer the questions given below.** (1x10)

(i)    **Choose an appropriate option to fill in the blank.**
       The principle of _____ is seen everywhere in nature.
       A. law          B. discipline          C. love          D. unconditional giving

(ii)   **As the humans think of only his comfort and greed. The writer tries in paragraph fifth to remind them of their duty.**
       Supply the sentence which supports this idea.

(iii)  **What should be considered real donation, as per paragraph three?**

(iv)   **It is good to utilise your spare moments in:**
       A. watching your favourite channel on TV.          B. chatting with your friends on facebook
       C. making 'Get well soon' card for your grandmother    D. None of the above

(v)    **Our peaceful co-existence is disturbed by:**
       A. our karmas    B. our selfish nature    C. our excessive greed    D. None of the above

(vi)   **The sharp instruments can be used both for surgery and for killing. They have been compared with humans' qualities.**
       Mention the sharp instruments humans are gifted with.

(vii)  **According to the writer of the passage, what is the human's attitude towards nature?**

(viii) **Complete the given sentence:**

Paragraph two deals with the role of humans in cosmos. The cause of ecological imbalance is the result of _____ .

(ix) **Read the given statements (1 & 2) and choose the correct option.**

1. Come face-to-face with the person you are helping.
2. We have moved much from the primitive selfish mentality.

A. 2 elaborates 1    B. 2 contradicts 1

C. 1 is true but 2 is false  D. Both 1 and 2 are false

(x) **Select the option that conveys the synonym of 'placidity', from words used in paragraph five**

A. Haunted  B. Tranquility  C. Primitive  D. Greed

## II. Read the passage given below:     (10)

The given chart provides information about the amount of carbon emissions in different countries during three different years. The bar chart compares the emission of carbon dioxide into the atmosphere of six countries, including two of emerging nations, for three decades starting from 1975 until 2005.
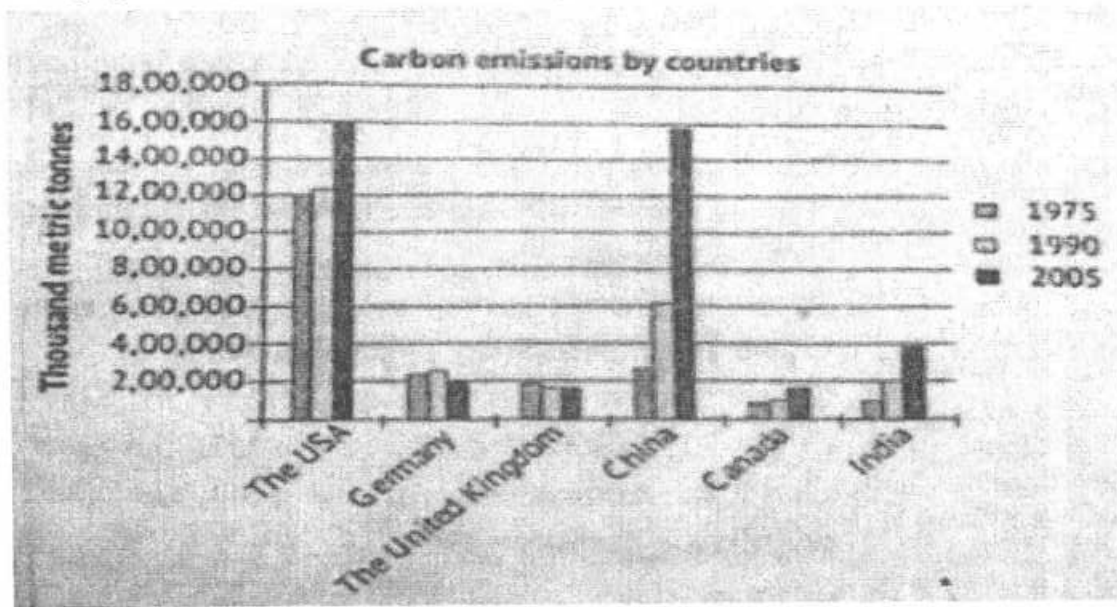


As an overall assessment, it can be clearly seen that only Germany and the United Kingdom managed to reduce the carbon emissions compared to the other countries.

The USA, being the number one polluter of all, emitted 12,00,000 thousand metric tons in 1975 and this count increased to 13,00,000 and 16,00,000 thousand metric tons in 1990 and 2005 respectively. In contrast, the carbon emissions of China was nearly 3,00,000 thousand metric tons in 1975 and it rose by nearly 100% in 1990 and surged dramatically to just below 16,00,000 thousand metric tons in 2005. In terms of the percentage increase, China was the largest contributor in carbon emissions of all.

The figures for Germany and the United Kingdom remained relatively stable throughout the period of time, and so were for Canada until 1990. The carbon dioxide emissions in India increased exponentially from around 1,00,000 in 1975 to just below 4,00,000 thousand metric tons in 2005.

**Based on your understanding of the passage, answer the questions given below.**   (1X10)

(i) **The given data compares the amount of emission of:**

A. carbon dioxide  B. oxygen  C. nitrogen    D. None of these

(ii) **What do you think can be the reason for surging of CO$_2$ emission in million tons?**

A. Fast paced industrialisation    **B.** Lack of sustainable development

C. The urge to become world's top economy  D. All of the above

(iii) **Which country has the lowest emission of CO$_2$ in the graph?**

(i) **Option A**  (ii) **Option B**  (iii) **Option C**  (iv) **Option D**



**Germany**  **The United Kingdom**  **Canada**  **India**

(iv) **Which of the following statements are true?**

1. The countries have achieved meteoric rise in CO$_2$ emission.
2. The countries have not been able to reduce their CO$_2$ emission significantly.
3. The carbon emission of China in 1975 was over 5,00,000 thousand metric tons.
4. Canada seems to leave behind China in coming years.

A. Only 1  B. 1 and 2  C. 1, 2and 4  D. Only 3

(v) **Figures for these countries remained relatively stable throughout the period.**

A. Germany and India    B. The USA and China

C. The United Kingdom and the USA  D. Germany and The United Kingdom

(vi) **Which country has registered a dramatic rise in CO$_2$ emission over the years?**

(vii) **Which country had almost the same level of CO$_2$ emission in the first and the second decade?**

(viii) **Which is the highest quantity of CO$_2$ emission ever achieved globally?**

**(ix)** **In which country the emission has increased exponentially over three decades?**

    A. India     B. Germany     C. Canada     D. USA

**(x)** **Read the given statements and choose the correct option.**

    1. The figures for Canada remained relatively stable until 1990.

    2. India emitted around 1,00,000 thousand metric tons $CO_2$ in 1975.

      A. 1 elaborates 2                                B. 1 contradicts 2

      C. Both 1 and 2 are true but independent of each other      D. 2 is true but 1 is false

**III.** 

## Section B: Creative Writing skills (20 marks)

All the names and addresses used in the questions are fictitious. Resemblance, if any, is purely coincidental.

**1.** **Attempt ANY ONE from A and B given below.**            **5 marks**

    **A.** As Smita/Sumit Bansal, Head boy/Head girl of BMC School, Lucknow, write a notice informing the students about an upcoming school tour to Nainital to be held during summer vacation. Write a notice about the same mentioning all the relevant details like cost of the trip, food, sightseeing, lodging, transport etc. (50 words).

                        **OR**

    **B.** You are a student of DAV Public School, Patna. Your school is holding a cultural fiesta for collecting funds for the flood victims of Uttarakhand. Draft a Notice in about 50 words for your school Noticeboard giving details of the programme. Sign yourself as Karan Mittal, cultural secretary.

**2.** **Attempt ANY ONE from A and B given below.**            **5 marks**

    **A.** Your school is planning to organise a talk on 'The Importance of Promoting Art Education' at all Levels. You plan to invite the Director, Delhi School of Art, as the keynote speaker. As CCA Coordinator of Vidya Mandir Vidyalaya, draft a formal invitation for the same, giving all the necessary details. (50 words)

                        **OR**

    **B.** As the principal of a reputed college, you have been invited to inaugurate a Book Exhibition in your neighbourhood. Draft a reply to the invitation in not more than 50 words, expressing your inability to attend the function. You are Tarun/Tanvi.

**3. Attempt ANY ONE from A and B given below.**            **5 marks**

    **A.** You are Prakriti/Prabhat, a resident of College Road, Bhopal. You see the following advertisement in the newspaper, for the job of a 'Marketing Officer' in Chaitanya Enterprises, Mumbai. Write an application with detailed biodata to the Public Relations Officer of the firm.

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**SITUATION VACANT**

Chaitanya Enterprises requires an experienced Marketing Officer for its Mumbai branch.
The applicant must have:

- B.Sc./B.A. in Marketing
- 6+ year's experience

Additional skills:

- Effective written and communication skills
- Thorough understanding of marketing techniques and principles
- Knowledge of MS Office, social media and web analytics.
- Apply to Sunil Baweja, Public Relations Officer.

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                        **OR**

    **B.** You feel that India will face a severe water crisis in the coming years. Write a letter to the Editor of a National Daily expressing your concern about it and requesting individuals and authorities to take steps to avert this crisis. You are Shalini/ Shaheen. Use the given poster along with your own ideas to write the letter about the same in about 120-150 words.



> **Warning !**
> **Water is the Essence of Life**
> Water Level going low
> Dangerously Year by Year
> Apply
> **Rain-Water Harvesting**
> • Don't let rain-water run waste.
> • Preserve it in tanks and ponds
> • Save this gift of nature for your coming generation
> **Save Water & Save Life**
> Issued by : National Agriculture Organization, Jaipur.

**4. Attempt ANY ONE from A and B given below.**            **5 marks**

    **A.** On the occasion of Basant Panchami celebrations Ranikhet district, Uttarakhand, had organized a three-day cultural festival. You are Bhupinder/ Priyanka Bhisht. Your newspaper had deputed you to cover the inaugural event of this festival. As a newspaper reporter, use the given cues along with your own ideas to write a report about the same in 120-150 words.

          • Big crowds - main grounds of the marketplace

          • Colourful decorations

          • Inauguration-local panchayat member to inaugurate.

          • Folk dance and songs

          • Speeches

OR

**B.** While reading about new places and searching for them online has its merits, the advantages of actually travelling to various destinations far exceed them. Write an article in 120-150 words for the magazine "Travel Times", evaluating both these options. You may use the cues given below along with your own ideas. You are Amrit/ Amrita.

> * Builds confidence
> * Make friends and memories
> * Experience new cultures
> * Expands knowledge

## SECTION C - Literature                                            40 Marks

**IV.** Read the given extracts to attempt the questions with reference to context.

**1.** Attempt ANY ONE of the two extracts given.                          (1x6=6)

**1 A.** Aunt Jennifer's tigers prance across a screen,
        Bright topaz denizens of a world of green.
        They do not fear the men beneath the tree;
        They pace in sleek chivalric certainty.

        **(Aunt Jennifer's Tigers)**

  (i) **Who are the denizens of a world of green?**
  (ii) **The literary device used in "Bright topaz denizens of a world of green" is** _____
        A. Simile          B. Metaphor          C. Oxymoron          D. Alliteration
  (iii) **How would you describe tigers after reading this stanza?**
        A. They are extremely ferocious          B. They live in a den
        C. They are the king of the jungle       D. They are fearless and walk with bravery
  (iv) **Where are the tigers?**
        A. In the jungle    B. In the movie    C. On a piece of canvas    D. None of the above
  (v) **Select the appropriate word from the extract to complete the analogy.**
        speed : pace : : civilized : _____.
  (vi) **Fill in the blanks with an appropriate word with reference to the extract:**
        The word _____ in the Stanza means the opposite of 'audacious'.

Or

**1 B.** The polished traffic passed with a mind ahead,
        Or if ever aside a moment, then out of sorts
        At having the landscape marred with the artless paint
        Of signs that with N turned wrong and S turned wrong
        Offered for sale wild berries in wooden quarts,
        Or crook-necked golden squash with silver warts,
        Or beauty rest in a beautiful mountain scene,
        You have the money, but if you want to be mean,
        Why keep your money (this crossly) and go along.

        **(A Road Side Stand)**

  (i) **The city folk who drove through the countryside:**
        A. are sympathetic about the plight of the roadside vendors and peddlers.
        B. wish to alter their destiny by providing them legal aids.
        C. remain ignorant about the unattractive and dull roadside stand and the people who owned it.
        D. want to be their pioneers and torchbearers in the hour of utter darkness and bleak situation.
  (ii) **The phrase 'with a mind ahead' refers to the attitude of the city people.**
        1. **callous**          2. **Wrathful**          3. **compassionate**          4. **affable**
        5. **indifferent**      6. **courteous**         7. **insincere**              8. **illegitimate**
        A. Options 1, 3, 4 and 8          B. Options 1, 5 and 7
        C. Options 1, 5, 6 and 8          D. Options 3, 7 and 8
  (iii) **What does the expression 'polished traffic 'suggest?**
        A. It suggests the insensitive and unmindful attitude of the city-men for the other people.
        B. It highlights a decorated class.
        C. It highlights a smooth traffic with a little considerate feeling of city people for the poor dwellers.
        D. It highlights the cars whizzing past with people from elite class who are absolutely careless about the plight of the country people.
  (iv) **Identify the figure of speech employed in the 1st line of the given stanza.**
  (v) **'Of signs that with N turned wrong and S turned wrong'. Why does the poet mention this?**
        A. To state that the villagers do not know the N and S.
        B. To state that the signs spoil the scenic beauty.
        C. To emphasise that passers-by notice the wrong signs but not the roadside stands.
        D. The people have come from the city to correct the signs.
  (vi) **Explain the phrase 'aside a moment'?**

**2. Attempt ANY ONE of the two extracts given.**                                    (1x4=4)

**2 A.** It was first ascertained that this was not the work of Khader Mian Saheb or Virasami Naicker, both famed for their ability to swallow sheep whole. Surely, a tiger was at work. The villagers ran to inform the Maharaja. The Maharaja announced a three-year exemption from all taxes for that village and set out on the hunt at once. The tiger was not easily found. It seemed as if it had wantonly hid itself in order to flout the Maharaja's will.

**(The Tiger King)**

(i)   Why did the Maharaja announce a three year exemption from all taxes for that village?

(ii)  What does 'a tiger was at work' mean?

    A. The tiger was eating the sheep             B. The tiger was eating the dogs

    C. The tiger was eating the babies           D. The tiger was wandering in the village

(iii) Khader Mian Saheb or Virasami Naicker were known for:

    A. creating problems for the congress         B. facing the British rule violently

    C. be-friending the Maharaja                 D. swallowing sheep whole

(iv)  What does 'ascertain' mean?

**OR**

**2 B.** He was taking out the packing now, and the blood began to flow more quickly. He peered into the wound with the bright surgeon's light fastened on his forehead. "The bullet is still there," he said with cool interest. "Now I wonder how deep this rock wound is. If it is not too deep it may be that I can get the bullet. But the bleeding is not superficial. He has lost much blood."

**(The Enemy)**

(i)   'But the bleeding is not superficial'. What does the surgeon mean by this line?

(ii)  Complete the sentence in the context of the extract.

    The packing was inside the _____

    A. wound of the white man             B. leg of the white man

    C. head of the white man              D. bed of the white man

(iii) In the given extract......... " he was taking out the packing.......". Here 'he' refers to:

    A. Surgeon's compounder            B. Sadao's servant

    C. Sadao's assistant                D. Sadao the surgeon

(iv)  Select the appropriate word from the extract to complete the analogy.

    flow : stop : : superficial : _____

**3. Attempt ANY ONE of the two extracts given.**                                    (1x6=6)

**3 A.** Seeing me sitting at my desk tearing up newspapers day in and day out, most people thought I was doing next to nothing. It is likely that the Boss thought likewise too. So anyone who felt I should be given some occupation would barge into my cubicle and deliver an extended lecture. "The 'boy' in the make-up department had decided I should be enlightened on how great literary talent was being allowed to go waste in a department fit only for barbers and perverts. Soon I was praying for crowd-shooting all the time."

**(Poets and Pancakes)**

(i)   Find out a word from the extract which is close in meaning to 'to be made known or aware'.

(ii)  What was the public opinion about the narrator's work?

    A. His talent was going waste.           B. He was doing next to nothing.

    C. His work was very important.         D. None of the above.

(iii) What does the 'boy' want the narrator to be enlightened on?

    A. He was fit for the job of a barber.      B. His great literary talent was going waste.

    C. He was suitable for crowd shooting.     D. None of the above.

(iv)  What was the age of the office boy?

(v)   "A department fit only for barbers and perverts". Who among the following was supposed to work there?

    A. The office boy    B. The narrator    C. The chief make-up man    D. The senior assistant

(vi)  Identify the reason why the writer prayed for crowd-shooting.

**OR**

**3 B.** The officials felt powerless without Gandhi's cooperation. He helped them regulate the crowd. He was polite and friendly. He was giving them concrete proof that their might, hitherto dreaded and unquestioned, could be challenged by Indians. The government was baffled. The prosecutor requested the judge to postpone the trial. Apparently, the authorities wished to consult their superiors. Gandhi protested against the delay. He read a statement pleading guilty. He was involved, he told the court, in a "conflict of duties"— on the one hand, not to set a bad example as a lawbreaker; on the other hand, to render the "humanitarian and national service" for which he had come. He disregarded the order to leave, "not for want of respect for lawful authority, but in obedience to the higher law of our being, the voice of conscience".

**(Indigo)**

(i)   Whom does 'them' stand for?

    A. British officials    B. Lawyers    C. Sharecroppers     D. None of these

**(ii)** On the basis of the extract, state whether the following statement is true or false.
Being polite and friendly, Gandhi was mocking the government.

**(iii)** What does 'regulated' mean here?
   A. Punish      B. Control      C. Gather      D. Disperse

**(iv)** Select the correct option from the extract which completes the following analogy.
   regulate : manage : : confused : _____ .
   A. Hitherto      B. Conscience      C. Conflict      D. Baffled

**(v)** Complete the sentence with appropriate explanation.
   Gandhi helped the officials control the crowd because _____ .

**(vi)** Where did the incident take place?

**V.** Answer ANY FIVE of the following in about 40-50 words each.                          (2x5=10)

   (i)   Why had M Hamel put on his fine Sunday clothes? Why were the old men of the village sitting there on the back benches of the class?

   (ii)  What is the theme of the poem 'Keeping Quiet'?

   (iii) Do we experience beauty only for short moments or do they make a lasting impression on us?

   (iv)  How does Umberto Eco explain his capacity of doing so much work? What are interstices and how does Eco use them?

   (v)   Though still quite young Edla Willmanson had a good psychological insight and a keen observation. Comment.

   (vi)  'Mukesh is a rebel'. Do you agree? Give reasons in support of your answer.

**VI.** Answer ANY TWO of the following in about 40-50 words each.                          (2x2=4)

   (i)   What are Geoff Green's reasons for including high school students in the "Students on ice expedition"?

   (ii)  Sadao's acceptance of the General's plan to assassinate Tom was counter-productive to having put him on the path of recovery. Substantiate with reasons.

   (iii) Why do you think Charley withdrew nearly all the money he had from the bank to buy old-style currency?

**VII.** Answer ANY ONE of the following in about 120-150 words.                          **5 marks**

   (i)   Gandhi ji said, ''I have come to the conclusion that we should stop going to law courts. Taking such cases to the courts does little good. Where the peasants are so crushed and fear-stricken, law courts are useless. The real relief for them is to be free from fear.''
   A group of young men working in the bangle making industry said to Anees Jung, "Even if we get organised, we are the ones who will be hauled up by the police, beaten and dragged to jail for doing something illegal".

   "Freedom from fear is more important than legal justice for the poor". The prose sections, Indigo and Lost Spring, bring out the importance of overcoming fear of the poverty-stricken people.

   Do you think the poor of India are free from fear after Independence?
   You want to write about it in your blog. **You may begin like this: According to Gandhi ji, the first step towards self-reliance is freedom from fear. In my opinion, …………**

   **OR**

   (ii)  A big boy pushes Douglas into the deep end of the swimming pool, which could have led to his death. Concerns regarding bullying and ragging persist in many teenage groups.
   **Quoting examples from the lesson 'Deep water", Write a paragraph about the problem of bullying and its effects on victims. Also suggest ways to deal with this problem.**

**VIII.** Answer ANY ONE of the following in about 120-150 words.                          **5 marks**

   (i)   Both Derry and Lamb are physically impaired and lonely. It is the responsibility of society to understand and support people with infirmities so that they do not suffer from a sense of alienation.
   As a responsible citizen, what would you do to bring about a change in the lives of such people?
   Imagine yourself to be a motivational speaker who has to address high school students who are working for the welfare of disabled children in collaboration with an NGO under "Deendayal Disabled Rehabilitation Scheme". **Write this address in 120-150 words inspiring your audience and convincing them about the importance of understanding such people and have empathy towards them.**
   **You may begin like this … Good morning, students!**
   **We all know what it's like …**

   **OR**

   (ii)  It may take a long time for oppression to be resisted, but the seeds of rebellion are sowed early in life. Zitkala-sa mentions the indignities she had to suffer as a child. Bama and her brother differ in their approach to fight discrimination. Bama's brother asks her to study hard and to top all examinations. He also told her that if she was successful in life, people would come to her of their own accord.
   **Imagine a conversation between Bama and her brother (Anna) after she becomes successful in her life. You may begin the conversation like this …**
   **Bama: Hey brother! I am so happy today.**
   **Anna: ………………**

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**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 4 marks each with sub parts.

*(Multiple Choice Questions)* **Each question carries 1 mark**

1. What is the principal value of $sin^{-1}\left(-\frac{1}{2}\right) + cos^{-1}\left(-\frac{1}{2}\right)$
   (a) $\frac{\pi}{2}$        (b) $\frac{\pi}{3}$        (c) 0        (d) None of these

2. If A is a matrix of order $3 \times 3$ such that $A(adjA) = 5I$, then $|adjA|$ is equal to
   (a) 5        (b) 25        (c) 125        (d) None of these

3. If A is a square matrix of order 3, $|A| \neq 0$ and $|4A| = k|A|$, then the value of k is
   (a) 4        (b) 16        (c) 64        (d) None of these

4. If A is a square matrix of order 3, with $|A| = 9$, then the value of $|2.adjA|$ is equal to
   (a) 648        (b) 72        (c) 8        (d) None of these

5. Let $I$ be any interval disjoint from ( -1, 1), then the function $f$ given by $f(x) = x + \frac{1}{x}$ is strictly increasing on
   (a) $(-\infty, -1)$        (b) $(1, \infty)$        (c) ( -1, 1)        (d) None of these

6. The values of p so that the lines $\frac{1-x}{3} = \frac{7y-14}{2p} = \frac{z-3}{2}$ and $\frac{7-7x}{3p} = \frac{y-5}{1} = \frac{6-z}{5}$ are at right angles is
   (a) $\frac{70}{11}$        (b) $\frac{11}{70}$        (c) 2        (d) None of these

7. If $x = at^2$, $y = 2at$, $\frac{dy}{dx}$ is equal to
   (a) $\frac{1}{t^2}$        (b) $t$        (c) $\frac{1}{t}$        (d) None of these

8. Solution of the differential equation $\frac{dy}{dx} = \frac{y^2-y-2}{x^2+2x-3}$ is (where c is arbitrary constant).
   (a) $\frac{1}{3}log\left(\frac{y-2}{y+1}\right) = \frac{1}{4}log\left(\frac{x+3}{x-1}\right) + c$        (b) $\frac{1}{3}log\frac{y+1}{y-2} = \frac{1}{4}log\left(\frac{x-1}{x+3}\right) + c$

   (c) $4\,log\left(\frac{y-2}{y+1}\right) = 3\,log\left(\frac{x-1}{x+3}\right) + c$        (d) None of these

9. The value of $\int_{-\pi/2}^{\pi/2} sin^7x\,dx$ is
   (a) 0        (b) $\frac{\pi}{4}$        (c) $\frac{\pi}{4}$        (d) None of these

10. The value of the integral $\int tan^{-1}(sec\,x + tan\,x)\,dx =$
    (a) $\frac{\pi}{4} + \frac{x^2}{4} + C$        (b) $\frac{\pi}{4}x + \frac{x}{4} + C$        (c) $\frac{\pi}{4}x + \frac{x^2}{4} + C$        (d) None of these

11. The integrating factor of the differential equation $\frac{dy}{dx} + y = \frac{1+y}{x}$ is :
    (a) $\frac{x}{e^x}$        (b) $\frac{e^x}{x}$        (c) $xe^x$        (d) None of these

12. In a school, there are 1000 students, out of which 430 are girls. It is known that out of 430, 10% of the girls study in class XII. What is probability that a student chosen randomly studies in class XII, given that the chosen students is a girl?
    (a) $\frac{1}{43}$.        (b) $\frac{1}{10}$.        (c) $\frac{1}{100}$.        (d) None of these

13. The probability distribution of a random variable $x$ is given as under $p(X = x) = \begin{cases} kx^2 , & x = 1,2,3 \\ 2kx , & x = 4,5,6 \\ 0 , & otherwise \end{cases}$

Where, k is constant. Then k equals

(a) $\frac{1}{2}$      (b) $\frac{1}{44}$      (c) $\frac{3}{44}$      (d) None of these

14. The area of the region enclosed by the curve $y = x^2$ and the line $y = x$ is

(a) $\frac{1}{6}$ sq. unit      (b) $\frac{3}{2}$ sq. unit      (c) $\frac{7}{2}$ sq. unit      (d) None of these

15. If $\int_0^a \frac{dx}{1+4x^2} = \frac{\pi}{8}$ , then the value of $\alpha$ is

(a) 1      (b) $\frac{1}{2}$      (c) 3      (d) None of these

16. All the points of discontinuity of $f(x)$ defined by $f(x) = |x| - |x - 1|$ is/are

(a) 0,1      (b) 0,1,2      (c) no point of discontinuity      (d) None of these

17. If $P(A) = \frac{7}{13}$ , $P(B) = \frac{9}{13}$ and $P(A \cap B) = \frac{4}{13}$ , then $P(A/B)$ equals

(a) $\frac{1}{9}$      (b) $\frac{2}{9}$      (c) $\frac{3}{9}$      (d) None of these

18. If $A$ and $B$ are two independent events, then $P(A \cap \bar{B})$ is equal to

(a) $P(A) - P(A)P(B)$    (b) $P(\bar{A}) - P(A)P(B)$    (c) $P(A) - P(A)P(\bar{B})$    (d) None of these

## 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.

(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

19. Assertion (A) : The linear programming problems, maximise $Z = x + 2y$, subject to the constraints
$x - y \leq 10, 2x + 3y \leq 20$ and $x, y \geq 0$. It gives the maximum value of Z as $\frac{40}{3}$.

