



# DELHI PUBLIC SCHOOL, BHILAI

Date : 22.09.2025

## MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : ENGINEERING GRAPHICS

M.M. : 70

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

### 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 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. Which is the included angle of a regular hexagon?  
(A) 30° (B) 60° (C) 90° (D) 120°
2. Name the projection with multiple views.  
(A) Perspective projection (B) Isometric projection  
(C) Orthographic projection (D) Oblique projection
3. Name the solid with apex.  
(A) Cone (B) Square prism (C) Triangular Prism (D) Sphere
4. Name the type of line which is used for dimensioning.  
(A) Small dash line (B) Chain line (C) Wavy line (D) Thin continuous line
5. Which is the correct sequence in case of first angle method of projection?  
(A) Observer, Plane of projection, Object (B) Observer, Object, Plane of projection  
(C) Object, Plane of projection, Observer (D) Object, Observer, Plane of projection
6. The angle between the flanks of a BSW thread profile is?  
(A) 60° (B) 90° (C) 55° (D) 45°
7. Which one of these is a temporary fastening?  
(A) Welding (B) Nut-Bolt (C) Riveting (D) Pasting
8. Which among these is used for power transmission?  
(A) Square thread (B) BSW thread  
(C) Metric thread internal (D) Metric thread external

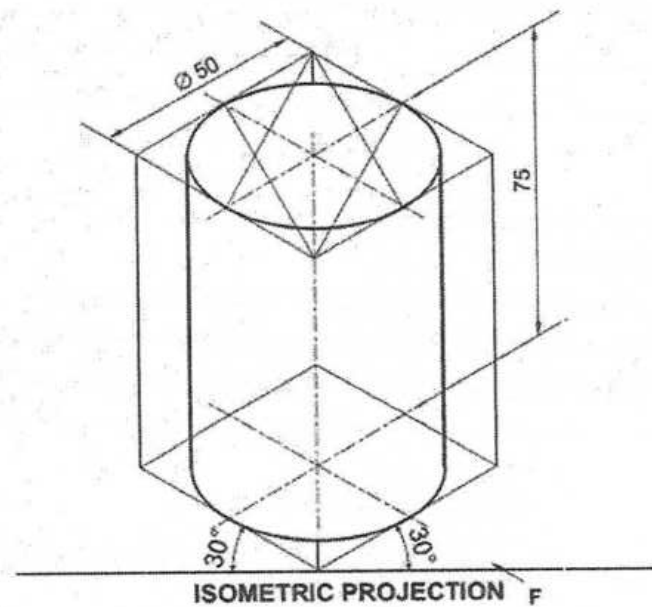
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:: 2 ::

Q 9 to Q 14 – Select the correct option corresponding to the orientation of the given Isometric Projection:

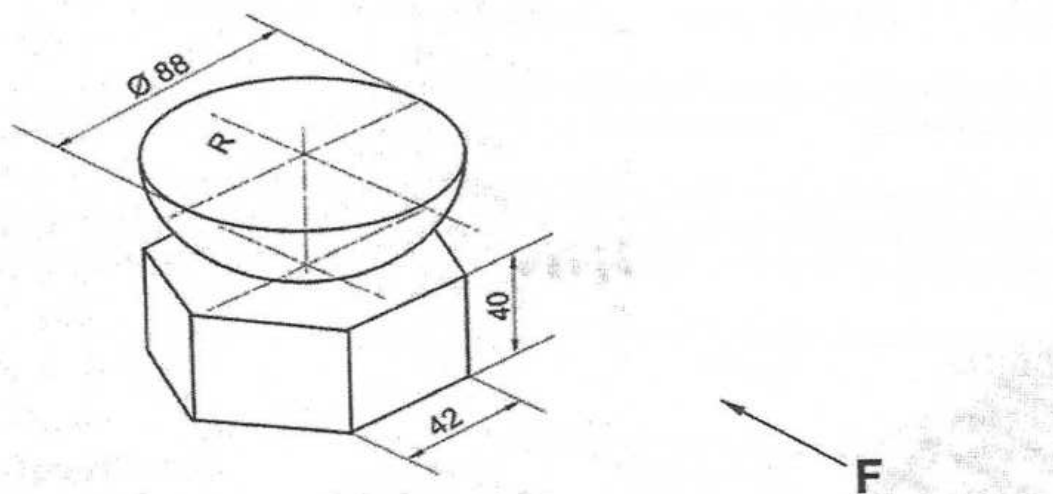
(1×6=6)

9.



- (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.