Reason (R) : To obtain maximum value of Z, we need to compare value of Z at all the corner points of the feasible region

20. Assertion (A): If $f(x)$ is continuous at $x = a$, if $\lim_{x \to a} f(x)$ exists and equal to $f(a)$.

Reason (R) : If $f(x)$ is continuous at $x = a$, then $\frac{1}{f(x)}$ is also continuous at $x = a$

## SECTION B

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

21. Check the injectivity and surjectivity of the function $f: R \to R$, defined by $f(x) = sin^2x + cos^2x$

OR

Check the injectivity and surjectivity of the function $f : N \to N$ definded by $f(x) = [x]$, where $[x]$ is greatest integer function.

22. If $A = \begin{bmatrix} cos\ \alpha & sin\ \alpha \\ -sin\ \alpha & cos\ \alpha \end{bmatrix}$, find $\alpha$ satisfying $0 < \alpha < \frac{\pi}{2}$ when $A + A^T = \sqrt{2}\ I_2$ ; where $A^T$ is transpose of A.

23. Evaluate : $\int_{-\pi/2}^{\pi/2} (\sin|x| + \cos|x|)\ dx$

24. Solve the differential equation : $cos^2x \frac{dy}{dx} + y = \tan x$

25. If $\vec{a}, \vec{b}, \vec{c}$ are three vectors such that $|\vec{a}| = 5$, $|\vec{b}| = 12$ and $|\vec{c}| = 13$, and $\vec{a} + \vec{b} + \vec{c} = \vec{0}$, find the value of $\vec{a}.\vec{b} + \vec{b}.\vec{c} + \vec{c}.\vec{a}$.

OR

If $\vec{a} + \vec{b} + \vec{c} = \vec{0}, |\vec{a}| = 5, |\vec{b}| = 6$ and $|\vec{c}| = 9$. Then find the angle beteen $\vec{a}$ and $\vec{b}$

## SECTION C

This section comprises of short answer type-questions (*SA*) of 3 marks each.

26. Find the particular solution of the differential equation:
    $(x^2 + 3xy + y^2)dx - x^2 dy = 0$ given that $y = 0$ when $x = 1$

27. Find the values of p and q, for which $f(x) = \begin{cases} \dfrac{1 - \sin^3 x}{3\cos^2 x}, & if\ x > \dfrac{\pi}{2} \\ p, & if\ x = \dfrac{\pi}{2} \\ \dfrac{q(1 - \sin x)}{(\pi - 2x)^2}, & if\ x < \dfrac{\pi}{2} \end{cases}$ is continuous at x $= \dfrac{\pi}{2}$

### OR

If the function f (x) given by f (x) = $\begin{cases} 3ax + b, & if\ x > 1 \\ 11, & if\ x = 1 \\ 5ax - 2b, & if\ x < 1 \end{cases}$ is continuous at x = 1, find the values of a and b

28. If y = $\log \left(\dfrac{x}{a + bx}\right)^x$, prove that $x^3 \dfrac{d^2 y}{dx^2} = \left(x\dfrac{dy}{dx} - y\right)^2$

29. Find the intervals in which the function $f(x) = (x + 1)^3 (x - 3)^3$ are strictly increasing or strictly decreasing:

30. Evaluate: $\int \dfrac{(x^2+1)(x^2+4)}{(x^2+3)(x^2-5)} dx$

    ### OR

    Evaluate: $\int \dfrac{dx}{\sin x(3 + 2\cos x)}$

31. Evaluate : $\int_0^\pi \dfrac{x}{a^2 \cos^2 x + b^2 \sin^2 x} dx$

    ### OR

    Evaluate : $\int_0^\pi \dfrac{x}{1 - \cos\alpha \sin x} dx$

## SECTION D

This section comprises of long answer type-questions (*LA*) of 5 marks each.

32. Find the shortest distance between the lines $l_1$ and $l_2$ given by
    $\dfrac{x+1}{7} = \dfrac{y+1}{-6} = \dfrac{z+1}{1}$ and $\dfrac{x-3}{1} = \dfrac{y-5}{-2} = \dfrac{z-7}{1}$

33. If $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$ and B = $\begin{bmatrix} 7 & -3 & -3 \\ -1 & 1 & 0 \\ -1 & 0 & 1 \end{bmatrix}$, find AB and solve the system of equations:

    $7x - 3y - 3z = -9$, $-x + y = 1$, $-x + z = 2$.

    ### OR

    Solve by matrix method : $\dfrac{2}{x} + \dfrac{3}{y} + \dfrac{10}{z} = 4$ , $\dfrac{4}{x} - \dfrac{6}{y} + \dfrac{5}{z} = 1$, $\dfrac{6}{x} + \dfrac{9}{y} - \dfrac{20}{z} = 2$ ; $x, y, z \neq 0$ .

34. Prove that the relation R on Z, defined by (a, b) $\in$ R $\Leftrightarrow$ a − b is divisible by 5, is an equivalence relation on Z.

    ### OR

    Show that the function $f: R \to R$, defined by $f(x) = \dfrac{x}{x^2 + 1}$ , $\forall\ x \in R$ is neither one one nor onto.

35. If $\vec{a} = 3\hat{\imath} + 4\hat{\jmath} + 5\hat{k}$ and $\vec{\beta} = 2\hat{\imath} + \hat{\jmath} - 4\hat{k}$, then express $\vec{\beta}$ in the form $\vec{\beta} = \vec{\beta_1} + \vec{\beta_2}$, where $\vec{\beta_1}$ is parallel to $\vec{a}$ and $\vec{\beta_2}$ is perpendicular to $\vec{a}$.

# SECTION E

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

36.     The feasible solution for a LPP is shown below
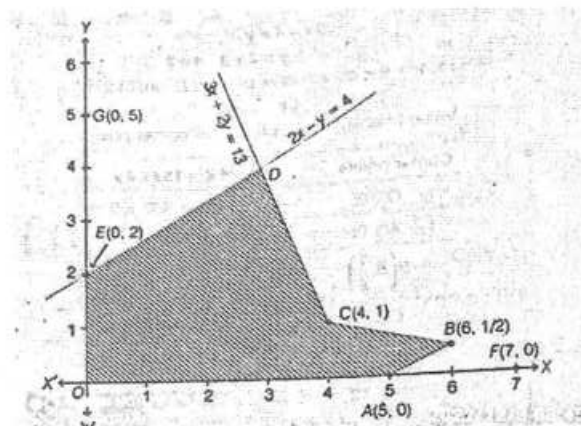


And the objective function is $Z = 15x - 4y$. Based on the above information, answer the following questions.

   (i)   Find the value of $(n - 1)^2$ , *where n is the number of corner points.*

   (ii)  Find *the value of Z at points B and E.*

   (iii) Find the coordinate of point D.

<div align="center"><b>OR</b></div>

Find the maximum value of Z.

37.     An architect designs a garden in society. The garden is in the shape rectangle inscribed in a circle of radius 10m. As shown in given figure
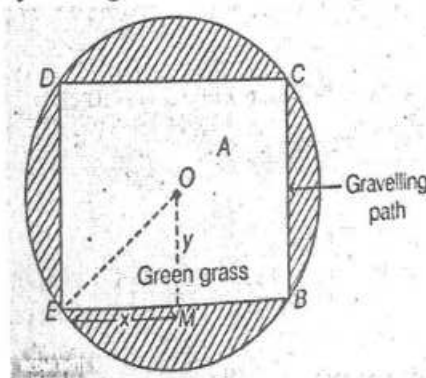


Based on the above information answer the following questions.

   (i)   *If 2x and 2y* represents the length and breadth of the rectangular part, then find the relation between the variables.

   (ii)  Find the area of the green grass A expressed as a function of $x$.

   (iii) Show that the area A is maximum, when $x = 5\sqrt{2}$

<div align="center"><b>OR</b></div>

If the area A is maximum, when $x = 5\sqrt{2}$ , then find the maximum area and area of gravelling path.

38.     In a school, teacher asks a question to three students Ravi, Mohit and Sonia. The probability of solving the question by Ravi, Mohit and Sonia are 30% , 25% and 45% respectively. The probability of making error by Ravi, Mohit and Sonia are 1 % , 1.2% and 2 % *respectively.*



Based on the above information answer the following questions.

   (i)   Find the total probability of committing an error in solving the question.

   (ii)  If the solution of question is checked by teacher and has some error, then find the probability that the question is not solved by Ravi.

# DELHI PUBLIC SCHOOL, BHILAI

Date : 12.12.2022    PREBOARD EXAMINATION-2022-'23    Time : 3 Hrs.
Class : XII    SUBJECT : APPLIED MATHEMATICS (0241)    Max. Marks : 80

**General Instructions:**

1. This question paper contains five sections A, B, C, D and E. Each section is compulsory
2. Section – A carries 20 marks weightage, section – B carries 10 marks weightage, section – C carries 18 marks weightage, Section – D carries 20 marks weightage and section – E carries 3 case-based with total weightage of 12 marks.
3. Section – A comprises 20 MCQs of 1 mark each.
4. Section – B comprises 5 VSA type questions of 2 marks each.
5. Section – C comprises 6 SA type of questions of 3 marks each
6. Section – D comprises 4 LA type of questions of 5 marks each.
7. SECTION – E It has 3 case studies. Each case study comprises 3 case-based questions, where 2 VSA type questions are of 1 mark each and 1 SA type question is of 2 marks. Internal choice is provided in 2 marks question in each case-study.
8. Internal choice is provided in 2 questions in section – B, 2 questions in section – C, 2 questions in section – D. You have to attempt only one of the alternatives in all such questions.

## SECTION A

1. What is the least value of x that satisfies $x \equiv 27 \pmod 4$, when $27 < x \leq 36$?
   (a) 27     (b) 30     (c) 31     (d) 35

2. Let p > 0 and q < 0 and p, q $\epsilon$ Z, then choose the correct inequality to complete the statement p+q __ p-q
   (a) >     (b) <     (c) ≤     (d) ≥

3. An observed set of the population that has been selected for analysis is called
   (a) a sample    (b) a process     (c) a forecast     (d) a parameter

4. For the purpose of t-test of significance, a random sample of size(n) 45 is drawn from a normal population, then the degree of freedom($v$) is
   (a) 0     (b) $\frac{1}{45}$     (c) 44     (d) 45

5. A person can row a boat upstream at 20 km/h and downstream at 38 km/h, then the speed of stream is
   (a) 29 km/h    (b) 9 km/h     (c) 10 km/h    (d) 19 km/h

6. The measurable characteristics of sample is called
   (a) parameter     (b) statistic     (c) error     (d) population

7. Two water supplying trucks X and Y supply water to remote areas. Truck A is carrying 100 litres of water to a village 1.5 km away and truck B is delivering 80 litres of water to another village, 1 km away. Due to bad road conditions, each truck loses 20 ml water while travelling each meter distance. Which truck is able to deliver more water and by how much?
   (a) Truck A, 20 litres     (b) Truck B, 20 litres
   (c) Truck A, 10 litres     (d) Truck B, 10 litres

8. What is the face value of a sinking fund that yields a dividend of Rs 5000 at 10%p.a. semi-annually?
   (a) 10000     (b) 100000     (c) 1000     (d) 50000

9. In the given figure, the area bounded by the curve y = f(x), x-axis and abscissa x=a and x= b is equal to
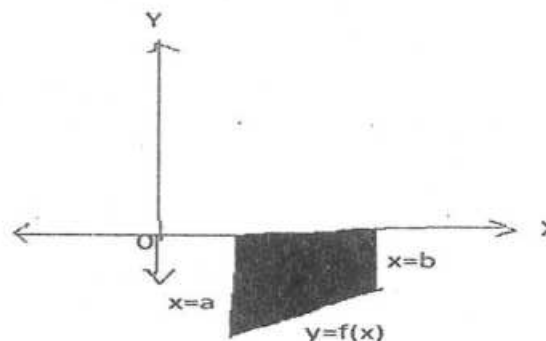


   (a) $\int_a^b f(x)dx$ (b) $\int_a^b f(y)dy$ (c) $\int_a^b |f(x)|dx$ (d) $\int_a^b |f(y)|dy$

10. Seasonal variations are
    (a) long term variations     (b) sudden variations
    (c) short term variations     (d) none of these.

11. In a trend line y = a + bx, the constant b represents
    (a) mean of x     (b) slope of trend line    (c) mean of y     (d) none of these

12. In the adjoining figure, the feasible region for LPP is shown, then the minimum value of $Z = 11x + 7y$ is

    (a) 21      (b) 47      (c) 20      (d) 31
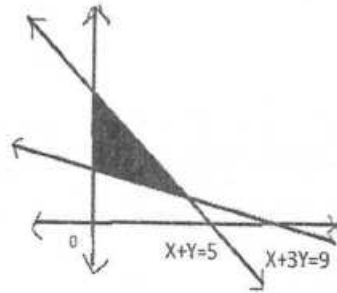


13. General solution of the differential equation $\frac{dy}{dx} + \frac{y}{x} = 2$ *is*

    (a) $y = x + cx^{-1}$      (b) $xy = x + c$      (c) $xy = x^2 + cx$      (d) $x^2y = x + c$

14. A person invested Rs 20000 in a fund in year 2016. The value of mutual fund is increased to ₹ 32000 in 2021. The CAGR is given by [given that $(1.6)^{\frac{1}{5}} = 1.098$]

    (a) 9.5%      (b) 9.8%      (c) 9.7%      (d) 9.7%

15. In what ratio shall one add water to the liquid detergent costing Rs 480 per litre to get resulting mixture worth ₹ 300 per litre?

    (a) 5:3      (b) 3:8      (c) 3:5      (d) 5:8

16. A food inspector visits a mall to check the quality of products; he takes a handful of goods for inspection. The handful of goods for quality inspection is a

    (a) statistic      (b) population      (c) parameter      (d) sample

17. Time series analysis helps to

    (a) understand the behaviour of a variable in the past
    (b) predict the future behaviour of a variable
    (c) plan future operations
    (d) all of the above.

18. Moving average method is used for measurement of trend when

    (a) trend is non-linear      (b) trend is linear
    (c) trend is curvilinear      (d) trend is parabolic

For questions 19 and 20, two statements are given – one labeled Assertion (A) and the other labeled Reason (R), select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

    (i) Both A and R are true and R is the correct explanation of the assertion
    (ii) Both A and R are true and R is not the correct explanation of the assertion
    (iii) A is true, but R is false
    (iv) A is false, but R is true

19. Assertion (A) : If the nominal rate of interest is 12.5% and the inflation is 2%, then the effective rate of interest is 10.5%.

    Reason (R) : If the interest is calculated only at the end of year, then the effective rate of interest is same as the nominal rate of interest.

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

20. Assertion (A) : X is normally distributed with mean 20 and standard deviation 4. Then, standard normal variable Z corresponding to X = 21 is 0.25.

    Reason (R) : $P(Z>z) = 1 - F(z)$

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

## SECTION B

(All questions are compulsory, in case of internal choice, attempt any one question only)

21. Find the present value of an annuity of ₹ 1000 payable at the end of each year for 5 years, if money is worth 6% compounded annually. [ given $(1.06)^{-5} = 0.7473$].

22. Find the quantity of water must be added to 30 $l$ of milk at ₹ 23.60 per litre, so as to have mixture worth ₹ 50 per litre.

### OR

A man takes half as much time in rowing his boat for a certain distance downstream than upstream. What is the ratio between his speed of rowing the boat in still water and speed of current?

23. Find the value(s) of k, for which the value of the determinant $D = \begin{vmatrix} 1 & -2 & 5 \\ 2 & k & -1 \\ 0 & 4 & 2k \end{vmatrix}$ is 86.

**OR**

Find the value of $3a - 2b + c$, if $A = \begin{bmatrix} 0 & 7 & -2 \\ 2a+1 & 0 & -4 \\ b-5 & 2c & 0 \end{bmatrix}$

24. A furniture trader deals in only two items- chairs and tables. He has ₹ 50000 to invest and a space to store at-most 35 items. A chair costs him ₹ 1000 and a table costs him ₹ 2000. The trader earns a profit of ₹ 150 and ₹ 250 on a chair and a table, respectively. Formulate the above problem as an LPP.

25. Find the effective rate of return which is equivalent to a nominal rate of 6% compounded semi-annually.

## SECTION C
(All questions are compulsory, in case of internal choice, attempt any one question only)

26. Find the interval(s) in which the function $f(x) = 3x^4 - 4x^3 - 12x^2 + 5$, is strictly increasing and strictly decreasing.

27. Two teams A and B are staying in the same hotel. Team A has 3 male and 4 female players accompanied by 1 coach. Team B comprises 2 males, 2 female players and 2 coaches. The daily diet requirement (calories and proteins) for each person is as given below:

|  | Calories | Proteins |
|---|---|---|
| Male player | 2000 | 80 g |
| Female player | 2500 | 60 g |
| coach | 1900 | 50 g |

Use matrix algebra to calculate the total diet requirement of calories and proteins for each team.

28. Evaluate $\int \frac{dx}{x(x^5+3)}$

**OR**

Evaluate $\int \frac{e^x(1+x)}{(1+xe^x)^2} dx$

29. The demand function and supply function under pure competition are $p = 16 - x^2$ and $p = 2x^2 + 4$ respectively. Find the consumer's surplus and producer's surplus.

30. A person wishes to purchase a house for Rs 4500000 with a down payment of Rs 500000 and balance in EMI for 25 years. If bank charges 6% per annum compounded monthly. Calculate the EMI by reducing balance method. [Given $(1.005)^{300} = 4.4650$]

31. At what rate of interest will the present value of a perpetuity of Rs 500 payable at the end of every 6 months be RS 10000.

**OR**

A firm anticipates an expenditure of Rs 500000 for plant modernization at end of 10 years from now. How much should the company deposit at the end of each year into a sinking fund earning interest 5% per annum? [Given $(1.05)^{10} = 1.629$]

## SECTION D
(All questions are compulsory, in case of internal choice, attempt any one question only)

32. For a Poisson distribution model, if arrival rate of passengers at an airport is recorded 30 per hour on a given day, find
    (a) the expected number of arrivals in the first 10 minutes of an hour.
    (b) the probability of exactly 4 arrivals in the first 10 minutes of an hour.
    (c) the probability of 10 or more arrivals in an hour given that there are 8 arrivals in the first 10 minutes of that hour.

**OR**

The weights of students of class 12 follow normal distribution with mean 50 kg and standard deviation 2 kg. Find the probability that a student selected at random will have weight
(a) less than 45 kg
(b) more than 54 kg
(c) between 48 and 56 kg.

33. The total cost function is given by $C(x) = \frac{1}{3}x^3 - 5x^2 + 30x - 15$ and selling price per unit is ₹ 6. Find for what value of x will the profit be maximum.

OR

Show that the height of a cylinder of maximum volume that can be inscribed in a sphere of radius R is $\frac{2R}{\sqrt{3}}$. Also find the maximum volume.

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

35. Given two matrices A and B where $A = \begin{bmatrix} 1 & -2 & 3 \\ 1 & 4 & 1 \\ 1 & -3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 11 & -5 & -14 \\ -1 & -1 & 2 \\ -7 & 1 & 6 \end{bmatrix}$, find AB.

Use the result to solve the following system of equations:
$x - 2y + 3z = 6$; $x + 4y + z = 12$; $x - 3y + 2z = 1$.

SECTION E
(All questions are compulsory, in case of internal choice, attempt any one question only)

36. Case study – 1
An overhead water tank has three pipes A, B and C attached to it. The inlet pipes A and B can fill the empty tank independently in 15 hours and 12 hours respectively. The outlet pipe C alone can empty a full tank in 20 hours. Based on above information, answer the following questions. Show steps to support your answers.
   (a) For a routine cleaning of the tank, the tank needs to be emptied. If pipes A and B are closed at the time when the tank is filled to two-fifth of its total capacity, how long will pipe C take to empty the tank completely?
   (b) How long will it take for the empty tank to fill completely, if all the three pipes are opened simultaneously?
   (c) On a given day pipes A, B and C are opened in order at 5 AM, 8 AM and 9 Am respectively, to fill the empty tank. In how many hours will the tank be filled completely?

OR

Given that the tank is half full, only pipe C is opened at 6 AM, to empty the tank. After closing the pipe C and an hour cleaning time, tank is filled completely by pipe A and B together. What is the total time taken in the whole process?

37. CASE STUDY – 2
Mr. Shola runs a business and the record of his sales items for the period 2004 to 2010 is as follows

| Year | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------|------|------|------|------|------|------|------|
| Sales (in '000) | 26 | 26 | 44 | 42 | 108 | 120 | 166 |

Based on the above , answer the following questions, show steps to support your answer.
(a) By taking year 2007 as origin, use method of least squares to find the best- fit trend line equation.

OR

Calculate the three yearly moving Averages.
(b) What is the trend value in the year 2007 by methods of least squares?
(c) Comment on the line of best fit.

38. Let X be the random variable which count the number of hours a student of class 12 studies
X has a probability P(X) of the following form $P(X) = \begin{cases} k, & if\ X = 0 \\ 2k, & if\ X = 1 \\ 3k, & if\ X = 2 \\ 0, & otherwise \end{cases}$, where k is a constant

Based on the above information answer the following questions, show steps to support your answers:

(a) Find the value of k
(b) The value of $P(X<2)$
(c) Calculate the mathematical expectation for $X < 2$

OR

Calculate the mathematical expectation for $X > 0$

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# DELHI PUBLIC SCHOOL, BHILAI

Date : 09.12.2022    PREBOARD EXAMINATION-2022-'23    Time : 3 Hrs.

Class : XII          SUBJECT : PHYSICS        Max. Marks : 70

**General Instructions:**

(1) There are 35 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. All the sections are compulsory.

(3) **Section A** contains eighteen MCQ of 1 mark each, **Section B** contains seven questions of two marks each, **Section C** contains five questions of three marks each, **Section D** contains three long questions of five marks each and **Section E** contains two case study based questions of 4 marks each.

(4) There is no overall choice. However, an internal choice has been provided in Section B, C, D and E. You have to attempt only one of the choices in such questions.

(5) Use of calculators is not allowed.

## SECTION A

Q.01 Which of the following is NOT the property of equipotential surfaces?
(i) They do not cross each other.
(ii) The rate of change of potential with distance on them is zero.
(iii) For a uniform electric, they are concentric spheres.
(iv) They can be imaginary spheres.

Q.02 An electric dipole of moment p is placed parallel to the uniform electric field. The amount of work done in rotating the dipole by 90° is-
(i) 2pE    (ii) pE    (iii) pE/2    (iv) Zero

Q.03 Three capacitors $2\mu F$, $3\mu F$ and $6\mu F$ are joined in series with each other. The equivalent capacitance is-
(i) $1/2\mu F$    (ii) $1\mu F$    (iii) $2\mu F$    (iv) $11\mu F$

Q.04 A circuit to verify Ohm's law uses ammeter and voltmeter in series or parallel connected correctly to the resistor. In the circuit-
(i) ammeter is always used in parallel and voltmeter is series
(ii) ammeter is always connected in series and voltmeter in parallel
(iii) Both ammeter and voltmeter must be connected in parallel
(iv) Both ammeter and voltmeter must be connected in series

Q.05 In the given circuit, current through the 2 ohm resistor is –
(battery voltage=1.2 V)
(i) 0.4 A        (ii) 0.2 A
(iii) 0.1 A       (iv) none of the above

Q.06 The resistivity of a metal wire varies with its :
(i) length    (ii) cross section      (iii) mass    (iv) material

Q.07 When a charged particle moving with velocity 'v' in a magnetic field B, the force on it is non zero. This implies that angle between v and B:
(i) either 0° or 180°         (ii) necessarily 90°
(iii) any value other than 90°     (iv) any value other than 0° or 180°

Q.08 The magnetic flux linked with the coil (in Weber) is given by the equation – $\Phi = 5t^2 + 3t + 16$. The induced EMF in the coil at time, t=4 will be-
(i) $-27\,V$      (ii) $-43\,V$      (iii) $-108\,V$      (iv) $210\,V$

Q.09 The self-inductance of a solenoid of 600 turns is 108 mH. The self-inductance of a coil having 500 turns with the same length , the same radius and the same medium will be-
(i) 95 mH      (ii) 90 mH      (iii) 85 mH      (iv) 75 mH

Q.10 Electromagnetic waves can be produced by –
(i) An accelerated charged particle
(ii) A charged particle moving with constant speed
(iii) A particle at rest
(iv) A particle which is either at rest or moving with constant velocity

Q.11 In Young's double slit experiment, if red colour light is changed to violet then –
(i) fringes become brighter       (ii) intensity of minima increases
(iii) consecutive fringes will come closer    (iv) central fringe will become dark

Q.12 Photoelectric emission occurs only when the incident light has more than a certain minimum –
(i) Intensity     (ii) Angle of Incidence     (iii) Speed     (iv) Frequency

Q13. Bohr model of atom is valid for :
(i) Only hydrogen atom          (ii) Only one electron atom
(iii) Only one electron atoms and ions     (iv) All the atoms

Q.14 The radius of Ge nuclide is measured to be twice the radius of $^{9}_{4}$Be. The number of nucleons in Ge are :
(i) 72     (ii) 73     (iii) 74     (iv) 75

Q.15 Which of the following statements is true for a p-type semiconductor?
(i) Holes are minority carries and pentavalent atoms are the dopant
(ii) Electrons are minority carries and pentavalent atoms are dopant
(iii) Holes are majority carriers and trivalent atoms are the dopant
(iv) Electrons are majority carriers and trivalent atoms are the dopant

Directions (Q. Nos 16 – 18) : Two statements are given-one labelled **Assertion (A)** and the other labelled **Reason (R).**

Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below –

(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 and R is also false

Q.16 **Assertion (A) :** The resistivity of semiconductor increases with temperature.
**Reason (R) :** The atoms of semiconductors vibrate with larger amplitudes at higher temperature thereby increasing the resistivity.

Q.17 **Assertion (A) :** If objective and eye lens of a microscope are interchanged ,then it can work as telescope.
**Reason (R) :** Objective of telescope has small focal length.

Q.18 **Assertion:** Kinetic energy of photo electrons emitted by a photosensitive surface depends upon the intensity of incident photons
**Reason :** The ejection of electrons from metallic surface is possible with intensity of incident photon below the threshold intensity.

## SECTION B

Q.19 Derive an expression for the electric field intensity at any point on the axial line of a dipole.     (2)

Q.20 An alternating voltage given by $v = 141\ sin314\ t\ volt$ is connected across a pure resistor of 50 Ω. Find the frequency of the source and the rms current.     (2)

Q.21 (a) Give one use of each of the following-
(i) microwaves     (ii) infra red waves     (iii) Ultra violet radiation     (iv) gamma rays     (2)

**OR**

In a plane e.. wave , the electric field oscillates with frequency of $2 \times 10^{10}\ Hz$ and amplitude of 40 V/m.
(i) What is the wavelength of wave ?
(ii) What is the energy density due to the electric field?     (2)

Q.22 The focal length of a convex lens made of glass (n=1.6) is 20 cm. What will be its new focal length when placed in a medium of refractive index 1.3?     (2)

Q.23 (a) Define a wave front and name the type of wav e-front that corresponds to beam of light –
(i) coming from a very far off source     (ii) diverging radially from a point source.     (2)

**OR**

Derive mirror formula for a convex mirror.     (2)

Q.24 Give two important characteristics of the nuclear force.     (2)

Q.25 Distinguish between conductors, semi conductors and insulators on the basis of energy band diagram. (2)

## SECTION C

Q.26 Define the term 'mobility' of charge carriers in a current carrying conductor. Obtain the relation between mobility and relaxation time.     (3)

Q.27 An ammeter of resistance 0.8 Ω can measure up to 1.0 A. Find the value of shunt resistance required to convert this ammeter to measure a current up to 5.0A.     (3)

Q.28 Radiation of frequency $10^{15}$ Hz is incident on three photosensitive surfaces A, B and C. Following observations are recorded:
**Surface A:** no photoemission occurs
**Surface B :** photoemission occurs but the photoelectrons have zero kinetic energy.
**Surface C:** photo emission occurs and photoelectrons have some kinetic energy.
Using Einstein's photo-electric equation, explain the three observations.     (3)

**OR**

The maximum kinetic energy of the photo electrons emitted is doubled when the wavelength of light incident on the photosensitive surface changes from $\lambda_1\ to\lambda_2$. Deduce expressions for threshold wavelength and work function in terms of $\lambda_1\ and\ \lambda_2$.

Q.29 Derive an expression for the radius of $n^{th}$ Bohr's orbit in Hydrogen atom.     (3)

**OR**

Energy of electron in first excited state in Hydrogen atom is $-3.4eV$. Find Kinetic and potential energy of electron in the ground state.     (3)

Q.30 Draw a lebelled diagram of a full wave rectifier circuit. State its working principle. Show the input and output waveforms.     (3)

## SECTION D

Q.31 (i) Obtain the expression for the electric field intensity due to a uniformly charged spherical shell of radius R at a point distant r from the centre of the shell outside it.

(ii) Draw a graph showing the variation of electric field intensity E with r, for r > R and r < R. (5)

**OR**

(i) Define electric flux. Write its S I unit.

(ii) Derive an expression for the electric field intensity due to a charged infinitely long straight conductor. Also draw a graph to show its variation with distance from conductor. (5)

Q.32 State the working of ac generator with the help of a labelled diagram. The coil of an ac generator having N turns, each of area A, is rotated with a constant angular velocity $\omega$. Deduce the expression for the alternating emf generated in the coil. What is the source of energy generation in this device? (5)

**OR**

(i) Define the term 'mutual inductance 'and write its S.I. unit.

(ii) Show that in an a.c. circuit containing a pure inductor, the voltage is ahead of current by $\frac{\pi}{2}$ *in phase*. (5)

Q.33 State Huygen's principle of wave construction. Draw suitable diagrams.
Explain the law of refraction i.e. Snell's law for a light going rarer to denser medium. (5)

**OR**

(a) Explain the working of an astronomical telescope with necessary ray diagram.

(b) Write two drawbacks of astronomical telescope in comparison with reflecting type telescope. (5)

## SECTION E

Q.34 **Case Study – 1 :**

*Read the following paragraph and answer the questions.*

The large-scale transmission and distribution of Electrical energy over long distances is done with the use of transformers. The voltage output of the generator is stepped-up. It is then transmitted over long distances to an area sub-station near the consumers. There the voltage is stepped down. It is further stepped down at distributing sub-stations and utility poles before a power supply of 240 V reaches our homes.
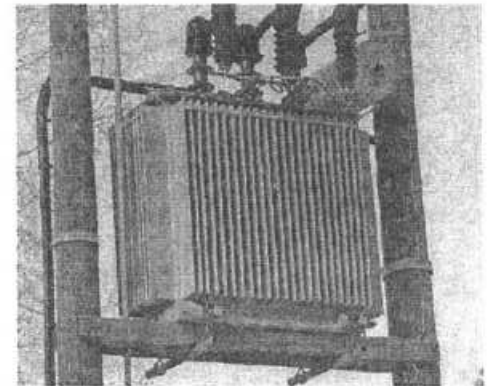
(i) What is the working principle of transformer?

(ii) Why a DC can neither be stepped up nor down by a transformer?

(iii) Electricity is transmitted at a very high voltage for long distances. Give reasons.

**OR**

A step up transformer converts a low voltage input into a high voltage output. Does it violate law of conservation of energy? Explain. (4)

35. **Case Study – 2 :**

*Read the following paragraph and answer the questions.*

Total internal reflection is the optical phenomenon in which when The light travels from an optically denser medium to a rarer medium at the interface, it is partly reflected back into the same medium and partly refracted to the second medium. A similar effect can be observed by opening one's eye while swimming just below the water surface. If the water is calm, the surface outside the critical angle (measured from vertical) appears mirror like reflecting objects below. The region above the water cannot be seen except overhead where the hemispherical field of view is compressed into a conical field known as Snell's window whose angular diameter is twice the critical angle.
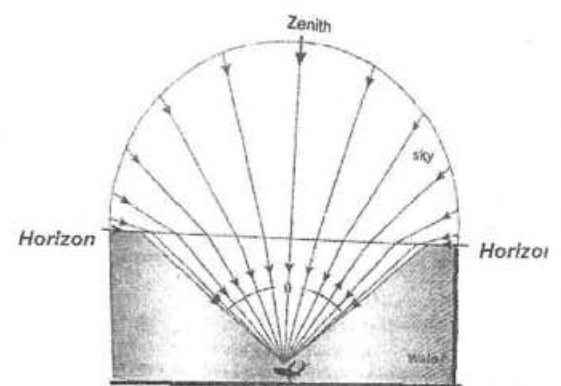
(i) Define 'critical angle'.

(ii) What happens to the speed of light when travelling from an optically denser to a rarer medium?

(iii) A small bulb is placed at a depth $2\sqrt{7}$m inside a water tank and a floating opaque disc is placed over the bulb so that it becomes invisible from outside. Find minimum diameter of disc.
*Refractive index of water* $= 4/3$

**OR**

Calculate the critical angle for glass –air surface if a ray of light which is incident in air on a glass surface is deviated through 15° when angle of incidence is 45°. (4)

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**General Instructions:**

**Read the following instructions carefully.**

a. There are **35** questions in this question paper with internal choice.
b. Section A consists of **18** multiple choice questions carrying **1** mark each.
c. Section B consists of **7** very short answer questions carrying **2** marks each.
d. Section C consists of **5** short answer questions carrying **3** marks each.
e. Section D consists of **2** case based questions carrying **4** marks each.
f. Section E consists of **3** long answer questions carrying **5** marks each.
g. All questions are compulsory.
h. Use of log tables and calculators is not allowed.

## SECTION – A

Q.01   The product of acid – catalysed hydration of 2 – Phenylpropene is:
(a) 3 – Phenylpropan – 2 – ol        (b) 1 – Phenylpropan – 2 – ol
(c) 2 – Phenylpropan – 2 – ol        (d) 2 – Phenylpropan – 1 – ol

Q.02   The correct IUPAC name for diethylbromomethane is
(a) 1 – bromo 1, 1 diethylmethane      (b) 3 – bromopentane
(c) 1 – bromo – 1 ethylpropane         (d) 1 – bromopentane

Q.03   When acidified $K_2Cr_2O_7$ solution is added to $Sn^{+2}$ salts, then $Sn^{+2}$ changes to
(a) $Sn$        (b) $Sn^{+4}$        (c) $Sn^{+3}$        (d) $Sn^+$

Q.04   For the reaction $A + B \rightarrow C + D$, doubling the concentration of both the reactants increases the reaction rate by 8 times and doubling the concentration of only B simply doubles the reaction rate. The rate law is given as :
(a) $r = K[A]^{\frac{1}{2}} [B]^{\frac{1}{2}}$        (b) $r = K[A] [B]^2$
(c) $r = K[A]^2 [B]$        (d) $r = K [A][B]$

Q.05   The amount of electricity in terms of faraday required to produce 40 g of Aluminium from molten $Al_2O_3$ is:
(a) $3F$        (b) $4.4 F$        (c) $3.4 F$        (d) $2.4 F$

Q.06   When initial concentration of the reactant is doubled, the half life period of a zero order reaction
(a) is halved        (b) is doubled        (c) is tripled        (d) remains unchanged

Q.07   The correct decreasing order of $PK_b$ values of following amines A : $C_2H_5NH_2$    B : $C_6H_5NHCH_3$   C : $(C_2H_5)_2 NH$    and    D : $C_6H_5NH_2$ is:
(a) D>B>A>C        (b) C>A>B>D        (c) D>A>B>C        (d) B>D>A>C

Q.08   Which of the following facts about the complex $[Cr(NH_3)_6]Cl_3$ is wrong ?
(a) The complex is paramagnetic
(b) The complex gives white precipitate with silver nitrate solution
(c) The complex is an outer orbital complex
(d) The complex involves $d^2sp^3$ hybridization and is octahedral in shape.

Q.09   $CH_3CH_2OH$ can be converted into $CH_3CHO$ by
(a) catalytic hydrogenation        (b) treatment with $LiAlH_4$
(c) treatment with acidified $KMnO_4$        (d) treatment with pyridinium chlorochromate

Q.10   Which of the following statements about primary amine is 'False'?
(a) alkylamines are stronger bases than ammonia.
(b) $PK_b$ value of alkylamines is lower than arylamines.
(c) alkylamines reacts with nitrous acid to produce alcohols.
(d) alkylamines have higher boiling point than alcohols of comparable molecular masses.

Q11   The correct order of increasing acidic strength is
(a) ethanol<phenol<acetic acid<chloroacetic acid
(b) chloroacetic acid<acetic acid<phenol<ethanol
(c) phenol<ethanol<chloroacetic acid<acetic acid
(d) ethanol<phenol<chloroacetic acid<acetic acid

Q.12 Arrhenius equation can be represented graphically as follows :
The (i) intercept and
  (ii) slope of the graph are :
(a) (i) $\ln A$   (ii) $Ea/R$     (b) (i) $A$   (ii) $Ea$
(c) (i) $\ln A$   (ii) $-Ea/R$    (d) (i) $A$   (ii) $-Ea$
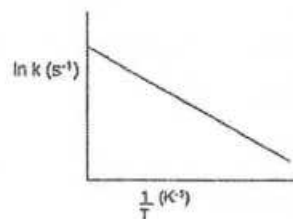


Q.13 The type(s) of isomerism exhibited by the following complex is (are) $[Co(NH_3)_5(NO_2)]Cl_2$
(a) ionization isomerism only      (b) linkage isomerism only
(c) both ionization and linkage isomerism   (d) both geometrical and optical isomerism

Q.14 Which of the following compounds is most reactive towards nucleophilic addition reactions?

$$\begin{array}{c} O \\ \| \end{array}$$

(a) $CH_3 - C - H$       (b) $CH_3 - CO - CH_3$
(c) $C_6H_5CHO$        (d) $C_6H_5COCH_3$

**Given below are two statements labelled as Assertion (A) and Reason (R). Select the most appropriate answer from the options given below:**
(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) Both A and R are false.

Q.15 **Assertion (A) :** The two strands of DNA are complementary.
   **Reason (R) :** Cytosine always pairs with Guanine and Thymine pairs with Adenine.

Q.16 **Assertion (A) :** Tert-butyl methyl ether on treatment with HI at 373 K gives a mixture of tert-butyl iodide and methyl alcohol.
   **Reason (R) :** The reaction occurs by $SN^2$ mechanism.

Q.17 **Assertion (A) :** Transition metals have higher enthalpies of atomization.
   **Reason (R) :** Transition metals have incompletely filled d-orbitals.

Q.18 **Assertion (A) :** Aromatic primary amines can be prepared by Gabriel Phthalimide synthesis.
   **Reason (R) :** Aryl halides undergo nucleophilic substation with anion formed by phthalimide.

## SECTION – B

Q.19 The rate constant for the first order reaction is $60\ s^{-1}$. How much time will it take to reduce the concentration of the reactant to its $1/16^{th}$ value? $(\log 16 = 1.20)$

Q.20 Define the following as related to proteins:
(a) Peptide linkage   (b) Primary Structure

Q.21 Account for the following:
(a) Grignard reagents should be prepared under anhydrous condition.
(b) Treatment of alkyl chlorides with alcoholic KOH gives alkenes as the major product.
**OR**
Among the isomeric alkanes of molecular formula $C_5H_{12}$, identity the one that on photochemical chlorination yields
(a) four isomeric monochlorides   (b) A single monochloride **(Draw structure)**    **(2)**

Q.22 (a) Write the formula of the given coordination compound:
   Hexammine cobalt (III) sulphate               **(1)**
(b) Draw the structure of the geometrical isomers of the complex $[Co(NH_3)_3Cl_3]$   **(1)**
               **OR**
(a) Write the IUPAC name of the complex $K_4[Mn\ (CN)_6]$       **(1)**
   Write the d-orbital configuration of the metal in terms of t2g and eg. of the given complex.   **(1)**

Q.23 Depict the galvanic cell in which the reaction
    $Zn_{(s)} + 2Ag^+{}_{(aq)} \rightarrow Zn^{+2}(aq) + 2Ag(s)$ takes place
(i) Which electrode is negatively charged?
(ii) What are the carriers of current in external and internal circuit?       **(2)**

Q.24 The rate of decomposition of $NH_3$ on platinum surface is zero. What are the rate of production of $N_2$ and $H_2$ if $K = 2.5 \times 10^{-4}\ Ms^{-1}$ ?               **(2)**
     $2NH_3 \rightarrow N_2 + 3H_2$

Q.25 Complete the following reactions :

(a) $CH_3COCH_2COOC_2H_5 \xrightarrow[\text{(ii) } H^+]{\text{(i) } NaBH_4}$

(b) 

$$\xrightarrow[H^+]{alkMnO_4}$$

with substituent $CH_2CH_3$
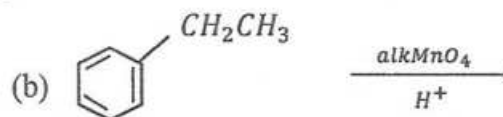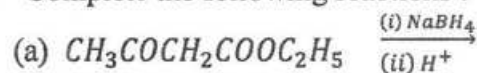
## SECTION – C

Q.26 (a) Write the names of the reagents for the preparation of ethoxy benzene by Williamson synthesis :
(b) Convert ethyl magnesium chloride to Propan-1-ol.
(c) Write equation for Fridel Craft alkylation reaction in anisole.

Q.27 Explain on the basis of valence bond theory that $[Ni(CN)_4]^{2-}$ ion with square planar structure is diamagnetic and $[NiCl_4]^{2-}$ ion with tetrahedral geometry is paramagnetic.

Q.28 Boiling point of water at 750 mm Hg is 99.63°. How much sucrose $(C_{12}H_{22}O_{11})$ is to be added to 500 g of water so that it may boil at 100° C? ($Kb\ for\ water = 0.52\ Kkg\ mol^{-1}$)

OR

The vapour pressure of water is 12.3 kPa at 300 K. Calculate the vapour pressure of 1 motal solution in it.

Q.29 Account for the following :
(a) Ethylamine is soluble in water whereas aniline is not.
(b) Although amino group is O, P directing in aromatic substitution reactions, aniline on nitration gives a substantial amount of m-nitroaniline.
(c) Give one chemical test to distinguish between methylamine and dimethylamine.

OR

(a) Convert aniline to p-bromoaniline.
(b) Give the structure of A and B.

(i) $CH_3CH_2Br \xrightarrow{KCN} A \xrightarrow{LiAlH_4} B$

(ii) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{NaOH+Br_2} B$
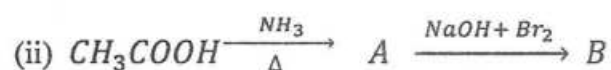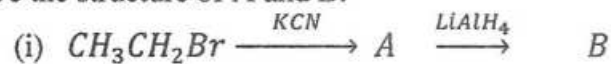
Q.30 (a) Predict the major alkene that would be formed by dehydrohalogenation of 2-Chloro-2 methylbutane.

(b) Arrange the given compounds in order of decreasing reactivity towards $SN^1$ reactions:
$C_6H_5CH(C_6H_5)Br$ , $C_6H_5CH_2Br$ , $C_6H_5CH(CH_3)Br$
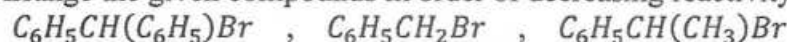
(c) Define Racemic mixture.

## SECTION – D

Q.31 Polysaccharides may be very large molecules Starch, glycogen, cellulose are examples of polysaccharides. Starch is the stored form of sugars in plants and is made up of amylose and amylopectin (both polymers of glucose). Amylose is soluble in water and can be hydrolyzed into glucose units breaking glycosidic bonds, by the enzymes $\alpha$ and $\beta$ amylase. It's a straight chain polymer. Amylopectin is a branched chain polymer of several D-Glucose molecules. 80% of amylopectin is present in starch.

The starch that is consumed by animals is broken down into smaller molecules, such as glucose. The cells can then absorb the glucose.

Glycogen is a storage form of glucose in humans and is made up of monomers of glucose. It is structurally quite similar to amylopectin. It is the animal equivalent of starch. It is stored in liver and skeletal muscles.

Cellulose is one of the most abundant natural biopolymers. The cell walls of plants are mostly made of cellulose, which provides structural support to the cell. Cellulose is made up of glucose monomers that are linked by bonds between carbon atoms. Glucose monomer in cellulose is flipped over and packed tightly as extended long chains. This gives cellulose its rigidity and high tensile strength which is so important to plant cells.

(a) Where is Glycogen stored in animals?
(b) What can you infer about the characteristics of amylose from the passage?
(c) Which polymer is important to plant cells? How?

OR

Name the biopolymer which breaks down to release glucose when glucose level drops in our body.

(1+2+1)

Q.32 Raoult's Law states that for a solution of volatile liquids, the partial vapour pressure of each component is directly proportional to its mole fraction present in solution. Solutions which obey Raoult's Law at all concentrations are called ideal and solutions which don't obey Raoult's Law are called non ideal. The properties of the solution which depends on the number of particles of solute are called colligative properties. Non ideal solution can either show positive or negative deviations from Raoult's Law.

(i) For water and nitric acid mixture which of the following given graph is correct? Also mention the reason.



$X_A=1$    (A)    $X_B=1$      $X_A=1$    (B)    $X_B=1$
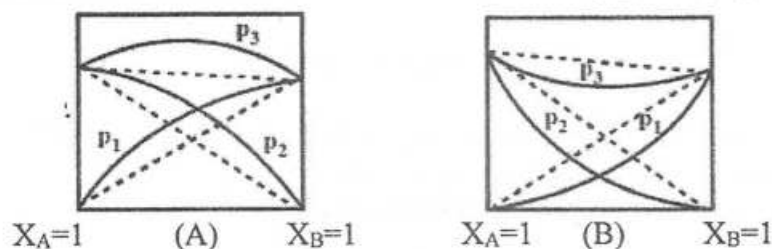
(ii) A solution of two liquids boils at a temperature more than the boiling point of either of them. What type of deviation will be shown b the solution.

(iii) Which among the two will have a higher boiling point 0.1M $BaCl_2$ or 0.1 M Glucose.

**OR**

What will be the signs of $\Delta Hmix$ and $\Delta Vmix$ for a solution showing positive deviation.    **(2+1+1)**

## SECTION – E

Q.33 (a) The molar conductivity of 0.025 $M$ methanoic acid is $46.1 \, Scm^2 \, mol^{-1}$. Calculate its degree of dissociation. Give $\lambda°m(HCOO^-)$ is $54.6 \, Scm^2 \, mol^{-1}$, $\lambda°m(H^+) = 349.6 \, Scm^2 mol^{-1}$ respectively.

(b) Write the reactions taking place at cathode and anode in a lead storage battery when it is in use.

(c) Why does the cell voltage of a mercury cell remain constant during its lifetime?    **(2+2+1)**

**OR**

(a) Calculate the standard Glibb's energy of the cell in which following reaction take place.

$$2Cr_{(s)} + 3Cd^{+2}(aq) \rightarrow 2Cr^{+3}(aq) + 3Cd_{(s)}$$

Given $E°cr^{+3} / cr = -0.74V$

$E°Cd^{+2} / cd = -0.40V$

(b) Predict the product of electrolysis of an aqueous solution of $AgNO_3$ using platinum electrodes.

(c) Define fuel cells.    **(2+2+1)**

Q.34 (i) Explain giving reason:

     (a) The transition metals generally form coloured compounds.

     (b) The highest oxidation state is exhibited in oxo-anions of a metal.

     (c) Of the $d^4$ species, $Cr^{+2}$ is strongly reducing manganese (III) is strongly oxidizing.

(ii) Complete the following reactions

     (a) $Cr_2O_7^{2-} + 3Sn^{+2} + 14H^+ \rightarrow$
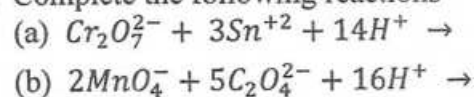
     (b) $2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow$    **(3+2)**

**OR**

(i) Account for the following :

     (a) The lowest oxide of transition metal is basic, the highest is acidic.

     (b) Transition metals are generally used as catalysts.

     (c) Zirconium and Hafnium exhibit similar atomic radii.

(ii) Complete the following reactions:

     (a) $2MnO_4^- + 5NO_2^- + 6H^+ \rightarrow$
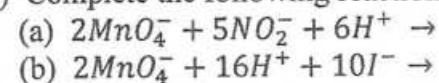
     (b) $2MnO_4^- + 16H^+ + 10I^- \rightarrow$    **(3+2)**

Q.35 The reaction of methyl magnesium chloride with dry ice followed by acid hydrolysis gives an organic compound A. When A is reacted with red P and Chlorine gives a compound B.

(a) Identify A and B.

(b) Which will be more acidic (A) or (B) and why?

(c) Write down the reaction to prepare methane from the compound A.    **(2+2+1)**

**OR**

(a) An organic compound with the molecular formula $C_9H_{10}O$ forms $2,4 - DPN$ derivative, reduces Tollen's reagent and undergoes Cannizaro reaction. On vigorous oxidation, it gives $1,2 - benzene \, dicarboxylic$ acid. Identify by the compound.

(b) Give the name of the reagent to bring about the following transformation:

     (i) Ethane nitrile to Ethanal.

     (ii) Hexan – 1 – ol to Hexanal.

(c) Predict the product when cyclohexane carbaldehyde reacts with semi carbazide and weak acid.

(d) Draw the structure of cycloprapanone oxime.    **(1+2+2+1)**

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DATE : 07-12-2022

**DELHI PUBLIC SCHOOL, BHILAI (C.G.)**

**PRE-BOARD EXAMINATION, 2022-23**

Time : 3 Hours

CLASS : XII

**BIOLOGY**

M.M : 70

**General Instructions :**

1) All questions are compulsory.

2) The question paper consists of 5 sections and 33 questions. All questions are compulsory.

3) Section A has 16 questions of 1 mark each; Section B has 5 questions of 2 marks each; Sec C has 7 questions of 3 marks each. Sec. D has two case based questions of 4 marks each and Sec. E has 3 questions of 5 marks each.

4) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

5) Wherever necessary, the diagrams drawn should be neat and properly labelled.

## SECTION A

1) The colour based contrasting traits in seven contrasting pairs, studied by Mendel in pea plant, were :

(a) 1   (b) 2   (c) 3   (d) 4       1

2)                                                                      1



☒ Number of patients with SCD    ☐ Number of patients without SCD
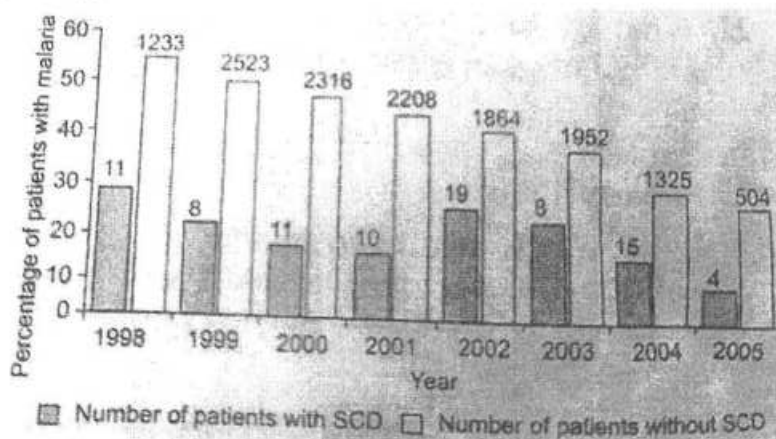
The following statements are drawn as conclusions from the above data (Kenya)

I. Patients with SCD (Sickle-Cell Disease) are less likely to be infected with malaria.

II. Patients with SCD (Sickle-Cell Disease) are more likely to be infected with malaria.

III. Over the years, the percentage of people infected with malaria has been decreasing.

IV. Year 2000 saw the largest percentage difference between malaria patients with and without SCD.

**Choose from below the correct alternative.**

  (a) Only I is true   (b) I and IV are true   (c) III and II are true   (d) I and III are true

3) What would happen if in a gene encoding a polypeptide of 50 amino acids $25^{th}$ (UAC) is mutated to UAA?      1

    a) A polypeptide of 49 amino acids will be formed

    b) A polypeptide of 25 amino acids will be formed

    c) A polypeptide of 24 amino acids will be formed

    d) Two polypeptides of 24 and 25 amino acids will be formed

4) Identify the parts labeled as A to F from the given diagram of human female reproductive system and select the correct option.      1
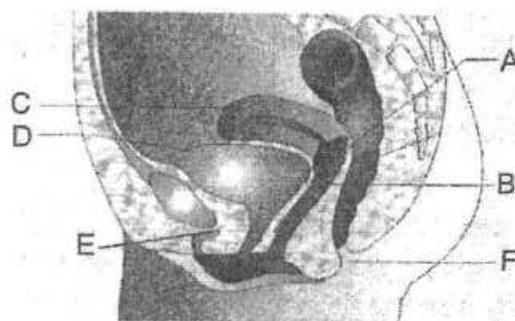


    a. A-Cervix,   B- Vagina,   C- Uterus,   D- Urinary bladder,   E-Clitoris,   F- Vaginal orifice.

    b. A-Vagina,   B- Cervix,   C- Urinary bladder,   D- Uterus,   E-Vaginal orifice,   F- Clitoris

    c. A-Urethra,   B- Vagina,   C- Urinary bladder,   D- Cervix,   E-Uterus,   F- Clitoris

5) 
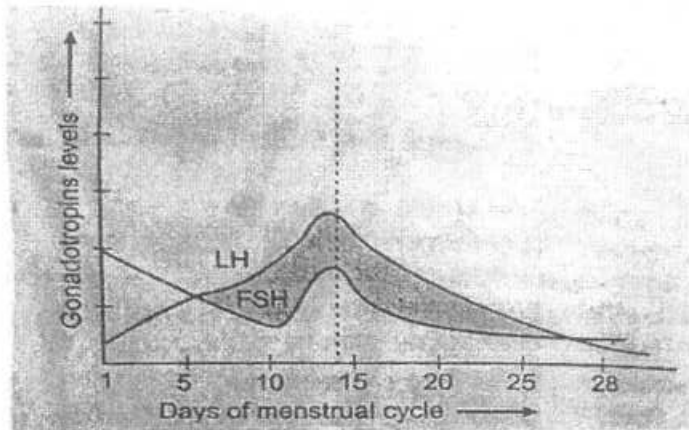


(i) 1-5 days
(ii) 12-14 days
(iii) 25-28 days (if the ovum is not fertilized)

  a.  (i) LH decreases and FSH increases
      (ii) LH increases and FSH decreases
      (iii) LH level maintained and FSH level increases.

  b.  (i) LH increases and FSH decreases
      (ii) LH decreases and FSH increases
      (iii) LH level increases and FSH level maintained.

  c.  (i) LH increases and FSH decreases
      (ii) LH peaks and FSH peaks
      (iii) Both FSH and LH decreases.

  d.  (i) LH peaks and FSH peaks
      (ii) LH increases and FSH decreases
      (iii) LH level decreases and FSH level maintained

6) The antibody which can cross placental barrier is :
(a) $I_gA$  (b) $I_gE$  (c) $I_gM$  (d) $I_gG$

7) Mycorrhiza does not help the host plant in :
  a) Enhancing its phosphorus uptake capacity.
  b) Increasing its tolerance to drought
  c) Enhancing its resistance to root pathogens
  d) Increasing its resistance to insects.

8) Only (Type II) restriction enzymes are used in gene manipulation because :
  a) ATP is not required for cleaving.
  b) It consists of three different subunits.
  c) It makes cleavage or cut in both the strands of DNA molecule.
  d) Both a and c.

9) Which of the following has a negative effect on the population growth rate?
  a) Emigration  (b) Immigration  (c) Natality  (d) Fecundity

10) Following pedigree chart show.
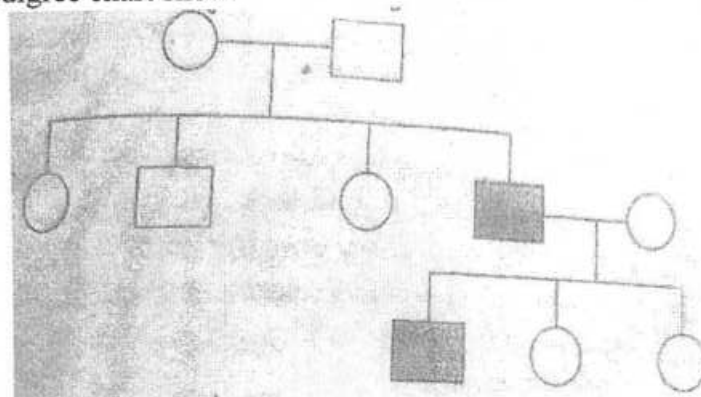


  a) Recessive and autosomal  b) Recessive and sex-linked
  c) Dominant and sex-inked   d) Dominant and autosomal

11) Match the codons in column 1 within their respective amino acids in column II.    1

| | Column I | | Column II |
|---|---|---|---|
| A | UUU | 1. | Serine |
| B. | GGG | 2. | Methionine |
| C. | UCU | 3. | Phenylalanine |
| D. | CCC | 4. | Glycine |
| E. | AUG | 5. | Proline |

|    | A | B | C | D | E |
|----|---|---|---|---|---|
| a. | 3 | 4 | 1 | 5 | 2 |
| b. | 3 | 1 | 4 | 5 | 2 |
| c. | 3 | 4 | 5 | 1 | 2 |
| d. | 2 | 4 | 1 | 5 | 3 |

12) Which of the following is an example of "Insitu conservation?    1

(a) Sacred groves, Zoological park, Wild life sanctuary

(b) Botanical garden, Ramsor site, Zoological park

(c) Wild life safari park, Wild life sanctuary, National park

(d) National park, Sacred grove, Ramsor site

**Question No. 13 to 16 consist of two statements –**

**Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**

(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.

13) **Assertion (A)** Predator maintain species diversity.    1

**Reason (R)** They reduce the intensity of competition among competing prey species.

14) **Assertion (A)** The method of development of embryo sac from a single functional megaspore is termed as monosporic development.    1

**Reason (R)** In monosporic type of embryo sac development, the megaspore situated towards micropylar end remains functional.

15) **Assertion (A)** The regions outside the seminiferous tubules are called interstitial spaces, which contain Leydig's cells.    1

**Reason (R)** Leydig's cells synthesise and secrete testicular hormones called androgens.

16) **Assertion (A)** Selection of recombinants due to inactivation of antibiotics is cumbersome procedure.    1

**Reason (R)** It requires simultaneous plating on two plates having different antibiotics.

### SECTION B

17) In a sewage treatment, plant setup to treat the wastewater, a vigorous growth of flocs are seen'. Justify the given statement and also give definition of flocs.    2

18) Name any two hormones and their source organs which are produced only during pregnancy.    2

19) All hydrophytes are not pollinated by water? Is it true? Why?    2

20) According to you, which property of DNA double helix led to hypothesise semiconservative mode of replication. Explain.    2

21) A plasmid DNA and a linear DNA (both of the same size) have one site for a restriction endonuclease. When cut and separated on agarose gel-electrophoresis, plasmid shows one DNA band while, linear DNA shows two fragments. Explain.    2

**(OR)**

Why is Ethidium bromide used in gel electrophoresis inspite of it being carcinogenic.

## SECTION C

22) Population at any given time is composed of individuals in different age groups. Analyse the pyramid and comment on the status of population they could be associated with.    3
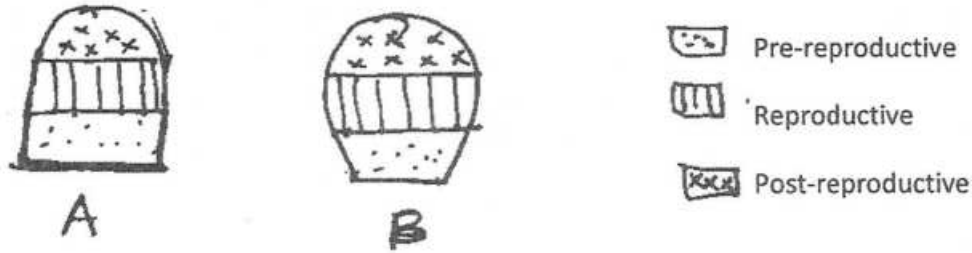


23) 'In a food chain, a trophic level represents a functional level, not a species'. Explain.    3

24) (a) How is apomixis different from parthenocarpy?    3

     (b) Describe any two modes by which apomictic seeds can be produced.

25) Give reasons :    3

     (i)    There is a statutory ban on amniocentesis.

     (ii)    It is essential to have a selectable marker in a cloning vector.

     (iii)    Tropics show greatest levels of species diversity.

26) (a) What is primary productivity? Why does it vary in different types of ecosystem?    3

     (b) State the relation between gross and net primary productivity.

### (OR)

Explain pleiotropy with the help of an example

27) Draw a well labeled diagram of a cloning vector used in recombinant DNA technology. Name the vector.    3

28) Enumerate the function of the following in protein synthesis :    3

     (a) Peptidyl transferase    (b) translocase

### SECTION D

29) Study the given figure and answer the following questions.    4
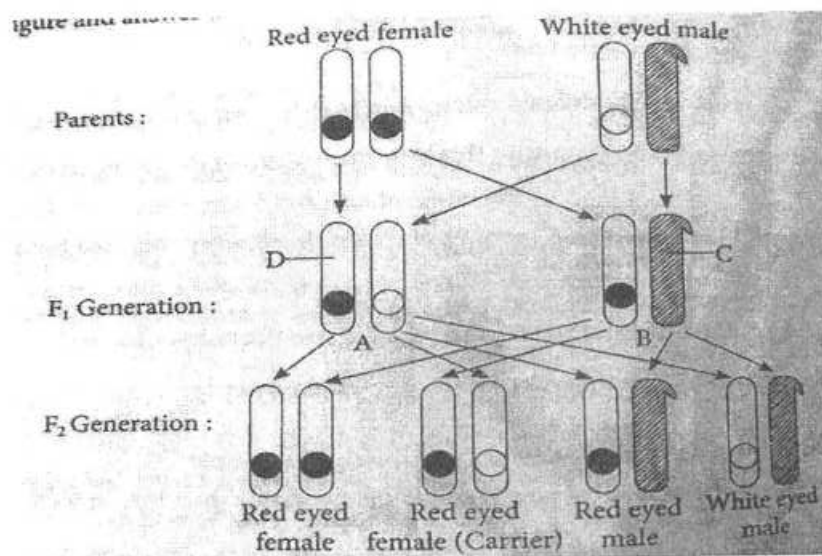


     (a) Identify A,B,C and D from the given figure.

     (b) What kind of inheritance is shown in the given figure?

     (c) State the significance of the inheritance in the above mentioned cross.

### (OR)

     (c) What would happen in the given cross if the parents phenotype be reversed i.e. white eyed female and red eyed male respectively?

30) Given below shows karyotype of a child who is suffering from a sex chromosomal abnormality which occurs during failure of segregation of chromatids during cell division cycle. This results in the gain or loss of a chromosome(s), called aneuploidy. 4
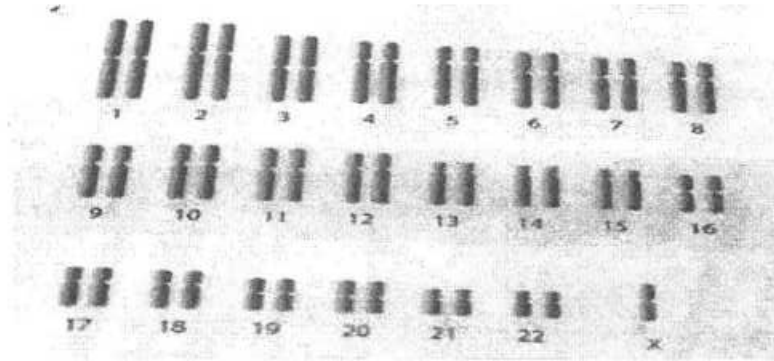


(a) Name the type of aneuploidy shown in this disease.

(b) Write the chromosomal complement of the child.

(c) How does sex chromosomal abnormality occurred in the child?

(OR)

(c) Mention the diagnostic features of the disease.

### SECTION E

31) Hardy-Weinberg principle is stated in the following algebraic equation: 5

$$p^2 + 2pq + q^2 = 1$$

(a) State what do 'p' and 'q' denote in the equation. State this principle

(b) What would you interpret if the value of 1 in the equation gets deviated.

(c) How does the shift in Hardy-Wainberg equation lead to founder effect? Explain.

(OR)

(a) Name the first human like hominid. Mention his food habit and brain capacity.

(b) Rearrange the following from early to late geologic periods:

Carboniferous, Silurian, Jurassic

(c) Mention the evolutionary significance of the following organisms:

(i) Shrews (ii) Lobe fins (iii) Homo erectus

32) What are lymphoid organs? Write the names of any four lymphoid organs along with their functions. 5

(OR)

(a) When do the oogenesis and the spermatogenesis initiate in human females and males respectively?

(b) Give **four** points of difference between male and female gamete of human beings along with labeled diagrams.

33) Many copies of a specific gene of interest are required to study the detailed sequencing of bases in it.

(a) Name and explain the process in it.

(b) How is this process different from the replication which takes place during 'S' phase of mitosis. 5

(OR)

(a) Sickle called anaemia in humans is a result of point mutation. Explain.

(b) Write the genotypes of both the parents who have produced a sickle called anaemic offspring.

\*\*\*\*\*\*\*\*\*\*\*\*

**General Instructions:**
(i)    This question paper contains 34 questions. All questions are compulsory.
(ii)   This question paper is divided into two parts, Part A and B.
(iii)  **Part - A is compulsory for all candidates.**
(iv)   **Part - B** has two options i.e. (i) **Analysis of Financial Statements** and (ii) **Computerised Accounting.** Students must attempt **only one** of the given options.
(v)    Question 1 to 16 and  27 to 30 carries **1 mark** each.
(vi)   Questions 17 to 20, 31and 32 carries **3 marks** each.
(vii)  Questions from 21 ,22 and 33 carries **4 marks** each
(viii) Questions from 23 to 26 and 34 carries **6 marks** each.

| 1. | Navya and Radhey were partners sharing profits and losses in the ratio of 3: 1. Shreya was admitted for 1/5th share in the profits. Shreya was unable to bring her share of goodwill premium in cash. The journal entry recorded for goodwill premium is given below: |
|---|---|

| Date | Particular | LF | Debit (₹) | Credit (₹) |
|---|---|---|---|---|
|  | Shreya's Current A/c. Dr. To Navya's Capital A/c. To Radhey's Capital A/c (Being entry for goodwill treatment passed) |  | 24,000 | 8,000 16,000 |

The new profit-sharing ratio of Navya, Radhey and Shreya will be:
a)  41: 7: 12      b)  13:12: 10      c)  3:1: 1      d)  5:3: 2

| 2. | Assertion (A):- Commission provided to Manager is shown in Profit and Loss A/c. <br> Reason (R):- Commission provided to partner is charge against profits and is to be provided at fixed rate. <br> a) (A) is correct but (R) is wrong <br> b) Both (A) and (R) are correct, but (R) is not the correct explanation of (A) <br> c) Both (A) and (R) are incorrect. <br> d) Both (A) and (R) are correct, and (R) is the correct explanation of (A) |
|---|---|

| 3. | Divya Ltd. Forfeited 7,000 shares of 100 each issued at a premium of 10%, for non-payment of first and final call of 40 per share. The maximum amount of discount at which these shares can be reissued will be: <br> a) ₹ 2,80,000    b) ₹ 4,20,000    c) ₹ 4,90,000    d) ₹ 3,50,000 <br> **OR** <br> _____ Can be issued at discount but _____ cannot be issued at discount except Sweat Equity Shares. <br> a) Debentures, Bonds    b) Debentures, Shares    c) Shares, Debentures d) Loan, Shares |
|---|---|

| 4. | X, Y and Z are partners in a firm sharing profits in the ratio of 3 : 2 : 1. They decided to share future profits equally. The Profit and Loss Account showed a Credit balance of ₹60,000 and a General Reserve of ₹30,000. If these are not to be shown in balance sheet, in the journal entry: <br> a) Cr. X by ₹15,000: Dr. Z by ₹15,000 <br> b) Dr. X by ₹15,000; Cr. Z by ₹15,000 <br> c) Cr. X by ₹45,000; Cr. Y by ₹30,000; Cr. Z by ₹15,000 <br> d) Cr. X by ₹30,000; Cr. Y by ₹30,000; Cr. Z by ₹30,000 <br> **OR** <br> P, Q and R are equal partners with fixed capitals of ₹ 5,00,000, ₹ 4,00,000 and ₹ 3,00,000 respectively. After closing the accounts for the year ending 31st March, 2022 it was discovered that interest on capitals was provided @7% p.a. instead of 9% p.a. In the adjusting entry: <br> a) P will be credited by ₹ 2,000 and Q will be debited by ₹ 2,000 <br> b) P will be debited by ₹ 2,000 and Q will be credited by ₹ 2,000 <br> c) P will be credited by ₹ 2,000 and R will be debited by ₹ 2,000 <br> d) P will be debited by ₹ 2,000 and R will be credited by ₹ 2,000 |
|---|---|

| 5. | Vihaan and Mann are partners sharing profits and losses in the ratio of 3:2. The firm maintains fluctuating capital accounts and the balance of the same as on 31st March 2022 is ₹ 4,00,000 and ₹ 4,65,000 for Vihaan and Mann respectively. Drawings during the year were ₹ 65,000 each. As per the partnership Deed, Interest on capital @ 10% p.a. on Opening Capital has been allowed to them. Calculate the opening capital of Vihaan given that the divisible profits during the year 2021-22 was ₹ 2,25,000. <br> a) ₹ 3,30,000      b) ₹ 4,40,000      c) ₹ 4,00,000      d) ₹3,00,000 |
|---|---|

| 6. | Omega Ltd purchased a business. The purchase price was paid by 20,000, 6% debentures of Rs 100 each issued at a premium of 10%. The purchase consideration was<br>    a) ₹ 20,00,000  b) ₹ 22,00,000   c) ₹ 24,00,000   d) None of these<br>**OR**<br>Amar Ltd. purchased land and building from Samar Ltd. for a book value of ₹ 2,00,000. The consideration was paid by issuing of 12% debentures of ₹ 100 each at a discount of 20% . The debentures account is credited with:<br>    a) ₹20,00,000     b) ₹ 26,00,000     c) 25,00,000     d) 14,00,000 |
|---|---|
| 7. | A forfeited share can:<br>    a)  Not be re-issued at discount<br>    b)  Re-issued at a maximum discount of 10%<br>    c)  Be re-issued at a maximum discount equal to the amount forfeited<br>    d)  Re-issued at a maximum discount of 25% |
| 8. | A, B and C are sharing profits in the ratio of 3:2:1. B retires and on the day of B's retirement Goodwill s valued at ₹ 60,000. A and C decided to share future profit in the ratio of 3:2. Journal Entry will be<br><br>(A)        A's Capital A/c Dr. 18000<br>             C's Capital A/c Dr. 42000<br>                  To B's Capital A/C 60,000<br>(B)        A's Capital A/c Dr. 6000<br>             C's Capital A/c Dr. 14000<br>                  To B's Capital A/C 20,000<br>(C)        A's Capital A/c Dr. 36000<br>             C's Capital A/c Dr. 24000<br>                  To B's Capital A/C 60,000<br>(D)        A's Capital A/c Dr. 12000<br>             C's Capital A/c Dr. 8000<br>                  To B's Capital A/C 20,000<br>**OR**<br>Sohan and Mohan are partners sharing profits and losses in the ratio of 2:3 with the capitals of ₹ 5,00,000 and ₹ 6,00,000 respectively. On 1st January 2022, Sohan and Mohan granted loans of ₹ 20,000 and ₹ 10,000 respectively to the firm. Determine the amount of loss to be borne by each partner for the year ended 31st March 2022 if the loss before interest for the year amounted to ₹ 2,500.<br>a) Share of Loss Sohan – ₹ 1,250 Mohan – ₹ 1,250   b) Share of Loss Sohan – ₹ 1,000 Mohan – ₹ 1,500<br>c) Share of Loss Sohan – ₹ 820 Mohan – ₹ 1,230    d) Share of Loss Sohan – ₹ 1,180 Mohan – ₹ 1,770 |
| | Read the following information carefully and answer the question number 9 to 10 on that basis Information: The profit for the last five years were:<br>Year Ended              Profits (Rs.)<br>31st March,2017        2,00,000 (including gain of Rs. 25,000 from sale of fixed assets<br>31st March,2018        1,70,000 (Including abnormal loss of Rs. 50,000)<br>31st March,2019        2,10,000<br>31st March,2020        2,30,000<br>31st March,2021        2,50,000 |
| 9. | Capital employed in the firm is Rs. 15,00,000 and normal rate of return in similar businesses is 10% . What is the amount of Actual Average Profit?<br>(a) Rs. 2,50,000     (b) Rs. 1,20,000     (c) Rs. 2,17,000     (d) None of the above |
| 10. | Value of Goodwill at 3 years' purchase by super profit method<br>(a) ₹ 2,00,000     (b) ₹ 2,01,000     (c) ₹ 2,50,000     (d) ₹ 1,50,000 |
| 11. | Match the average period of drawing when equal amount is withdrawn in the following cases: |

| 1. | when drawings are made at the end of quarter | i) | 5.5 |
|---|---|---|---|
| 2. | when drawings are made in middle of every quarter | ii) | 9 |
| 3. | when drawings are made in beginning of every half-year | iii) | 4.5 |
| 4. | When drawings are made at the end of every month | iv) | 6 |

| a) | (iii) ; (iv) ; (i) ; (ii) | b) | (iii) ; (i) ; (ii) ; (iv) |
|---|---|---|---|
| c) | (iii) ; (iv) ; (iii) ; (i) | d) | (ii) ; (iii) ; (iv) ; (i) |

| 12. | Beta Ltd. Issued 10,000 shares of ₹ 10 each at 20% premium which was over subscribed to the extent of 5,000 share. All money to be paid on application only and shares were allotted on pro-rata basis. The company will refund...................<br>a) ₹ 60,000     b) ₹ 50,000     c) ₹ 40,000     d) ₹ 30,000 |
|---|---|

| 13. | Which capital of company is mentioned in the Memorandum of Association? <br> A. Authorized capital    B. Issued capital    C. Subscribed capital    D. None of the above |
|---|---|
| 14. | A manager gets 5% commission on net profit after charging such commission. Gross profit ₹ 5,80,000 and expenses of indirect nature other than manager's commission are ₹ 1,60,000. Commission amount will be <br> a) ₹ 21,000    b) ₹ 20,000    c) ₹15,000    d) ₹ 22,000 <br> <div align="center">**OR**</div> Ramesh and Suresh are partners sharing profits in the ratio of 2 : 1 respectively, Ramesh capital ₹ 1,02,000 and Suresh capital are 73,000. They admit Mahesh and agree to give him 1/5<sup>th</sup> share in future profit. Mahesh brings 14,000 as his share of goodwill. He agrees to contribute capital in the new profit-sharing ratio. How much capital will be brought by Mahesh? <br> a) 43,750    (b) 45,000    (c) 47,250    (d) 48,000 |
| 15. | Partners A, B and C share the profits of a business in the ratio of 3 : 2 : 1 respectively. They admit D who brings in ₹60,000 for his share of goodwill. A, B, C and D decide to share the profits respectively in the ratio of 5 : 3 : 2 : 2. Credit will be given to : <br> a) A ₹6,000; B ₹6,000 <br> b) A ₹30,000; B ₹20,000; C ₹10,000 <br> c) A ₹30,000; B ₹18,000; C ₹12,000 <br> d) A ₹30,000; B ₹30,000 |
| 16. | At the time of dissolution of a firm, Creditors are ₹ 70,000; Firm's Capital is ₹ 1,20,000; Cash Balance is ₹ 10,000. Other assets realised ₹ 1,50,000. Gain/Loss in the realisation account will be: <br> a) ₹ 30,000 (Gain)    b) ₹ 40,000 (Gain)    c) ₹ 40,000 (Loss)    d) ₹ 30,000 (Loss) |
| 17. | P, Q and R were partners in a firm sharing profits in 2: 2 : 1 ratio. The Partnership Deed provided that on the death of a partner his executors will be entitled to the following: <br> (a) Interest on Capital @ 12% p.a. <br> (b) Interest on Drawings @ 18% p.a. <br> (c) Salary of Rs.12,000 p.a. <br> (d) Share in the profit of the firm (up to the date of death) on the basis of previous year's profit. <br><br> P died on 31st May, 2022. His capital was Rs.80,000. He had withdrawn Rs.15,000 and interest on his drawings was calculated as Rs.1,200. Profit of the firm for the previous year ended 31st March, 2022 was Rs.30,000. <br> Prepare P's Capital Account to be rendered to his executors. |
| 18. | A, B and C are partners sharing profits and losses in the proportions of 3 : 2: 1 with capitals of ₹ 10,000, ₹ 10,000 and ₹ 5,000 respectively. Each partner is entitled to 5% interest on his capital; B and C are entitled to a salary of ₹ 150 and ₹ 100 per month respectively. During the year 2014, the drawings of the partners in anticipation of their shares of profit and salary are A ₹ 1,000; B ₹ 1,000 and C ₹ 1,200. The profits for the year prior to calculation of interest on capital but after charging salary of partners amounted to ₹ 8,000. The above figure of profit is before charging depreciation of 7<sup>1/</sup>2% on furniture valued at ₹ 5,000 and writing off a bad debt of ₹ 150. You're requested to prepare Profit and Loss Appropriation A/c, Partners capital A/c. <br> <div align="center">**OR**</div> X, Y and Z is a partnership concern having three partners X, Y and Z. Their capital accounts stood at ₹ 30,000, ₹ 15,000 and ₹15,000 respectively on 1<sup>st</sup> April, 2021.Deed of partnership provided that <br> a) Z should be allowed a remuneration of ₹3,000 p.a. <br> b) Interest @ 5% p.a. has to be allowed on the capital. <br> c) Balance of profit or loss is to be divided in the proportion of 2 :2 :1. <br> Ignoring the above terms, the profit of ₹18,000 for the year ended 31<sup>st</sup> March, 2022 was divided equally. You are required to pass adjustment journal entry to rectify the error. |
| 19. | Nishant Ltd acquired assets of ₹ 25,00,000 and took over creditors of ₹ 5,00,000 from Ram Enterprises for purchase consideration of ₹ 24,00,000. The consideration was paid by the issue of 9% Debentures of ₹ 100 each at a premium of 20%, to be redeemed at par after 5 years. <br> Pass the necessary Journal entries for the above transactions. <br> <div align="center">**OR**</div> On 1st April, 2022, Samar Ltd. issued 5,000, 8% Debentures of ₹ 100 each at a discount of 5% redeemable at a premium of 10% . Public subscribed for 4,800 debentures which were duly allotted. The company had a balance of ₹ 50,000 in Securities Premium A/c. The company earned a profit of ₹ 80,000 for the year. <br> Pass necessary journal entries for issue of debentures and for writing off loss on issue of debentures. |
| 20. | Neha, Pooja and Anju were partners sharing profits and losses in the ratio of 2:3:2. On 1st April, 2022 they decided to change the profit sharing ratio as 2:1:1. On this date their Balance Sheet showed the following balances: General Reserve ₹ 40,000; Workmen Compensation Reserve ₹ 13,000; (Liability against this was ₹ 4,000) Profit and Loss A/c (Dr. balance) ₹ 4,200 the assets of the firm were revalued and they resulted in a gain of ₹ 8,400. The Partners had decided to distribute all the Reserves and Profit and Loss A/c but to leave the assets at their original amount. Show the effect of the above adjustments in the books of the partnership firm. |

| 21. | Anand Ltd. has an authorized capital of ₹ 10,00,000 divided into Equity Shares of ₹ each. The company invited applications for 50,000 shares. Application for 48,000 shares were received. All calls were made and duly received except the final call of ₹ 3 per share on 1,000 shares. These shares on which the final call was not received were forfeited. Show how the Share Capital will appear in the Balance Sheet of the company as per Schedule III Part I of the Companies Act 2013. Also prepare Notes to Accounts for the same. |
|---|---|
| 22. | Pass necessary journal entries in the following cases on the dissolution of a partnership firm of X, Y, A and B: <br> (i) Realisation expenses of ₹ 5,000 were to be borne by X, a partner. However, it was paid by Y. <br> (ii) Investment costing ₹ 25,000(comprising 1,000 shares), had been written off from the books completely. These shares are valued at ₹ 20 each and were divided amongst the partners. <br> (iii) Y's loan of ₹ 50,000 settled at ₹ 48,000. <br> (iv) Machinery (book value ₹ 6,00,000) was given at a discount of 20% to creditor of ₹ 4,00,000. |
| 23. | Strongman Ltd. company was registered with an authorized capital of ₹ 2,00,000 of ₹ 10 per equity share. Out of these, 6,000 equity shares issued as fully paid to the vendor for the purchase of building, 8,000 equity shares were subscribed by the public and during the first year ₹ 5 per equity share were called-up, payable as ₹ 2 on application, ₹ 1 on allotment, ₹ 1 on first call and ₹ 1 on second call. <br> The amount received in respect of these shares were: On 6,000 equity shares, the full amount has been paid; On 1250 shares, ₹ 4 per equity share; on 500 shares, ₹ 3 per equity shares and on 250 shares ₹ 2 per share. <br> The directors forfeited 750 equity shares on which less than ₹ 4 per equity share had been paid. Show the journal entries in the books of the company. <br><br> **OR** <br><br> Sahni Tyres and Company Ltd. issued application for 1,00,000 equity shares of ₹ 10 each at a premium of ₹ 3 per share. The amount was payable as follows <br> (i) On application ₹ 2      (ii) On allotment ₹ 5 (including premium) <br> (iii) Balance on the first and final call. <br><br> Applications were received for 1,50,000 shares. Allotment was made on pro-rata basis to all applicants. Amar, who applied for 300 shares failed to pay allotment and call money. His shares were forfeited after first and final call. Of these, 170 shares were re-issued to Samar at ₹ 9 per share fully paid. <br> Pass the necessary journal entries to show the above transactions. |
| 24. | Given below is the Balance Sheet of Akshita and Anubhutee as on 31st March, 2022 who are partners in a firm sharing profits in the ratio of 3 : 2 : |

| Liabilities | ₹ | Assets | ₹ |
|---|---|---|---|
| Creditors | 1,50,000 | Sundry Assets | 7,00,000 |
| Contingency Reserve | 50,000 | | |
| Capital Accounts: | | | |
| Akshita 3,00,000 | | | |
| Anubhutee 2,00,000 | 5,00,000 | | |
| | **7,00,000** | | **7,00,000** |

On that date Aprajeeta is admitted as a partner for 1/5th share on the following terms:
a) She acquires her share of profit from Akshita and Anubhutee in the ratio of 3:1.
b) Goodwill is valued at 2 years' purchase of the average profits of the last 4 years, which were ₹1,00,000; ₹2,50,000; ₹80,000 (loss) and ₹1,30,000 respectively. Aprajeeta does not bring her share of goodwill in cash.
c) Aprajeeta brings in capital in proportion to her share of profit in the firm.
Pass necessary journal entries.

**OR**

The Balance Sheet of Nidhi, Neelakshi and Tarini who are partners in a firm sharing profits according to their capitals as on 31st March,2022 was as under:

| Liabilities | ₹ | Assets | | ₹ |
|---|---|---|---|---|
| Creditors | 35,000 | Buildings | | 1,00,000 |
| Workmen Compensation Fund | 10,000 | Machinery | | 60,000 |
| General Reserve | 16,000 | | | |
| Capital A/c | | Goodwill | | 28,000 |
| Nidhi | 80,000 | Debt | 20,000 | |
| Neelakshi | 40,000 | *Less:* PBD. | 1,000 | 19,000 |
| Tarini | 40,000 | Bank | | 14,000 |
| | **2,21,000** | | | **2,21,000** |

On that date, Neelakshi decided to retire from the firm and was paid for his share in the firm subject to the following :
(i) Building to be appreciated by 20%
(ii) Provision for Bad Debts to be increased to 15% on Debtors.
(iii) Machinery to be depreciated by 10%. Liability for workmen compensation is only ₹ 2,000.
(iv) Goodwill of the firm is valued at ₹ 60,000 and the retiring partner's share is adjusted through the capital accounts of remaining partners. Prepare Partner's Capital A/c. and Balance Sheet.

| 25. | Gagan, Yutish and Jitin were partners sharing profits in the ratio of 5: 3: 2. Jitin died on 1st August,2022. Amount due to Jitin executor after all adjustments was ₹ 90,300. The executor was paid ₹ 10,300 in cash immediately and the balance in two equal annual instalments with interest @ 6% p.a. starting from 31st March, 2024. Accounts are closed on 31st, March every year. <br> Prepare Jitin's Executor Account till he is finally paid. |
|---|---|
| 26. | Anand Ltd., an educational company founded in in 1992, deals in providing education services in North India. Seeing its growth and success, it decided to expand in other parts of India too. <br> For this, a huge investment was required on the part of the company. The company decided to raise the required funds through issue of Debentures. For this the Anand Ltd, invited applications for 15,000, 12% Debenture of ₹ 100 each at a premium of ₹ 10 per debenture, repayable after 5 years along with premium of ₹ 15 each. <br><br> The full amount was payable on application. Applications were received for 18,000 debentures. The company decided to make pro-rata allotment. <br> Answer the following questions on the basis of information provided above. <br> i) How much amount will be credited to Securities Premium Reserve Account? <br> ii) Excess application money on 3,000 debentures will be credited to which account? <br> iii) What is the total amount received on application on issue of debentures? <br> iv) How much amount will be credited to 12% Debenture account on issue of debentures? <br> v) How much amount will be debited to loss on issue of debenture account on issue of 12% Debenture account? <br> vi) Pass Journal entry for writing off loss on issue of debentures. |

|  | **Part B :- Analysis of Financial Statements** <br> **(Option – I)** |
|---|---|
| 27. | Unclaimed dividend is shown under Equity and Liabilities of Balance Sheet of company under the heading: <br> a) Share Capital    b) Non-Current Liabilities.  c) Current Liabilities.    d) None of these <br> OR <br> Which of the following transaction will decrease the quick ratio? <br> a) Debentures converted into equity shares       b) Rent paid in Advance <br> c) Payment received from debtors                 d) All of these. |
| 28. | If Net Revenue from Operations of a firm are ₹ 15,00,000, Gross Profit is ₹ 9,00,000 and Operating Expenses are ₹ 75,000. The operating profit ratio will be: <br> a) 45%.  b) 50%   c) 55%    d) 65% |
| 29. | While Preparing Cash Flow Statement, match the following activities: <br> 1. Purchase of Building                        (i) Financing Activity <br> 2. Redemption of Preference Shares             (ii) Operating Activity <br> 2. Depreciation of Fixed Assets                (iii) Investing Activity <br> a) 1-(ii), 2-(iii), 3-(i)       b) 1-(i), 2-(ii), 3-(iii)      c) 1-(iii), 2-(i), 3-(ii)    d) 1-(iii), 2-(ii), 3-(i) <br> OR <br> Which of the following activity is classified as financing activity in case of a manufacturing enterprise? <br> a) Payment of salaries      b) Payment of dividend on shares    c) Purchase of goodwill     d) All of these |
| 30. | Bhavleen Ltd. had investment of ₹ 68,000 as on 31.03.2021 and investment of ₹ 56,000 as on 31.03.2022. During the year Bhavleen Ltd. sold 40% of its investments being held in the beginning of period at a profit of ₹ 16,800. Determine cash flow from investing activities. <br> a) ₹ 59,600          b) ₹ 28,800        c) ₹ 72,800        d) 62,800 |
| 31. | Name the 'Major head' and 'sub-head' in which the following items will be presented in the balance sheet of a company as per Schedule III, Part-I of the Companies Act 2013. <br> i) Public Deposits <br> ii) Interest accrued but not due on debentures <br> iii) Goodwill <br> iv) Stores and Spares <br> v) Debentures maturing in current financial year <br> vi) Securities Premium |
| 32. | Financial Statement analysis is affected by personal ability and biasness of the analyst. Explain the above limitation of Financial Statement analysis and list any other two limitations also. |

| 33. | From the given information calculate the following : |
|---|---|

(i) Cost of Revenue from operations  (ii) Opening and closing inventory
(iii) Quick Assets and              (iv) Current Assets

**Information:**

Inventory turnover ratio 6 times, Inventory at the end is ₹ 6,000 more than the inventory in the beginning, Revenue from operation (all credits) ₹ 2,40,000, Gross Profit 25% on cost, Current liabilities ₹ 80,000, Quick ratio 0.80 :1.

<div align="center">OR</div>

(i) Guneet Ltd. has a current ratio of 3 :1 and quick ratio of 2 :1. If the excess of current ratio over quick assets as represented by inventory is ₹ 40,000, Calculate current assets.

(ii) From the following information calculate inventory turnover ratio:
Revenue from operations ₹ 16,00,000; Average Inventory ₹ 2,20,000; Gross Loss Ratio 5%.

| 34. | From the following Balance Sheet of Vivek Ltd. as at 31st March, 2022 and 31st March, 2021, prepare Cash Flow Statement: |
|---|---|

| Particulars | Note No. | 31st March, 2022 (₹) | 31st March 2021 (₹) |
|---|---|---|---|
| **I. EQUITY & LIABILITIES** | | | |
| **1. Shareholders' Funds** | | | |
| (a) Share Capital | | 5,75,000 | 2,50,000 |
| (b) Reserves and Surplus | 1 | 1,00,000 | 72,000 |
| **2. Non-Current Liabilities** | | | |
| Long Term Borrowings: 10% Debentures | | 75,000 | 1,00,000 |
| **3. Current Liabilities** | | | |
| (a) Short-Term Borrowings(Bank o/d) | | 10,000 | 18,000 |
| (b) Trade Payables | | 1,50,000 | 90,000 |
| **Total** | | **9,10,000** | **5,30,000** |
| **II. ASSETS** | | | |
| **1. Non- Current Assets** | | | |
| (a) Fixed Assets | 2 | 6,00,000 | 3,50,000 |
| (b) Non-Current Investments | | 50,000 | 70,000 |
| **2. Current Assets** | | | |
| (a) Inventories | | 80,000 | 60,000 |
| (b) Trade Receivables | | 90,000 | 30,000 |
| (c) Cash and cash equivalents | | 90,000 | 20,000 |
| **Total** | | **9,10,000** | **5,30,000** |

| Particulars | 31st March, 2022 (Rs.) | 31st March, 2021 (Rs.) |
|---|---|---|
| **1. Reserves and Surplus** | | |
| General Reserve | 60,000 | 42,000 |
| Surplus, i.e., Balance in Statement of Profit &Loss | 40,000 | 30,000 |
| | 1,00,000 | 72,000 |
| **2. Fixed Assets** | | |
| Tangible Assets: Plant & Machinery (Cost) | 6,90,000 | 4,10,000 |
| Less: Accumulated Depreciation | 90,000 | 60,000 |
| | 6,00,000 | 3,50,000 |

**Notes to Accounts:-**

Additional Information:

i.  During the year, Plant and Machinery costing Rs. 35,000(accumulated depreciation of Rs. 20,000) was sold for Rs. 28,000.

ii.  Debentures were redeemed at a premium of 10% in the beginning of the year.

iii.  Tax of Rs. 25,000 was paid during the year.

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**DELHI PUBLIC SCHOOL, BHILAI**

Date : 16.12.2022     PREBOARD EXAMINATION-2022-'23     Time : 3 Hrs.

Class : XII     SUBJECT : BUSINESS STUDIES     Max. Marks : 80

**General Instructions:**

1. This question paper contains 34 questions.
2. Marks are indicated against each question.
3. Answer should be brief and to the point.
4. Answers to the questions carrying 3 marks may be from 50 to 75 words.
5. Answers to the questions carrying 4 marks may be about 150 words.
6. Answers to the questions carrying 6 marks may be about 200 words.
7. Attempt all parts of the questions together.

01. Name the principle of scientific management through which Taylor advocates that, "there should be an almost equal division of work and responsibility between workers and management."
    - (a) Science, not rule of thumb
    - (b) Cooperation, not individualism
    - (c) Harmony, not discord
    - (d) Development of each and every person to his or her greatest efficiency and prosperity   (1)

02. Healthy living Limited is a company dealing in organic products. Keeping in view the growing demand for such products the company has decided to open three more outlets in the same city in order to expand its business. Identify the type of organisational structure which is suitable for the company after expansion.
    - (a) Divisional structure    (b) Functional structure    (c) Matrix structure    (d) All of the above   (1)

03. **Assertion (A) :** Management consists of a series of interrelated functions that are performed by all managers.
    **Reason (R) :** Management is a process.
    - (a) Both (A) and (R) are correct and (R) is the correct explanation of (A).
    - (b) Both (A) and (R) are correct and (R) is not the correct explanation of (A).
    - (c) (A) is incorrect but (R) is correct.
    - (d) (A) is correct but (R) is incorrect.   (1)

04. Sharp Ltd. is a leather bags manufacturing company. The company is using prohibited animal skin to make leather bags, in order to satisfy some of its customers. Which marketing thinking is being violated in the given case?
    - (a) Production concept  (b) Product concept  (c) Societal marketing concept  (d) Marketing concept  (1)

05. _____ refers to the number of subordinates that can be effectively managed by a superior.
    - (a) Delegation    (b) Organisation structure  (c) Divisional structure  (d) Span of management  (1)

06. On the introduction of 'Goods and Services Tax Act', experts in the field of business started analysing and forecasting its impact on various sectors and industries. Aniket, an established businessman, attended a few seminars and conferences organised by such experts to familiarize himself with this information. He wanted to use these forecasts to reduce the uncertainty in making decisions for the future in his business. Identify the step in the planning process that is being discussed above.
    - (a) Follow-up action  (b) Setting objectives  (c) Developing premises  (d) Selecting an alternative  (1)

07. 'Even where members of department willingly cooperate and work, a manager has to coordinate the efforts of different people in a conscious manner.' Identify the characteristic of coordination discussed above.
    - (a) Coordination ensures unity of action    (b) Coordination is a deliberate function
    - (c) Coordination is a continuous process    (d) Coordination is an all-pervasive function   (1)

08. Sheetal refused to purchase an insulated lunch box for Rs. 2250 as she felt that the real worth of the product was much less than its monetary value. Identify the factor of pricing decision being highlighted in the given case.
    - (a) Profit maximization  (b) Product cost  (c) Government regulation    (d) Utility and demand  (1)

09. If the rate of return on investment for a company is 16%, a situation of unfavourable financial leverage will be said to arise when the rate of interest payable on debt capital is
    - (a) More than 16%    (b) Less than 16%    (c) Equal to 16%    (d) None of the above   (1)

10. Match the following and choose the correct option:

    | | |
    |---|---|
    | (i) Zero coupon bonds | - (a) Call money |
    | (ii) Used for bridge financing | - (b) Treasury bills |
    | (iii) Short-term instrument used for Inter-bank dealings. | - (c) Certificate of deposit |
    | (iv) Instrument issued by commercial banks and development financial institutions. | - (d) Commercial papers   (1) |

    - (a) (i) – (a), (ii) - (b), (iii) - (c), (iv) - (d)
    - (b) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c)
    - (c) (i) - (c), (ii) - (a), (iii) - (d), (iv) - (b)
    - (d) (i) - (d), (ii) - (c), (iii) - (b), (iv) - (a)

11. Which principle of management is being highlighted in the following pictorial presentation?



    (a) Remuneration of employees    (b) Stability of personnel    (c) Discipline    (d) Initiative    (1)

12. Which of the following is not an assumption of Maslow's Need Hierarchy Theory?
    (a) People's behaviour is based on their needs
    (b) People's needs are in hierarchical order
    (c) People are motivated by unfulfilled needs
    (d) A person moves to next higher-level need even if lower need is not satisfied.    (1)

13. Triveni Ltd. starts offering discount on its products to compete with the competitors. The type of plan indicated is _____ .
    (a) Rule    (b) Policy    (c) Method    (d) Strategy    (1)

14. Olivia Ltd. is a company dealing in ready-to-eat food products. Over the years, the earning potential of the company has gone up and it enjoys a good reputation. The Finance manager is confident of the fact that not just the earnings of the current year, but of their future years are likely to be high. Identify the related factor of dividend decision being described in the given lines.
    (a) Earnings    (b) Stability of earnings    (c) Stability of dividend    (d) Growth prospects    (1)

15. _____ test is a measure of an individual's potential for learning new skills.
    (a) Aptitude test    (b) Trade test    (c) Skill test    (d) Personality test    (1)

16. One of the common irregularities noted by the Securities and Exchange Board of India during the inspection of a stock exchange was that it was dealing with unregistered sub-brokers. Identify the related function of SEBI.
    (a) Regulatory function    (b) Protective function    (c) Developmental function    (d) None of the above    (1)

17. A Joint Management Committee is an example of _____ non-financial incentive.
    (a) Job enrichment    (b) Employee empowerment
    (c) Employee participation    (d) Employee Recognition Programme    (1)

18. The production manager requested the owner of the factory to revise the standard production time and the differential wage system after the new machinery was installed. Identify the importance of controlling highlighted by the statement.
    (a) Accomplishing organisational goals    (b) Ensuring order and discipline
    (c) Making efficient use of resources    (d) Judging accuracy of standards    (1)

19. Stanley Enterprises is a company manufacturing Geysers. The company has a functional structure. As the demand for the product grew, the company decided to hire new employees. Identify the concept which will help the human resource manager in deciding the actual number of persons required in each department.
    (a) Workload analysis    (b) Workforce analysis    (c) Job description    (d) Job enrichment    (1)

20. These decisions affect the liquidity as well as the profitability of a business.
    (a) Capital budgeting decision    (b) Financing decision
    (c) Working capital decision    (d) Dividend decision    (1)

21. Unilever has found a new way to make ice creams by using an ingredient called 'ice structuring protein' which is widely found in nature especially, in fishes which allows them to survive in freezing arctic waters. Combining ISP with stabilizer technology allows to make ice creams that don't melt so easily thereby making it more convenient for small children and consumers in hot countries.
    (a) Identify the component of marketing mix being taken into consideration by the company.
    (b) Identify and explain briefly the function of marketing being highlighted here.    (1+2=3)

22. A manager applies the various theories of management in his unique personalised way. Which aspect of nature of management does this statement indicate? State any two features of that aspect.    (1+2=3)

23. Raghav and Rajesh are working in the same organisation but in different departments. One day at lunch time Raghav informs Rajesh that due to computerisation many people are going to be retrenched soon from the organisation. Name, which type of communication is this? State any two limitations of this type of organisation.

<div align="center">OR</div>

    (1+2=3)

In Surya Ltd., selection process is very fair, scientific and standardised. Competent, laborious employees with good work culture are selected. As a result, subordinates are efficient, responsible and take initiative in every activity. Which kind of leadership would be suitable in Surya Ltd. Also, state other two styles of leadership.

24. Why is understanding of business environment important for managers? State any three points.

<div align="center">OR</div> (3)

State any three features of Business environment.

25. Sathish, the Marketing Head, Sahil, the Assistant Manager and Shilpa, the Human Resource Manager of 'Myra Ltd' decided to leave the company. The CEO of the company called Shilpa, the HRM and requested her to fill up the vacancies before leaving the organisation. She informed that her subordinate Aanya was very competent and trustworthy and suggested that if she could be moved up in the hierarchy, she would do the needful. The CEO agreed for the same. Aanya contacted 'ABC Recruiters' who advertised for the post of marketing head for the company. They were able to recruit a suitable candidate for the company. Sahil's vacancy was filled up by screening the database of unsolicited applications lying in the office.

    (a) What do you mean by Recruitment?

    (b) Name the sources of recruitment used by Myra Ltd. to fill up the vacancies by quoting the lines from the above paragraph. (1+3=4)

26. Techno Ltd., an automobile manufacturer, needs Rupees Twenty crores as additional capital to expand its business. Rahul Agrawal, the CEO of the company wanted to raise funds through equity. On the other hand, the Finance manager said that the public issue may be expensive on account of various mandatory and non-mandatory expenses. Therefore, it was decided to allot the securities to institutional investors. Name the method through which the company decided to raise additional capital. Explain any three other methods by which the company can float shares in the market. (1+3=4)

27. Sanjana recently joined Raj Vidyamandir School as an administrative officer. She observed that the school had an experienced medical team on its payroll. They regularly offered useful suggestions which were neither appreciated nor rewarded by the school authorities. Instead the school outsourced the task of maintenance of health records of the students and paid them a good compensation for their services. Because of this, the existing medical team felt disheartened and stopped giving useful suggestions.

    (a) Identify the communication barrier discussed above.

    (b) State the category of this communication barrier.

    (c) Explain any other two communication barriers of the same category. (1+1+2=4)

28. Puro Ltd. is doing the business of manufacturing water purifier. It has come up with a latest innovation in the field of RO purifiers which will avoid wastage of water. It knows that there are many competitors in this field as Whirlpool, Aqua guard, Kent, Eureka Forbes, LG etc.

    (a) Which factor Puro Ltd. must keep in mind while fixing the price of its water purifier in the given case?

    (b) Explain any three other factors to be considered while fixing the price of the purifier. (1+3=4)

29. Describe briefly the relationship between planning and controlling.

<div align="center">OR</div> (4)

Explain briefly the first four steps in the process of controlling.

30. In spite of best efforts of managers, sometimes planning fails to achieve desired results due to its limitations. Explain any four limitations of planning.

<div align="center">OR</div> (4)

Explain briefly any four types of plans.

31. Mr. Ajay Sharma is a Managing Director of Astro Ltd. He continuously motivates his R&D Department that new and latest methods of doing work must be explored. The provisions have also been made to give reward to those employees who will participate in a particular exploration. He also believes that two groups working on managerial and non-managerial posts each are similar to two wheels of an organisational vehicle. If this vehicle (organisation) is to be driven in a right way then both the wheels should be properly aligned. Mr. Ajay is a successful leader. Among his employees, he has instilled a feeling that no decision will be taken without consulting the subordinates. To excel and surpass the other companies in this field is the main motive of Mr. Ajay. Paying attention to training is the secret of the company.

Identify and explain the four principles of Scientific Management highlighted in the above para by quoting the lines. (6)

32. From last many years, in the month of November, due to sudden rise in the pollution levels in Delhi and other parts of northern India, there has been an increase in the demand for air purifiers. Oxyzone Ltd., a manufacturer of air purifiers wants to encash this opportunity and wants to raise its investment in stock. It is expected that this decision would increase the rate of profitability of the business. Due to this, many competitors have recently entered in this industry. In order to increase the sales, the company has started selling air purifiers on liberal credit terms. It is not affecting the profits of the company since the production cycle of the product is short.

Identify and explain any four factors that will affect the working capital requirements of 'Oxyzone Ltd.' by quoting the lines from the above para. (6)

33. Explain briefly the rights of a consumer.

<div align="center">OR</div> (6)

Explain briefly the three-tier judicial machinery for redressal of consumer grievances.

34. What is meant by Decentralisation? Explain any five points highlighting the importance of decentralisation in an organisation.

<div align="center">OR</div> (1+5=6)

What is meant by Functional structure? Explain any five merits of Functional structure.

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Date : 07.12.2022     PREBOARD EXAMINATION-2022-'23     Time : 3 Hrs.
Class : XII     SUBJECT : ECONOMICS     Max. Marks : 80

**General Instructions-**
1. Q. no. 1-10 and 18-27 is MCQ of 1 mark each.
2. Q. no. 11-12 and 28-29 is short answer of 3marks each which can be answered in 60-80 words.
3. Q. no. 13-15 and 30-32 are short answer questions of 4 marks each which can be answered in 80 to 100 words.
4. Q. no. 16-17 and 33-34 is long answer of 6 marks each and can be answered in 100 to 150 words.

## SECTION-A (Macroeconomics)

1. Issue of currency notes ……………….. the money supply.     (1)
   a) Increases   b) Decreases     c) Restricts     d) check

2. ……………… is the agent and advisor to the government of India.     (1)
   a) RBI     b) Commercial banks     c) Ministry of finance     d) none

3. The money multiplier in a economy increases with…………     (1)
   a) Increase in cash reserve ratio     b) Increase in statutory liquidity ratio
   c) Increase in banking habits of the population     d) Increase in population of the country

4. Choose the correct alternative from the following-     (1)
   **Statement I-** autonomous transactions are independent of the state of BoP account.
   **Statement II-** balance of payment is an accounting statement that records monetary transactions between residents of a nations and the rest of the world.
   a) Statement I is true and statement II is false     b) Statement I is false and statement II is true
   c) Both statements are true     d) Both statements are false

5. S= -100+0.2Y is the saving function in an economy. Investment expenditure is Rs,5000. Calculate the equilibrium level of income.     (1)
   a) ₹ 25500     b) ₹ 24500     c) ₹ 23000     d) ₹ 25000

6. Which of the following is not a tool of monetary policy?     (1)
   a) Tax rate    b) Interest rate    c) Cash reserve ratio    d) Open market operation of the central bank

7. If the total expenditure is Rs.2000 and the total receipts is Rs.1500, fiscal deficit will be equals to…… (1)
   a) ₹ 2000     b) ₹ 1500    c) ₹ 500    d) None of these

8. **Assertion (A)** - income tax is a direct tax.     (1)
   **Reason(R)** - impact and incidence of income tax lies on the same person.
   a) Both assertion and reason is true and reason is the correct explanation of the assertion.
   b) Both assertion and reason is true nut reason is not the correct explanation of the assertion.
   c) Assertion is true but reason is false
   d) Assertion is false but reason is true

9. Balance of payment is a ………….. Concept.     (1)
   a) Stalk    b) Flow    c) Both a) and b)    d) None of the above

10. Choose the correct pair-     (1)
    a) APC     i) can never be equals to 1
    b) APS     ii) can be less than 0
    c) MPC     iii) can be more than 1
    d) MPS     iv) varies between -1 and +1

11. Discuss the derivation of saving curve from consumption curve.( Use diagram)     (3)
    **OR**
    Explain the working of multiplier with the help of suitable numerical example.

12. Explain the process of foreign exchange rate determination of a currency.     (3)

13. Discuss banker's bank and currency authority function of central bank.     (4)

14. Define government budget. Explain the various objectives of government budget.     (4)

15. Give the meaning of balance of payment. What are its main components? Explain them briefly.     (4)
    **OR**
    Give the meaning of disequilibrium in BOP. Discuss is causes.

16. Saving at different level of income is given as follows-     (6)

| Income- | 0 | 200 | 400 | 600 | 800 | 1000 |
|---|---|---|---|---|---|---|
| Saving- | -120 | -60 | 0 | 60 | 120 | 180 |

On the basis of the given schedule, answer the followings-
   a) Calculate MPC, APC, K at different level of income.
   b) If investment is Rs.120 crore, determine the equilibrium of income.
   **OR**
How does the situation of inflationary gap arise in an economy? Discuss is impact and measures to control it.

17.(a) Explain circular flow of income in two sectors of economy. (3)
   (b) Find the net national product at market price from the following- (3)

| | Particular's | (Crores) |
|---|---|---|
| i) | Net factor income from abroad- | -5 |
| ii) | Private final consumption expenditure- | 100 |
| iii) | Personal tax- | 20 |
| iv) | Gross national disposable income- | 170 |
| v) | Government final consumption expenditure- | 20 |
| vi) | Corporation tax- | 15 |
| vii) | Gross domestic capital formation- | 30 |
| viii) | Personal disposable income- | 70 |
| ix) | Net export- | -10 |
| x) | Saving of private corporate sector- | 5 |
| xi) | Net national disposable income- | 145 |

## Section B (Indian Economy)

18. Which of the following are not considered in constructing the HDI index- (1)
    a) Long and healthy life measured by life expectancy at birth
    b) Knowledge as measured by adult literacy rate
    c) A good environment as measured by appropriate environment policies
    d) A decent standard living as measured by GDP per capita

19. Which year is described as the year of great divide- (1)
    a) 1931     b) 1921     c) 1941     d) 1911

20. ........................ refer to the taxes levied on imported goods- (1)
    a) Quotas     b) Tariff     c) Lagan     d) none

21. agricultural marketing does not comprise of- (1)
    a) transportation of the produce to the market place of the sale
    b) grading of the produce according to the quality
    c) storage of the produce for the sale in future
    d) credit taken to meet expenditure on agriculture

22. .............. Is a form of market intervention by the government of India to insure agricultural produces against any sharp fall in the farm price- (1)
    a) Minimum support price   b) Adequate prices   c) Quality assure prices   d) Structural adjustment prices

23. **Assertion (A) :** Railways brought a significant change in the sector of Indian economy (1)
    **Reason (R) :** It enables peoples to break geographical and cultural barriers and promoted commercialization of agriculture
    a) Both assertion and reason is true and reason is the correct explanation of the assertion.
    b) Both assertion and reason is true nut reason is not the correct explanation of the assertion.
    c) Assertion is true but reason is false
    d) Assertion is false but reason is true

24. ................ is the most preferred form of employment among women in India. (1)
    a) Self -employment   b) Technical employment    c) Both a) and b)    d) Wage employment

25. Increase in the proportion of casual workers as a proportions of total work force is known as............... (1)
    a) Casualization    b) Informalization   c) Employment elasticity of growth   d) None of the above

26. Which of the following economic reform work initiated by the government under liberalization. (1)
    a) Industrial sector reform    b) Tax reform    c) Financial sector reform     d) All of them

27. The government set up the central pollution control board to control- (1)
    a) Air pollution     b) Noise pollution     c) Deforestation    d) Soil pollution

28. Discuss the occupational structure on the eve of independence. (3)

**OR**

Discuss the land reform introduced during the planning period.

29. Establish the relationship between economic growth and human capital. (3)

30. What is organic farming? Discuss the various benefits of organic forming. (4)

31. What do you mean by new economic policy? Describe in brief industrial sector reform under it. (4)

**OR**

Explain the positive impact of LPG policies under economic reform.

32. Describe the initiative by the government to improve marketing system for the farmers in India. (4)

33. State giving valid reasons whether the following statements are true or false- (6)
    a) There is no difference between labour force and work force
    b) Give the development strategies of China.

34. (a) What is rural development? Discuss the importance of credit in rural development. (3)
    (b) Discuss various challenges to India' environment. (3)

**OR**

(a) What do you mean by environmental crisis? Discuss the various causes of it. (3)
(b) Mention the similar development strategies between India and Pakistan. (3)

**General Instructions:**
1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each.
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 03 Long Answer type questions carrying 05 marks each.
7. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
8. All programming questions are to be answered using Python Language only.

| | PART A | |
|---|---|---|
| 1. | The device that can operate in place of a Hub is a:<br>  i.  Switch      ii. Bridge<br>  iii. Router      iv Gateway | 1 |
| 2. | Which of the following is not done by cyber criminals?<br>  i.  Unauthorized account access      ii. Mass attack using Trojans as botnets<br>  iii. Email spoofing and spamming      iv. Report vulnerability in any system | 1 |
| 3. | Which of the following is the type of software that has self-replicating software that causes damage to files and system?<br>  i.  Trojans      ii. Viruses      iii. Worms      iv Adware | 1 |
| 4. | Which of the following keyword will you use in the following query to display all the values of the column dept_name ?<br><br>**SELECT _____ dept_name FROM BSP_BHILAI;**<br><br>  i.  Distinct      ii. All<br>  iii. Fields      iv. None | 1 |
| 5. | What will be returned by the given query?<br><br>**Select instr(" INDIA", 'DI');**<br><br>  i.    2<br>  ii.   3<br>  iii.  -2<br>  iv.  -3 | 1 |
| 6. | 'O' in FOSS stands for:<br>  i.  Outsource      ii. Open<br>  iii. Original      iv. Outstanding | 1 |
| 7. | Which SQL statement do we use to find total of a column Fees of table SCHOOL?<br>  i.   SELECT total(Fees) FROM SCHOOL;<br>  ii.  SELECT COUNT (Fees) FROM SCHOOL;<br>  iii. SELECT FIND (Fees) FROM SCHOOL;<br>  iv. SELECT SUM (Fees) FROM SCHOOL; | 1 |
| 8. | Which clause is used with 'aggregate function'?<br>  i.  SELECT      ii. GROUP BY<br>  iii. WHERE      iv. Both (i) and (ii) | 1 |
| 9. | Which one of the following functions is used to find the smallest value from the given data in MySQL?<br>  i.   MIN( )<br>  ii.  MINIMUM( )<br>  iii. LOWEST( )<br>  iv. SMALL( ) | 1 |

| | | |
|---|---|---|
| 10. | To display last five rows of a series object **'emp'**, you may write:<br>  i.   emp.Head()<br>  ii.  emp.Tail(5)<br>  iii. emp.Head(5)<br>  iv.  emp.tail() | 1 |
| 11. | Which of the following statement will include NUMPY library?<br>  i.   Import numpy as np<br>  ii.  import numpy as np<br>  iii. import Numpy as np<br>  iv.  import numpi as np | 1 |
| 12. | Which of the following can be used to specify the data while creating a DataFrame?<br>  i.   Series          ii. List of Dictionaries<br>  iii. Structured ndarray   iv. All of these | 1 |
| 13. | **WiFi** stands for?<br>  i.   Wireless Internet Frequent Interface      ii.  Wireless functioning<br>  iii. Wireless Fidelity            iv.  Wire Free Intenet | 1 |
| 14. | In SQL, which function is used to display current date and time?<br>  i.   Date()<br>  ii.  Time()<br>  iii. Curdate()<br>  iv.  Sysdate () | 1 |
| 15. | Unsolicited commercial email is known as:<br>  i.   Malware<br>  ii.  Virus<br>  iii. Spam<br>  iv.  Spyware | 1 |
| 16. | Devika copies an image from the internet which was not free to use and used it in her project without seeking the permission from the creator of the image. Which of the following Intellectual Property Rights is she violating?<br>  i.   Plagiarism          ii. Copywrite Infringement<br>  iii. Trademark Infringement     iv. Patent | 1 |
| | Q17 and 18 are **ASSERTION AND REASONING** based questions. Mark the correct choice as<br>  i.   Both A and R are true and R is the correct explanation for A<br>  ii.  Both A and R are true and R is not the correct explanation for A<br>  iii. A is True but R is False<br>  iv.  A is false but R is True | |
| 17. | **Assertion (A):** - Internet cookies are text files that contain small pieces of data, like a username, password and user's preferences while surfing the internet.<br><br>**Reasoning (R):-** To make browsing the Internet faster & easier, its required to store certain information on the server's computer. | 1 |
| 18. | **Assertion (A):-** DataFrame has both a row and column index.<br><br>**Reasoning (R): -** A DataFrame is a two-dimensional labelled data structure like a table of MySQL. | 1 |

| | PART B | |
|---|---|---|
| 19. | Explain the terms **Static page** and **Dynamic page**.<br><br>OR<br><br>Write any two advantages and two disadvantages of **Star Topology**. | 2 |
| 20. | Malvika, a database administrator needs to display house wise total number of students of **'Chenab'** and **'Yamuna'** house. She is encountering an error while executing the following query:<br><br>**SELECT HOUSE, COUNT (\*) FROM XIIA ORDER BY HOUSE GROUP BY HOUSE WHERE HOUSE='Chenab' OR HOUSE= 'Yamuna';**<br><br>Help her in identifying the reason of the error and write the correct query by suggesting the possible correction (s). | 2 |

| 21. | What is the purpose of **LIKE** operator in SQL? Explain with the help of suitable example. | 2 |
|---|---|---|
| 22. | Write a program to create a series object using a dictionary that stores the number of students of each section of class XII.<br><br>**Note: Assume there are four sections A, B, C and D and number of students are 43,42,44 and 41. Import required module also.** | 2 |
| 23. | Write any four measures you will take to keep your data secure.<br><div align="center">**OR**</div><br>What can be done to reduce the risk of **Identity theft**? Write any two ways. | 2 |
| 24. | What will be the output of the following code:<br>    **import pandas as pd**<br>    **s= pd.Series([10,20,30,40,50], index = ['a', 'b','c', 'd', 'e'])**<br>    **print(s[:3])**<br>    **print(s[-3:])** | 2 |
| 25. | Write Python code to create the Data Frame **SALES** from the given data: | 2 |

| | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| **Rajan** | 5000 | 6000 | 5400 | 8000 |
| **Manan** | 4567 | 7689 | 7654 | 4000 |
| **Teena** | 2345 | 5433 | 2345 | 5367 |
| **Juhi** | 9234 | 8762 | 3498 | 8532 |

Also, Write Python code to display details of year 2016, 2019.

| | SECTION C | |
|---|---|---|
| 26. | Write commands in SQL for (i) to (iii) which are based on the given table:<br><div align="center">**TABLE: STORE**</div> | 3 |

| SLNO | NAME | CITY | NO_OF_EMP | AMOUNT |
|---|---|---|---|---|
| 1 | RAGE | DELHI | 10 | 40,000 |
| 2 | TRENDS | MUMBAI | 15 | 60,000 |
| 3 | VOGUE | MUMBAI | 12 | 56,000 |
| 4 | F-PLANET | DELHI | 25 | 85,000 |

    (i)      Write SQL command to delete the details of F-PLANET.
    (ii)    Write SQL command to increase the amount of RAGE by 5%.
    (iii)   Write SQL command to insert a new column DATE_OPEN of data type date.

| 27. | Write Python code a draw a column chart of the following data:<br>**Year**         **2016-17**    **2017-18**  **2018-19**  **2019-20**<br>**Students**     4500        4800      4890      5100<br>Also, display all the attributes of column chart. | 3 |
| 28. | Consider the given DataFrame 'Stock': | 3 |

| | Name | Price |
|---|---|---|
| **0** | **Computer Science** | 450 |
| **1** | **AI Text Book** | 380 |
| **2** | **Learn Python** | 825 |
| **3** | **Networking** | 900 |

Write suitable Python statements for the following:
    i.     Add a column called Special_Price with the following data: [400,300,800, 850].
    ii.    Add a new book named **'Java Core'** having price 700.
    iii.   Remove the column **Special_Price**.

| 29. | Rohit uses his smartphone for online shopping payments and other transactions such as paying electricity bill, broadband connection changes, mobile recharge etc.<br>    i.     What kind of protection he should he take while doing online transactions?<br>    ii.    What type of information is collected from payment websites?<br>    iii.   If some fraud happens with him then what actions he should take? | 3 |
| | <div align="center">**OR**</div><br>What do you understand by plagiarism? Why is it a punishable offence? Mention any two ways to avoid plagiarism. | |

| 30. | Based on table **STUDENT** given here, write suitable SQL queries for the following: | 3 |
|---|---|---|

| Roll | Name | Class | Gender | City | Marks |
|---|---|---|---|---|---|
| 1 | RAKESH | 11 | M | RAIPUR | 430 |
| 2 | SUMIT | 12 | M | AGRA | 440 |
| 3 | RAMIT | 11 | M | DELHI | 470 |
| 4 | POOJA | 12 | F | AGRA | 492 |
| 5 | SUNITA | 12 | F | RAIPUR | 360 |
| 6 | RAGHAV | 11 | M | DELHI | 256 |
| 7 | PALLAV | 10 | M | AGRA | 324 |
| 8 | NISHIRAJ | 10 | F | RAIPUR | 429 |

i. Display gender wise highest marks.
ii. Display highest marks, lowest marks and average of STUDENT table.
iii. Display number of students appeared from each city.

**OR**

Discuss the significance of Group by clause in detail with the help of suitable example.

## SECTION D

| 31. | Write suitable SQL query for the following: | 5 |
|---|---|---|

i. Display 5 characters extracted from 5$^{th}$ left character onwards from the string **'Beat around the bush'**.
ii. Display the position of occurrence of string 'more' in the string **'Bite off more than you can chew.'**
iii. Round off the value 133.88 to one decimal place.
iv. Display the remainder of 99 divided by 7.
v. Remove all the expected leading and trailing spaces from a column USER of the table **'net_users'**.

**OR**

Explain the following SQL functions using suitable examples.
   i. MID()    ii. SIGN()    iii. SUBSTR()   iv DAYOFWEEK()  v. TRUNCATE()

| 32. | **PCE** an international educational organization. It is planning to set up its India campus at Mumbai with its head office in Delhi. The Mumbai office campus has four main buildings-**ADMIN, ACCOUNTS, EXAMINATION and RESULT.** | 5 |
|---|---|---|

You as a network expert have to suggest the best network related solutions for their problems raised in (i) to (v), keeping in mind the distances between the buildings and other

**MUMBAI CAMPUS**

| DELHI HEAD OFFICE |

| EXAMINATION | | ACCOUNTS |
| ADMIN | RESULT |
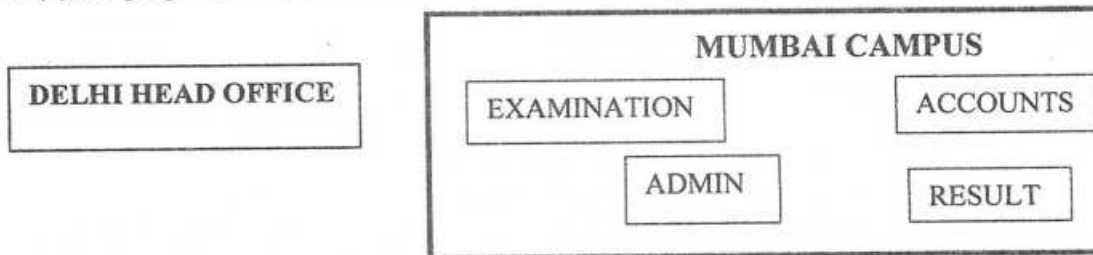
**Shortest distances between various buildings:**

| ADMIN TO ACCOUNTS | 65 m |
|---|---|
| ADMIN TO EXAMINATION | 95 m |
| ADMIN TO RESULT | 55 m |
| ACCOUNTS TOEXAMINATION | 60 m |
| ACCOUNTS TO RESULT | 85 m |
| EXAMINATION TO RESULT | 49 m |
| DELHI Head Office to MUMBAI campus | 1411 km |

**Number of computers installed at various buildings are as follows:**

| ADMIN | 10 |
|---|---|
| ACCOUNTS | 80 |
| EXAMINATION | 30 |
| RESULT | 10 |
| DELHI HEAD OFFICE | 35 |

(i) Suggest the most appropriate location of the server inside the MUMBAI campus (out of the four buildings) to get the best connectivity for maximum number of computers. Justify your answer.
(ii) Suggest and draw cable layout to efficiently connect various buildings within the MUMBAI campus for a wired connectivity.
(iii) Which networking device will you suggest to be procured by the company to interconnect all the computers of various buildings of MUMBAI campus?
(iv) Company is planning to get its website designed which will allow students to see their results after registering themselves on its server. Out of the static or dynamic, which type of website will you suggest?
(v) Which of the following will you suggest to establish the online face to face communication between the people in the ADMIN office of Mumbai campus and Delhi head office?
      a. Cable TV      b. Email   c. Video conferencing    d. Text chat

33. Write Python code to plot a **line graph** as shown below:(Take approximate values from the graph). | 5



Arctic hospital last week birth rate

Also give suitable Python statement to save this chart.

**OR**

Write a Python program to plot a line chart based on the given data to depict the changing weekly average temperature in Bhilai for a week. Also give suitable Python statement to save this chart.

**Dates_Nov=[1,2,3,4,5,6]**
**Avg_Temp=[32,35,34,37,31,30]**

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**SECTION E**

34. Manas, a database administrator has designed a database for a RAMA_BROTHRS shop. Help him by writing answers of the following questions based on the given table: | 1+1+2

**TABLE: RAMA_BROTHERS**

| CODE | CNAME | SIZE | COLOR | PRICE | DOP |
|------|-------|------|-------|-------|-----|
| C1 | JEANS | XL | BLUE | 990 | 2022-01-21 |
| C2 | T SHIRT | M | RED | 599 | 2021-12-12 |
| C3 | TROUSER | M | GREY | 399 | 2021-11-10 |
| C4 | SAREE | FREE | GREEN | 1299 | 2019-11-12 |
| C5 | KURTI | L | WHITE | 399 | 2021-12-07 |

  i. Write a query to display cname and color in lower case.
  ii. Write a query to display the total price of the cloths.
  iii. Write a query to count total number of cloths purchased of medium size.

---

**OR (Option for part iii only)**
Write a query to count year wise total number of cloths purchased.

35. Mr. Peeyush, a data analyst has designed the given DataFrame **STORE**.

| | Toys | Books | Uniform | Shoes |
|--------|------|-------|---------|-------|
| Andhra | 1213 | 123 | 5464 | 1123 |
| Odisha | 2345 | 345 | 4356 | 2345 |
| MP | 2389 | 342 | 4578 | 3456 |
| UP | 3456 | 234 | 5678 | 5678 |

  A. Predict the output of the following python statement:
    i. **print(STORE.shape)**
    ii. **print(STORE.loc[:'MP', :'Uniform'])**
  B. Write Python code to display BOOKS and UNIFORM columns only.
    **OR (Option for part iii only)**
  Write Python statement to find total Toys and Books in a new column TOTAL for all states. | 1+1+2

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**General Instructions:**
1. This question paper contains five sections, Section A to E. All questions are compulsory.
2. Section A have 18 questions carrying 01 mark each.
3. Section B has 07 Very Short Answer type questions carrying 02 marks each.
4. Section C has 05 Short Answer type questions carrying 03 marks each.
5. Section D has 03 Long Answer type questions carrying 05 marks each.
6. Section E has 02 questions carrying 04 marks each. One internal choice is given in Q35 against part c only.
7. All programming questions are to be answered using Python Language only.

| | SECTION A | |
|---|---|---|
| 1. | Which of the following is not a valid identifier in Python? <br> a. _name   b. roll-number   c. while   d. var101 | 1 |
| | In Python ........ arguments can be passed in any order of the function call ? <br> a. Actucal   b. default   c. keyword   d. formal | 1 |
| 3. | What will be the output of the following code? <br> a = [11,20,34,45] <br> print(a[2:0:-1]) <br> a. [45,34]   b. [34,20]   c. [34,20,11]   d. Syntax error | 1 |
| 4. | Consider the given expression: <br> **not False and False or True or False** <br> Which of the following will be correct output if the given expression is evaluated? <br>    a. True   b. False   c. None   d. NULL | 1 |
| 5. | What are the possible output(s) of the following code? <br> import random <br> M = ["Cat", "Bat", "Mat", "Sat", "Rat"] <br> x = random.randint(0,2)+2 <br> for i in range(x+1): <br>    print(M[i], " ", end = " ") <br>    a. Bat Mat   b. Cat Bat Mat Rat   c. Cat Bat     d. Rat Sat | 1 |
| 6. | Which of the following mode in file opening statement results an error if the file does not exist? <br> a. a+    b. r+    c. w+      d. None of the above | 1 |
| 7. | Fill in the blank: <br> _____ command is used to remove primary key from the table in SQL. <br> a. update   b. remove   c. alter   d. drop | 1 |
| 8. | Which of the following commands will delete a record (s) from MYSQL database table? <br>    a.       b. DELETE    c. DROP     d. ALTER | 1 |
| 9. | Write the output of the given code: <br> L = ["These",["are", "a"], ["few", "words"], "that","we", "will", "use"] <br><br> print([3:3]+L[1:2]) <br>    a. ["few", "words"] <br>    b. ["that", ["are", "a"]] <br>    c. [["few", "words"], "that"] <br>    d. None | 1 |
| 10. | Fill in the blank: <br> _____ is a non-key attribute, whose values are derived from the primary key of some <br>    other table. <br>    a. Primary Key      b. Foreign Key      c. Candidate Key     d. Alternet key | 1 |
| 11. | The correct syntax of tell() is: <br> (a) file_object.tell(offset [, reference_point])    (b) file_object.tell.tell(offset ) <br> (c) file_object.tellseek(file_object)    (d) file_object.tell() | 1 |
| 12. | The pattern '_ _ _' matches any string of _____ three characters '_ _ _ %' any of _ _ _ characters. <br> a. atleast,   b. exactly, atleast   c. atleast , all   d. all, exacly | 1 |
| 13. | Fill in the blank: <br> Switch is a _____ device. <br> a) Broadband    b. unicast    c. multicast   d. None | 1 |

| 14. | What will the following expression be evaluated to in Python?<br>print(19.0 // 7 + (18 + 30/2))<br><br>(a) 30.0      (b) 33.0      c. 35.0      (d) error | 1 |
|---|---|---|
| 15. | Which function is used to display the total salary of all employees?<br>(a) sum(salary)      (b) total(salary)      (c) count(salary)      (d) return(salary) | 1 |
| 16. | To reflect the changes made in the database, you need to run \<connection\>._____ method.<br>(a) done()    (b) store()    (c) save()    (d) commit() | 1 |
| | Q17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as<br>(a) Both A and R are true and R is the correct explanation for A<br>(b) Both A and R are true and R is not the correct explanation for A<br>(c) A is True but R is False<br>(d) A is false but R is True | |
| 17. | Assertion (A):- If the arguments in function call statement match the number and order of arguments as defined in the function definition, such arguments are called positional arguments.<br>Reasoning (R):- During a function call, the argument list first contains default argument(s) followed by positional argument(s). | 1 |
| 18. | Assertion (A): CSV (Comma Separated Values) is a file format for data storage which looks like a text file.<br>Reason (R): The information is organized with one record on each line and each field is separated by comma. | 1 |

## SECTION B

| 19. | Predict the output of the following code:<br>count = 1<br>def doThis():<br>  global count<br>  for i in (1, 2, 3):<br>    count += 1<br>doThis()<br>print (count) | 2 |
|---|---|---|
| 20. | Write two points of difference between Circuit Switching and Message Switching.<br><div align="center">OR</div><br>Write the difference between MAC address and IP address with suitable examples. | 2 |
| 21. | Given is a Python string declaration:<br>a="Sadhana loves Python"<br>print(a.replace("Sadhana","Manaswi"))<br>print(a.replace("P","J"))<br>Write the output of both print statements. | 2 |
| 22. | Write is Data inconsistency? How does it impact a database? | 2 |
| 23. | (a) Write the full forms of the following:<br>    (i) TPCIP      (ii) HTTP<br>(b) What is the use of Firewall? | 2 |
| 24. | Predict the output of the Python code given below:<br><br>def Position(C1, C2, C3):<br>  C1[0] = C1[0] + 2<br>  C2 = C2 + 1<br>  C3 = "python"<br>P1 = [20,30]<br>P2 = 4<br>P3 = "school"<br><br>Position(P1, P2, P3);<br>print(P1, ", ", P2, ", ", P3)<br><div align="center">OR</div><br>Predict the output of the Python code given below:<br>frequency = { }<br>list = ['a','b','c','a','c']<br>for index in list:<br>  if index in frequency:<br>    frequency[index] += 1<br>  else:<br>    frequency[index] = 1<br>print(len(frequency))<br>print(frequency) | 2 |

| | | |
|---|---|---|
| 25. | Differentiate between count(column_name) and count(*) functions in SQL with appropriate example.<br>**OR**<br>Give two commands available for each of the following categories:<br>DML, DDL | 2 |

## SECTION C

| | | |
|---|---|---|
| 26. | (a) Consider the following tables: **Bank_Account** and **Branch**: | 1+2 |

Table: **Bank_Account**

| ACode | Name | Type |
|---|---|---|
| A01 | Raman | Savings |
| A02 | Sudha | Current |
| A03 | Meena | Current |

Table: **Branch**

| ACode | City |
|---|---|
| A01 | Durg |
| A02 | Raipur |
| A01 | Bhilai |

What will be the output of the following statement?

**SELECT * FROM Bank_Account , Branch;**

(c) 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 | Mobile Application Development | 18000 | 2022-11-01 | 101 |
| C206 | Digital marketing | 16000 | 2022-07-25 | 103 |

(i) SELECT LEFT(CNAME,5), FEES*6 FROM TECH_COURSE;

(ii) SELECT MAX(FEES), COUNT(*), MIN(FEES) FROM TECH_COURSE GROUP BY CID;

(iii) SELECT CNAME, STARTDATE FROM TECH_COURSE WHERE FEES>15000 ORDER BY CNAME;

(iv) SELECT AVG(FEES) FROM TECH_COURSE WHERE FEES BETWEEN 15000 AND 18000;

| | | |
|---|---|---|
| 27. | Write a function **DISPLAY()** to read from binary file **"student.bin"** who are in "Chenab" house. Structure of record is as follows:<br>**ADMNO   HOUSE    NAME   MOBILE**<br>**OR**<br>Write a function **STOCK()** in Python, which should read a file **"bigshop.csv"** and print the given report. File contains **ITEM_NAME, QUANTITY AND UNIT_PRICE** of few items.<br><br>REPORT<br>ITEM_NAME    QUANTITY  UNIT_PRICE    AMOUNT<br>TOTAL AMOUNT - - - - - - | 3 |
| 28. | Suresh Traders Ltd are considering to maintain their product database using MYSQL. They have appointed Prasoon as a database administer. After detailed analysis, Suresh has decided the following structure of table **PRODUCTS**:<br>1. PRODUCT_ID<br>2. PRODUCT_NAME<br>3. MANUFACTURER<br>4. PRICE<br>5. EXPIRYDATE<br>Help him to type the commands for his queries.<br>a) Identify the attribute best suitable to be declared as a primary key for the above table.<br>b) There are total 10 records in a table PRODUCTS. Write the degree and cardinality of a table PRODUCT.<br>c) Write update command to increase the unit_price of all items by 4%.<br>d) Show the list of existing tables stored in the database INVENTORY.<br>e) Write a command to set PRODUCT_ID as Primary key<br>f) Delete a record whose PRODUCT_ID is P-1111. | 3 |

| 29. | Write a function **ROTATE_LIST(DATA, NO_OF_TIMES)** to rotate the elements towards left side as shown in the given example:<br>If L contains [12,23,45,67,89,10] and function call is ROTATE_LIST(L,2)<br>then list L will look like:<br>[45,67,89,10, 12,23] | 3 |
|---|---|---|
| 30. | A list contains following record of a customer:<br>**[room_no, guest_name, room_rent]**<br><br>Write the following user defined functions to perform given operations on the stack named **'HOTEL'**:<br>　(i)　**Push_Guest()** to add new guest information.<br>　(ii)　**Pop_Guest()** to remove guest information from hotel.<br>　(iii)　**SIZE()** to know the size of stack.<br><div align="center">**OR**</div><br>Write **ADD_NEW(Book)** and **REMOVE(Book)** methods in Python to add a new book and remove a book from a list of books, considering them to act as **PUSH** and **POP** operations of the data structure STACK. Also write a function **BOOK_ON_TOP()** to see the guest_ name kept on top of stack. | 3 |

## SECTION D

31. DigiTeck Private Ltd. Has decided to network all its offices spread in four buildings of a campus as shown below:



**The distances between buildings in meters are given below:**

| Between A and B | 20 |
|---|---|
| Between C & D | 70 |
| Between B & C | 50 |
| Between A & D | 65 |
| Between A & C | 120 |
| Between B & D | 80 |

**Number of computers in the various buildings are as follows:**

| Building A | 70 |
|---|---|
| Building B | 55 |
| Building C | 120 |
| Building D | 35 |

a. Suggest a suitable cable layout and topology for connecting the buildings.

b. Suggest the most suitable building to install the server of this organization, with suitable justification.

c. Suggest the placement of a Repeater in a network with justification.

d. Which device will you suggest to be placed/ installed in each of the building to efficiently connect all the computers within these buildings.

e. The company is planning to connect its front office in Delhi which is more than 2000 kms from the campus. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

32.  (a)  Write the output of the code given below:  **2+3**

```
def call(p = 60, q = 30):
   p = p + q
   q = p - q
   print(p, '#', q)
   return
r = 100
s = 200
r = call(r ,s)
print(r, '#', s)
s = call(s)
print(r,'#', s)
```

(b)  The code given below inserts the following record in the table **LIBRABY**:

ACCNO    - integer
BOOKNAME  - string
PRICE     - Integer

Note the following to establish connectivity between Python and MYSQL:

- Username is **root**
- Password is **DPSB**
- The table exists in a MYSQL database named **DPSB_LIB**.
- The details (ACCNO, BOOKNAME & PRICE) are to be accepted from the user.

Write the following missing statements to complete the code: Statement 1 – To connect to database
Statement 2 – Design a query for inserting a insert a record
Statement 3 -  To add the record a in a table.

```
import mysql.connector as mysql
def sql_data():
        mycon=mysql.connect(_____)          # Statement 1
        mycursor = mycon.cursor()
        ACCNO=int(input("Enter Number : "))
        BOOKNAME=input("Enter name : ")
        PRICE=int(input("Enter price: "))
        querry="_____"                      #statement 2
        _____               # statement 3
                    .
        print("Data Added successfully")
```

**OR**

(a)  Predict the output of the code given below:

```
String ='ASTRING'
print(String[:3])
print(String[1:5:2])
print(String[-1:-12:-2])
print(String[::-1])
```

(b)  The code given below reads the following record from the table named "employee" and displays only those records who have salary greater than 75000:

empno – integer
name – string
salary – integer

Note the following to establish connectivity between Python and MYSQL:

- Username is root
- Password is **BHILAI**
- The table exists in a MYSQL database named TEACHERES.

Write the following missing statements to complete the code:
Statement 1 – to connect to database
Statement 2 – to execute the query that extracts records of those students whose salary greater than 75000.
Statement 3- to read the complete result of the query (records whose salaries are greater than 75000) into the object named data, from the table **TEACHERS**.

```
import mysql.connector as mysql
def sql_data():
        mycon=mysql.connect(_____)  # Statement 1
        mycursor=mycon.cursor()
        print("Employees who are getting salary more than 75000 are:")
        _____           # Statement 2
        Data = _____       # Statement 3
        for i in data:
            print(i)
            print()
```

| | | |
|---|---|---|
| 33. | What is the advantage of using a csv file for permanent storage? Write a Program in Python that defines and calls the following user defined functions: | 5 |

1. ADD() – To accept name and marks of eng, phy, chem, maths and cs of few records to a CSV file 'student.csv'.
2. COUNTR() – To count the number of records present in the CSV file named 'student.csv'.

**OR**

Give any one point of difference between a binary file and a csv file. Write a Program in Python that defines and calls the following user defined functions:

1. ADD() - To accept name test1 and test2 marks of few subjects to a CSV file 'monday.csv'. Each test is of 25 marks.
2. SEARCH() - To display name and 20% of test marks of all the students.

## SECTION E

| | | |
|---|---|---|
| 34. | Reena creates a table RESULT with a set of records to maintain the marks secured by students in Test1, Test2, Test3 and their division. After creation of the table, she has entered data of 7 students in the table. | 1+1+2 |

| ROLL NO | SNAME | Test1 | Test2 | Test3 | DIVISION |
|---|---|---|---|---|---|
| 101 | SITA | 24 | 24 | 25 | I |
| 102 | GITA | 23 | 24 | 24 | I |
| 103 | MITA | 24 | 25 | 24 | I |
| 104 | TINA | 23 | 24 | 25 | I |
| 105 | RAKESH | 12 | 13 | 14 | IV |
| 106 | SOHAM | 20 | 18 | 19 | II |
| 107 | RETU | 22 | 25 | 23 | I |

Based on the data given above answer the following questions:
(i) Identify the most appropriate column, which can be considered as Primary key.
(ii) If two columns are added and 2 rows are deleted from the table result, what will be the new degree and cardinality of the above table?
(iii) Write the statements to:
   a. Insert the following record into the table
      Roll No- 108, Name- ARCHISHA, Test1- 24, Test2-25, Test3- 22, Div – I.
   b. Increase the Test2 marks of the students by 4% whose name begins with 'S'.

**OR (Option for part iii only)**

(iii) Write the statements to:
   a. Delete the record of students securing I division.
   b. Add a column REMARKS in the table with datatype as varchar with 50 characters

| | | |
|---|---|---|
| 35. | Disha is a Python programmer. She has written a code and created a binary file **records.dat**. The file contains 5 records. She now has to update a record based on the employee id entered by the user and update the salary. As a Python expert, help her to complete the following code based on the requirement given above: | |

```
import _____                                    #Statement 1
def update_data():
    rec={}
    fin=open("records.dat","rb")
    fout=open("               ")                 #Statement 2
    found=False
    pid=int(input("Enter employee id to update their
    salary : "))
    while True:
        try:
            rec=_____                 #Statement 3
            if rec["Employee_id"]==pid:
                found=True
                rec["Salary"]=int(input("Enter new salary: "))
                pickle._____           #Statement 4
            else:
                pickle.dump(rec,fout) except:
            break
    if found==True:
        print("The salary of employee id ", id ," has been updated.")
    else:
        print("No employee with such id is not found")
    fin.close()
    fout.close()
```

(i) Which module should be imported in the program? (Statement 1) — 1
(ii) Write the correct statement required to open a temporary file named records.dat. (Statement 2) — 1
(iii) Which statement should Disha fill in Statement 3 to read the data from the binary file records.dat and in Statement 4 to write the updated data in the file records.dat? — 2

DELHI PUBLIC SCHOOL, BHILAI

Date : 14.12.2022      PREBOARD EXAMINATION-2022-'23      Time : 3 Hrs.
Class : XII      SUBJECT : ENGINEERING GRAPHICS      Max. Marks : 70

**General Instructions:**

(i)   Attempt all the questions.
(ii)  Use both sides of the drawing sheet, if necessary.
(iii) All dimensions are in millimetres.
(iv)  Missing and mismatching dimensions, if any, may be suitably assumed.
(v)   Follow the SP: 46 – 2003 revised codes. (with first angle method of projection)
(vi)  In no view of question 21, are hidden edges or lines required.
(vii) In question 23, hidden edges or lines are to be shown in views without section.

## SECTION – A

**Q 1 to Q 8 – Answer the following multiple-choice questions. Print the correct choice on your drawing sheet:**
(1×8=8)

1.   In isometric projection, the angle between isometric axes are
     (a) 30°,30°,90°          (b) 60°, 60°,60°
     (c) 90°,45°,30°          (d) 120°, 120°,120°

2.   The projection generally used for engineering practice is
     (a) Picture projection    (b) Isometric projection    (c) Oblique projection    (d) Perspective projection

3.   The truncated lower portion of a pyramid is called
     (a) Prism        (b) Frustum        (c) Cube        (d) Cone

4.   Name the type of line which is used for short break line.
     (a) Small dash line       (b) Chain line     (c) Wavy line      (d) Thin continuous line

5.   Which is the correct sequence in case of third angle method of projection?
     (a) Plane of projection, Object, Observer     (b) Observer, Object, Plane of projection
     (c) Object, Plane of projection, Observer     (d) Object, Observer, Plane of projection

6.   What is the value of thread angle in a square thread?
     (a) 30°        (b) 45°      (c) 60°        (d) 90°

7.   Which one among the following is called screw pair ?
     (a) Bolt and nut        (b) Shaft and key      (c) Gib and cotter        (d) Rivet and plate

8.   Which among these is used for neck of glass bottles?
     (a) Square thread       (b) BSW thread        (c) Knuckle thread       (d) Metric thread external

**Q 9 to Q 14 – Select the correct option corresponding to the orientation of the given Isometric Projection:**
(1×6=6)

9.



ISOMETRIC PROJECTION ʀ
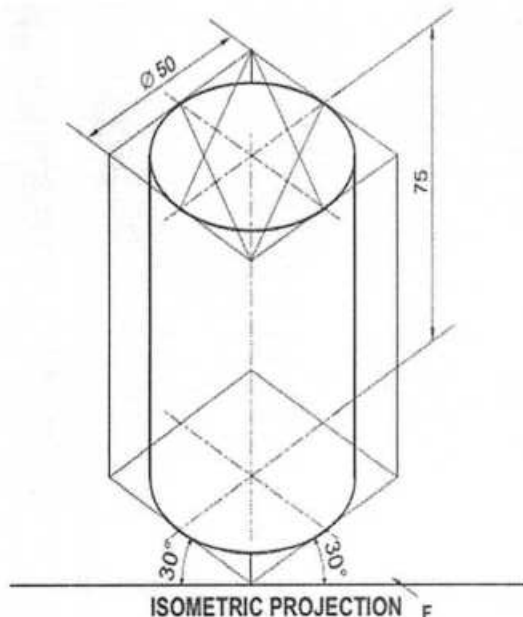
(a) The cylinder is resting on H.P. with one of its long edges on it.
(b) The cylinder is resting on H.P. with its base on it.
(c) The cylinder is resting on H.P. with one of its rectangular faces on it.
(d) The cylinder is resting on H.P. with its axis parallel to both H.P. and V.P.

Contd…2

10.
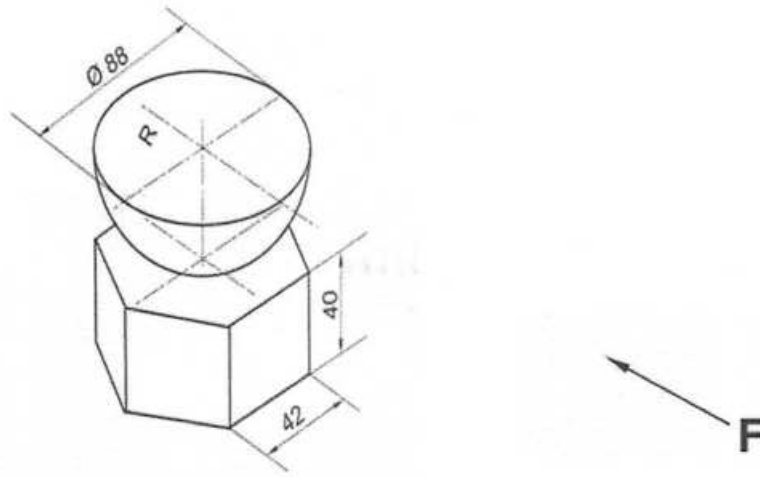


(a) The common axis is perpendicular to HP and two of the base edges of the prism are perpendicular to VP
(b) The common axis is perpendicular to VP and two of the base edges of the prism are perpendicular to VP
(c) The common axis is perpendicular to HP and two of the base edges of the prism are parallel to VP
(d) The common axis is perpendicular to VP and two of the base edges of the prism are parallel to VP

11.



ISOMETRIC PROJECTION
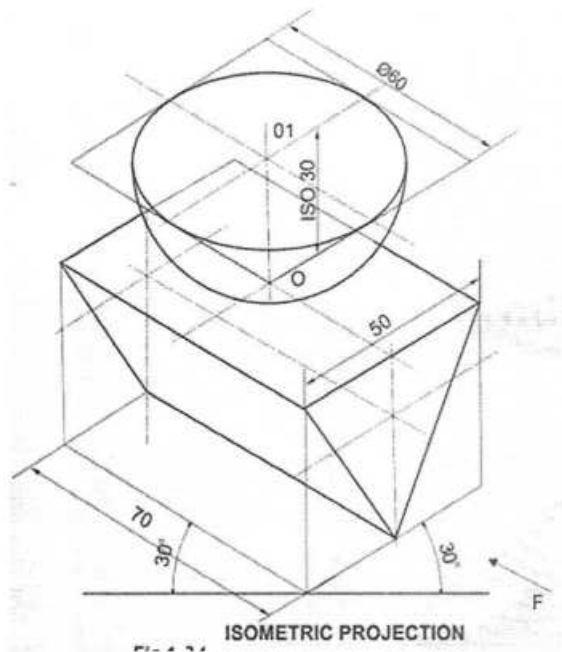
(a) A hemisphere is kept centrally on the top hexagonal surface of a hexagonal prism with its curved surface on it.
(b) A sphere is kept centrally on the top hexagonal surface of a hexagonal prism with its curved surface on it.
(c) A hemisphere is kept centrally on the top rectangular face of a triangular prism with its curved surface on it.
(d) A sphere is kept centrally on the top rectangular face of a hexagonal prism with its curved surface on it.

12.
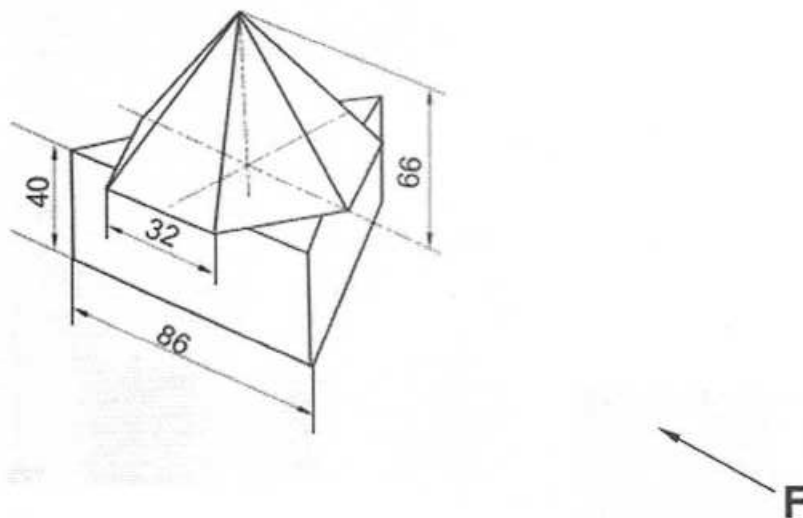


(a) Both the solids are vertical and one of the base edges of the prism is parallel to VP and nearer the observer.
(b) Both the solids are vertical and one of the base edges of the prism is perpendicular to VP.
(c) Both the solids are vertical and one of the base edges of the prism is parallel to VP and near it.
(d) Both the solids are vertical and two of the base edges of the prism are parallel to VP.

**13.**



**ISOMETRIC PROJECTION**
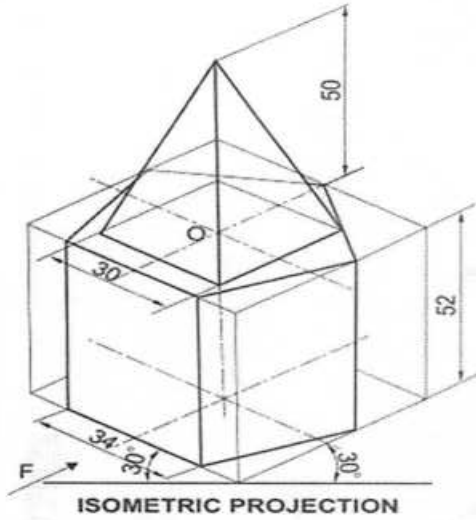
(a) All the base sides of the square pyramid are perpendicular to V.P.
(b) All the base sides of the square pyramid are parallel to V.P.
(c) One of the base sides of the pentagonal prism is perpendicular to V.P.
(d) One of the base sides of the pentagonal prism is parallel to V.P.

**14.**



**ISOMETRIC PROJECTION**
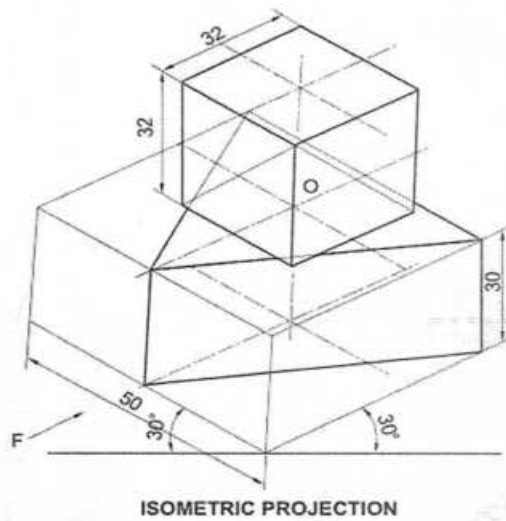
(a) The top solid is square prism and the bottom solid is triangular prism.
(b) The top solid is triangular prism and the bottom solid is square prism.
(c) Both the solids are square prisms.
(d) Both the solids are triangular prisms.

**Q15 – Two statements are given – one labelled assertion (A) and the other labelled reason (R). Select the correct answer to the following question from the codes (a), (b), (c) and (d) as given below:**

(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 and R is also false.

**15. A:** The hexagonal nut takes preference over the other nuts.          (1)
   **R:** The angle through which the spanner will have to be turned to get another hold is only 60 in case of a hexagonal nut but 90° for a square nut

**Q16 to Q 20 – Answer Read the following para and answer the following questions.**          (1×5=5)

Two friends who are the students of class XII Engg. Graphics visited a workshop to repair a part of their robotic arm. Mechanic advised them to use nub-bolt combination in place of welding. While purchasing, they observed many nuts and bolts. They sent the following image to their Engg. Graphics teacher. Then the teacher explained everything about nut-bolt and fasteners.



16.   The way to represent external threads of a bolt of diameter 'd' in drawing is
      (a) Discontinuous ' 0.8d' circle          (b) Discontinuous 'd' circle
      (c) Discontinuous '1.5d+3' circle          (d) Discontinuous '1.5d' circle

17.   The way to represent internal threads of a nut of diameter 'd' in drawing is
      (a) Discontinuous ' 0.8d' circle          (b) Discontinuous 'd' circle
      (c) Discontinuous '1.5d+3' circle          (d.) Discontinuous '1.5d' circle

18. The thickness of a nut of diameter 'd' is
   (a) 0.8d      (b) d      (c) 1.5d+3      (d) 1.5d

19. The maximum diameter of a washer which is used on a bolt of diameter 'd' is
   (a) 2d      (b) d+1      (c)1.5d+3      (d) 2d+3

20. The diameter of a cylindrical rod on which thread profiles are formed is known as
   (a) Major diameter      (b) Nominal diameter      (c) Minor diameter      (d) Chamfering diameter.

## SECTION – B

21. (a) Construct an isometric scale.                                                                (5)
   (b) A hexagonal prism of base side 30 mm and height of 70 mm resting on its base on H.P. with two of its base side parallel to V.P.                                                                (10)

22. Draw to scale 1:1, the standard profile of the Metric thread profile (External) with the pitch = 50mm. Give standard dimensions.                                                                (8)

### OR

Draw to scale 1:1, the Front 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)

23. Figure-1 shows the detail drawings of different parts of a Gib and Cotter Joint for joining two square rods. Assemble all the parts correctly and draw the following views to scale 1:1
   (a) Front view, upper half in section.                                                          (15)
   (b) Side view, viewing from the left hand side.                                                  (06)
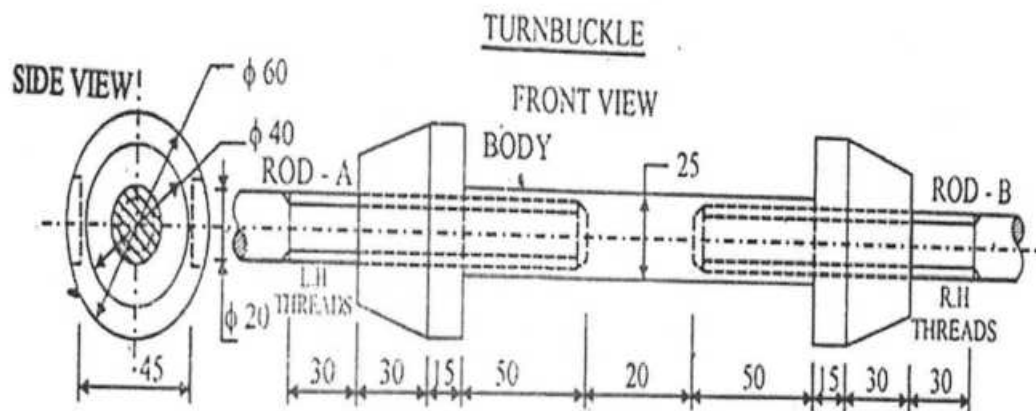   (c) Print title, scale used and draw the projection symbol. Give '6' important dimensions.        (06)
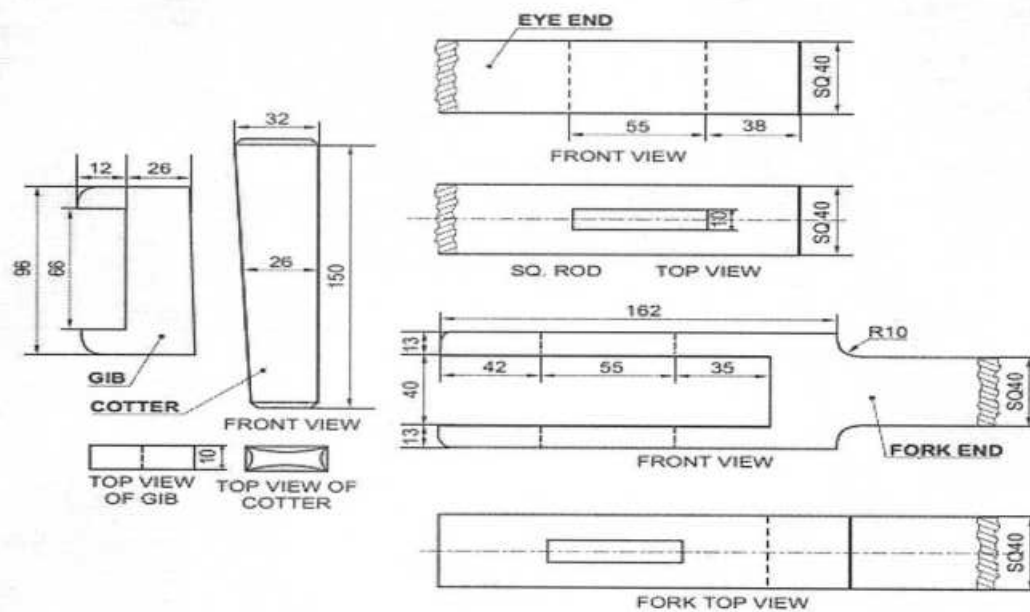


**DETAILS OF A GIB AND COTTER JOINT**

## FIGURE-1
### OR

Figure-2 shows the assembly of a turnbuckle. Its front view and the side view are given. Disassemble the parts correctly, and then draw the following views, to a scale 1:1, keeping the same position of the parts with respect to H.P. & V.P.:

(a) Front view of the body, showing the upper half in section, and its top view.                    (15)
(b) Front view of Rod-B, and its side view, as seen from the left.                                   (06)
   Print titles and scale used. Draw the projection symbol. Give 8 important dimensions.             (06)



TURNBUCKLE

NOTE : FIG. NOT TO SCALE.
USE DIMENSIONS, GIVEN FOR DRAWING SOLUTIONS.

## FIGURE-2

Date : 12.12.2022     PREBOARD EXAMINATION-2022-'23     Time : 3 Hrs.
Class : XII     SUBJECT : HOME SCIENCE     Max. Marks : 70

**General Instructions :**
1. All questions are compulsory.
2. There are total 35 questions.
3. Question paper is divided into 3 sections : A, B and C.
4. Section A has question nos. 1 to 18 (multiple choice questions) and are of 1 mark each.
5. Section B has question nos. 19 to 25 of 2 marks and question nos. 26 to 29 of 3 marks each.
6. Section C has question nos. 30 to 33 of 4 marks each and question nos. 34 and 35 are of 5 marks each.
7. Internal choices are given in some questions.
8. Support your answer with suitable example wherever required.

## SECTION : A

01. Food items that have beneficial effect on human health are known as : (1)
(a) Medical Foods     (b) Functional Foods     (c) Formulated Foods     (d) Minimally Processed Foods

02. India's first SOS village was set up in the year : (1)
(a) 1930     (b) 1946     (c) 1964     (d) 1965

03. GMP stands for: (1)
(a) Good Managing Practices     (b) Goods Manufacturing Practices
(c) Good Manufacturing Practices     (d) Good Marketing Practices

04. What is the golden mean proportion ratio? (1)
(a) 3:5:8 to 5:8:13     (b) 2:4:6 to 4:6:10
(c) 13:15:28 to 15:28:43     (d) 7:9:16 to 9:16:25

05. Market segmentation based on leisure, pursuits and needs of people is: (1)
(a) Behavioural segmentation     (b) Psychographic segmentation
(c) Demographic segmentation     (d) Geographic segmentation

06. Hydro-extractors work in centrifugal motion which gets rid of ........................ % of moisture. (1)
(a) 70 – 80%     (b) 60 – 70%     (c) 65 – 75%     (d) 75 – 85%

07. Name the famous craft of Assam. (1)
(a) Coconut     (b) Puppetry     (c) Bamboo     (d) Shola

08. ........................... is the third stage of Guest Cycle. (1)
(a) Arrival     (b) Pre-arrival     (c) Departure     (d) Occupancy

09. Old stain of tea and coffee in silk fabric can be removed by : (1)
(a) Steeping in Borax solution     (b) Steeping in methylated spirit
(c) Treating with curd     (d) Treating with potassium permanganate

10. You have to design a dress for a tall girl, which elements of design will you choose to enhance the appearance.
(a) Vertical line     (b) Horizonal line     (c) Related colours     (d) Contrasting colours     (1)
**Choose the correct option:**
(a) i and ii     (b) ii and iv
(c) i and iii     (d) iii and iv

11. Harmony based on one hue is: (1)
(a) Achromatic Harmony     (b) Monochromatic Harmony
(c) Analogous Harmony     (d) Complementary Harmony

12. **Match the following :** (1)
(i) RRE     (A) Television
(ii) SEWA     (B) Print Media
(iii) Project Village Chhatera     (C) Campaign
(iv) EDUSAT     (D) ICT

**Choose the correct option :**
(a) i – B, ii – A, iii – D , iv – C     (b) i – D, ii – A, iii – C, iv - B
(c) i – C, ii – D, iii – B, iv – A     (D) i – B, ii – C, iii – A, iv – D

13. Which of the following rights includes the "Right to be Represented"? (1)
(a) Right to be informed     (b) Right to seek redressal
(c) Right to be heard     (d) Right to choose

Contd...2

**Case-Based Questions:**

**Read the passage carefully and answer question no. 14 to 18.**

The Consumer Protection Act is a landmark legislation in the interest of the consumer. The main function of this Act is to protect consumers from fraudulent trade practices prevalent in the market place and provide redressal to them for their grievances. It is based on the principle of self help and protects consumers against all kind of exploitations and unfair dealings. It intends to provide simple, speedy and inexpensive redressal to consumer for their grievances. This act has made the consumer movement powerful, broad based, effective and people oriented. The Act has two implications:

First, it gives the consumer the right to complain to an authority about his/her grievances and seek speedy redressal, secondly, consumer can claim compensation of the negligence of the manufacturer.

14. Consumer Protection Act was enacted in the year : (1)
    (a) 1958  (b) 1968  (c) 1986  (d) 1987

15. Fruit Product Order (FPO) is for : (1)
    (a) Agricultural Products  (b) Fruits and Vegetable Products
    (c) Precious Metals  (d) Pure Silk

16. Which of the following is the major issue faced by consumers? (1)
    (a) Lack of Consumer Information  (b) Information on Labels
    (c) Good Quality Products  (d) Minimal Prices

17. Which right includes the Right to Fair Settlement? (1)
    (a) Right to safety  (b) Right to be informed
    (c) Right to be heard  (d) Right to seek redressal

18. ……………….. is a Delhi based consumer organization, that brings out the consumer voice. (1)
    (a) CERC  (b) VOICE  (c) INSIGHT  (d) CHOICE

## SECTION : B
### (SHORT ANSWER QUESTIONS)

19. Write about two major methods of washing. (2)

20. What are the ways by which Emphasis can be created in a dress? (Any 4) (½ x4=2)

21. (a) Who invented the foot treadle for sewing machines?
    (b) What was the early use of sewing machines? (1+1)

22. Why there is need to have optimum nutrition? (1+1)

23. (a) What do you mean by PEM?
    (b) How it can be assessed? (1+1)

24. Enlist any four sections of housekeeping department. (½ x4=2)

25. Neha has completed her graduation in Food Science. She wants to pursue her career as a community Nutritionist. Which are the areas where she can work as a community nutritionist? (Any 4) (½x4=2)

26. (a) What is Design?
    (b) What are the two aspects of a design? (1+2)

27. Write the three ways by which erroneous or inadequate information are given to the consumers by the manufacturers. (1x3)

28. Rita, in her research for different methods of developmental communication, came across the term RRE. Now, she wants to know why RRE was started.
    Write down the aims of RRE. (1x3)

29. Based on the operating manner of washing machines give their classification. (1x3)

## SECTION : C
### (LONG ANSWER QUESTIONS)

30. (a) What does KGBV stands for?
    (b) What was the aim of KGBV? (2+2)
    **OR**
    (a) Give definition of Ergonomics. (1+3)
    (b) Why the use of Ergonomics is essential at work place?

31. (a) What is the difference between contamination and adulteration? (2+2)
    (b) What are the two concepts of food safety?

32. Write about the four different types of establishments which offer hospitality services. (4)
    **OR**
    What are the different stages of "Guest Cycle"?

33. Which strategies can be used to combat public nutrition problems? Explain them. (4)

34. What are the different issues related to women at work?
    Write about the provisions made by the government in order to safeguard women at work place. (2+3=5)
    **OR**
    Write a note on "Beti Bacho Beti Padhao". (5)

35. What is "colour"? Draw the Munsell's Colour Wheel. Describe the colours given by Munsell in his colour wheel. (1+2+2)

Date : 14.12.2022  PREBOARD EXAMINATION-2022-'23  Time : 3 Hrs.

Class : XII  SUBJECT : PHYSICAL EDUCATION  Max. Marks : 70

**General Instructions:**
**(i)** The question paper consists of 5 sections and 37 questions.
**(ii)** Section A consists of questions 1-18 carrying 1 mark each and is multiple choice questions. All questions are compulsory.
**(iii)** 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 5.**
**(iv)** Section C consists of questions 25-31 carrying 3 marks each and are short answer types and should not exceed 100 – 150 words. **Attempt any 5.**
**(v)** Section D consists of questions 31 – 33 carrying 4 marks each and are case studies. There is internal choice available.
**(vi)** Section E consists of questions 34-37 carrying 5 marks each and are short answer types and should not exceed 200 – 300 words. Attempt **any 3.**

**Q.01** Which postural deformity is shown in the illustration?



  (a) Bow Leg  (b) Knock Knee  (c) Flat Foot  (d) Round Foot

**Q.02** A person having both traits of introvert and extrovert is known as:
  (a) mesomorph  (b) extroversion  (c) ambivert  (d) endomorph

**Q.03** When the sum of force acting upon the object and sum of the movement acting upon the body is both equal to zero then the body is said to be in:
  (a) equilibrium  (b) static equilibrium  (c) dynamic equilibrium  (d) None of these

**Q.04** Which is not a long term effect of exercise on muscular system?
  (a) Increase in lactic acid tolerance  (b) Increase in muscle size
  (c) Increase in myoglobin storage  (d) Increase in muscle temperature

**Q.05** ................ is the ability to perform sports movement with the desired quality and speed under conditions of fatigue.
  (a) Endurance  (b) Speed  (c) Flexibility  (d) /strength

**Q.06** Which of these is a type of endurance?
  (a) Static  (b) Dynamic  (c) Specific  (d) Relative

**Q.07** The amount of blood pumped out by each side of the heart in 1 minute is known as:
  (a) blood pressure  (b) cardiac output  (c) blood volume  (d) oxygen intake

**Q.08** Starting a throwing event in athletics is an example of which law of motion.
  (a) First Law of motion  (b) Second Law of motion
  (c) Third Law of motion  (d) First and Third Law of motion

**Q.09** Given below are two statements labelled Assertion (A) and Reason (R).
**Assertion (A) :** Instrumental aggression and hostile aggression are the two types of aggression.
**Reason (R) :** Instrumental aggression is positive while hostile aggression is negative in nature.
  (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
  (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
  (c) Assertion (A) is true but Reason (R) is false.
  (d) Assertion (A) is false but Reason (R) is true.

**Q.10** Jatin is a weightlifter in the 96 kg category. He has to participate in a weightlifting competition next week for which he is taking good care of his practice and diet. He has included all the essential nutrients in his diet.

  What do you think would be the most important component of Jatin's diet?
  (a) Proteins  (b) Carbohydrates  (c) Vitamins  (d) Minerals

**Q.11** What is the ratio of carbon, hydrogen and oxygen in carbohydrates?
  (a) 1:2:1  (b) 2:2:1  (c) 2:1:1  (d) 1:2:2

**Q.12** Which of the following is a contraindication for Pavanmuktasana?
  (a) Slipped disc  (b) Shoulder impingement  (c) Knee injury  (d) Enlarged liver

**Q.13** How many byes will be given if 21 teams are participating in a knock-out tournament?
  (a) 11  (b) 12  (c) 10  (d) 13

**Q.14** Archana a P.E. Teacher of ABC School sent invitations to 26 teams to play Kho-Kho under Khelo India Programme. All terms accepted the invitation. Now, help Archana and suggest her which type of tournament she should organize to make the competition successful.
(a) Knockout tournament (b) League tournament
(c) Round-robin tournament (d) Berger tournament

**Q.15** The first World Winter Special Olympics Games were held in:
(a) 1962 (b) 1987 (c) 1960 (d) 1977

**Q.16** Match List-I with List-II and select the correct answer from the codes given below:

| List – I Committee | List-II Function |
|---|---|
| A. Boarding and Lodging | (i) Welcoming the Chief Guest |
| B. Publicity | (ii) Making several announcements during the game |
| C. Announcement | (iii) Providing accommodation and serving meals |
| D. Reception | (iv) Announcement of date. Venue to the public |

| | A | B | C | D |
|---|---|---|---|---|
| (a) | (iii) | (i) | (iv) | (ii) |
| (b) | (ii) | (iv) | (i) | (iii) |
| (c) | (iii) | (iv) | (ii) | (i) |
| (d) | (iv) | (i) | (iii) | (ii) |

**Q.17** Match the following vitamin with the disease caused due to their deficiency:

| List – I Vitamin | List-II Sources |
|---|---|
| A. Vitamin A | (i) Rickets |
| B. Vitamin B | (ii) Night blindness |
| C. Vitamin C | (iii) Beri beri |
| D. Vitamin D | (iv) Scurvy |

| | A | B | C | D | | | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|---|
| (a) | (iv) | (iii) | (ii) | (i) | | (b) | (iv) | (i) | (ii) | (iii) |
| (c) | (iii) | (ii) | (iv) | (i) | | (d) | (iii) | (iv) | (i) | (ii) |

**Q.18** Gomukhasana and Padmasana are performed to rectify which postural deformity?
(a) Flatfoot (b) Scoliosis (c) Knock knees (d) Bow legs

### SECTION – B

**Q.19** List any four long-term effects of exercise on the muscular system.

**Q.20** Write a short note on types of personality.

**Q.21** What do you mean by maximum strength and strength endurance?

**Q.22** Create a flowchart to explain classification of sports injuries.

**Q.23** Give the names of the test included in SAI Khelo India Fitness Test in school.

**Q.24** What do you mean by vitamin? Explain about fat-soluble and water-soluble vitamins.

### SECTION – C

**Q.25** Discuss in detail the objectives of Special Olympics Bharat.

**Q.26** Describe fats. What are the different sources of fats? List two importance functions of fats?

**Q.27** League tournament is a better way to judge the best team of the tournament. Comment.

**Q.28** Differentiate between introverts and extroverts?

**Q.29** Enumerate the Laws of motion.

**Q.30** Discuss in details about 'Female Athletes Triad'.

### SECTION – D

**Q.31** While organizing sports events for the Annual Sports Day. Arjun and Ravi being the captain and vice captain of sports, formed various committees as shown below.

(a) Which committee selects various officials such as referees, judges, etc. in tournament?

(b) The head of a sport committee is ………………….. director.

(c) The Boarding and Lodging Committee for a tournament arranges …………… .

(d) Which committee provides first aid to the injured or affected sports person immediately.
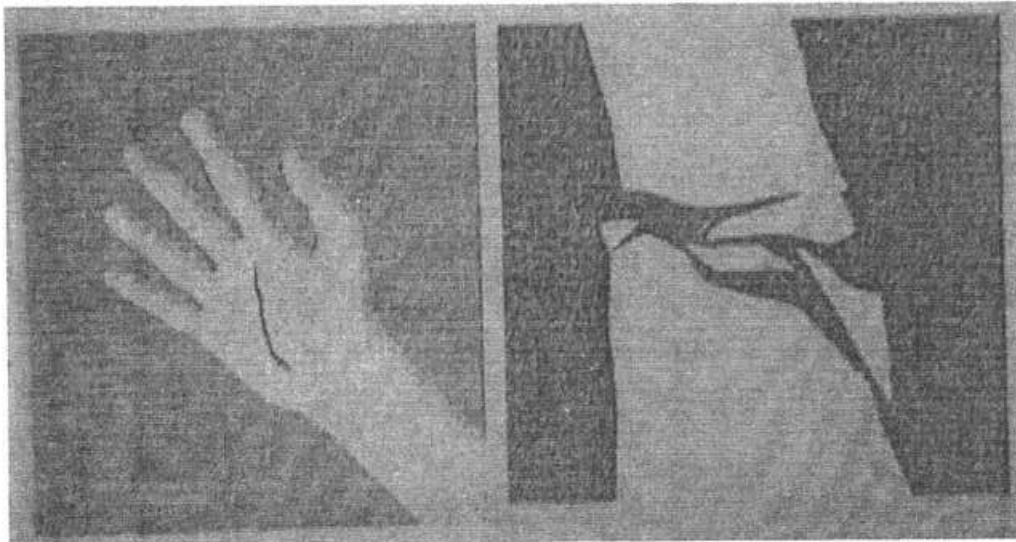
Q.32
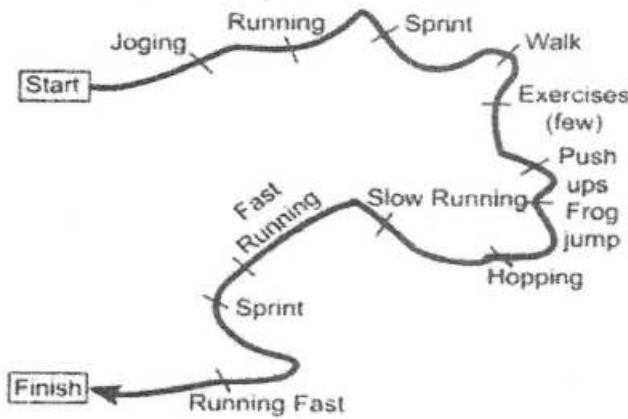


(a) From the given picture, it is identified as ………………….. training method.

(b) This training method was developed by ………….. .

(c) The above training method helps in increasing the ………….. .

(d) In the above training method, ………… plays an important role.

OR

The Swedish word meaning 'speed play' is ………….. .

Q.33    In relation to the pictures, answer the following questions.



(a) What is the name of the first injury?

(b) Among the above given pictures, soft tissue injury is shown in ……………. .

(c) What is the name of the second injury?

(d) Define greenstick fracture.

## SECTION – D

Q.34    What is diabetes? Draw stick diagrams of any one asana recommended to control diabetes along with its benefits and contraindications.

Q.35    What are the components of Rikli and Jones Test? Explain the procedure for administering any two test items.

Q.36    Discuss the types of endurance according to the nature and duration of activity.

Q.37    What is friction? Explain its types. How is friction advantageous or disadvantageous in the field of sports? Explain with suitable examples.

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