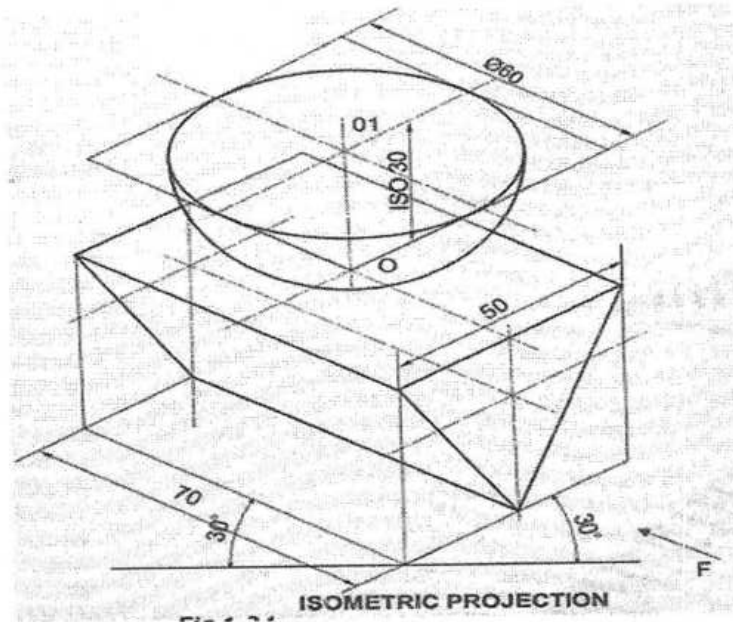
10.



- (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

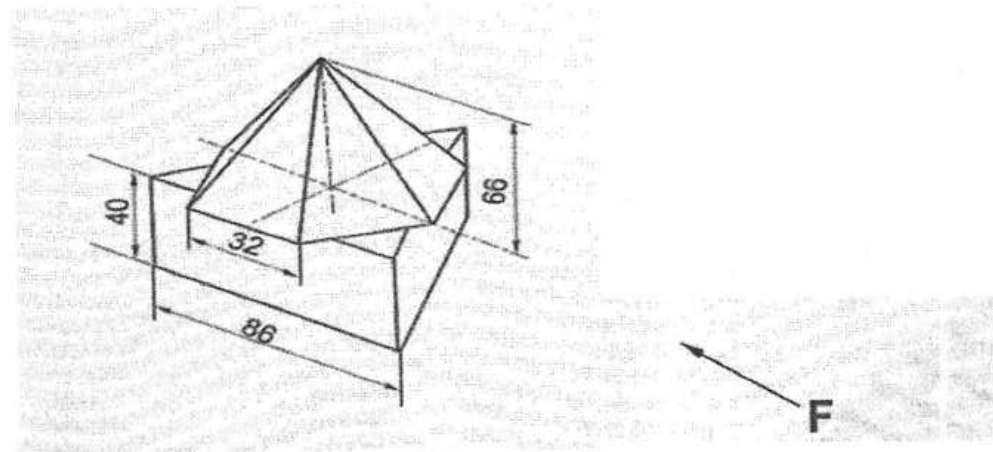
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11.



- (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.

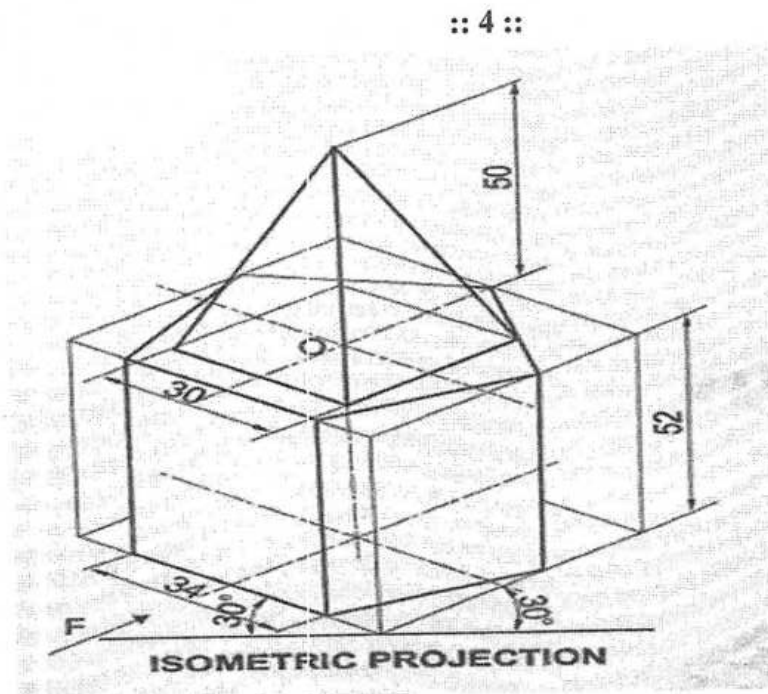
12.



- (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.

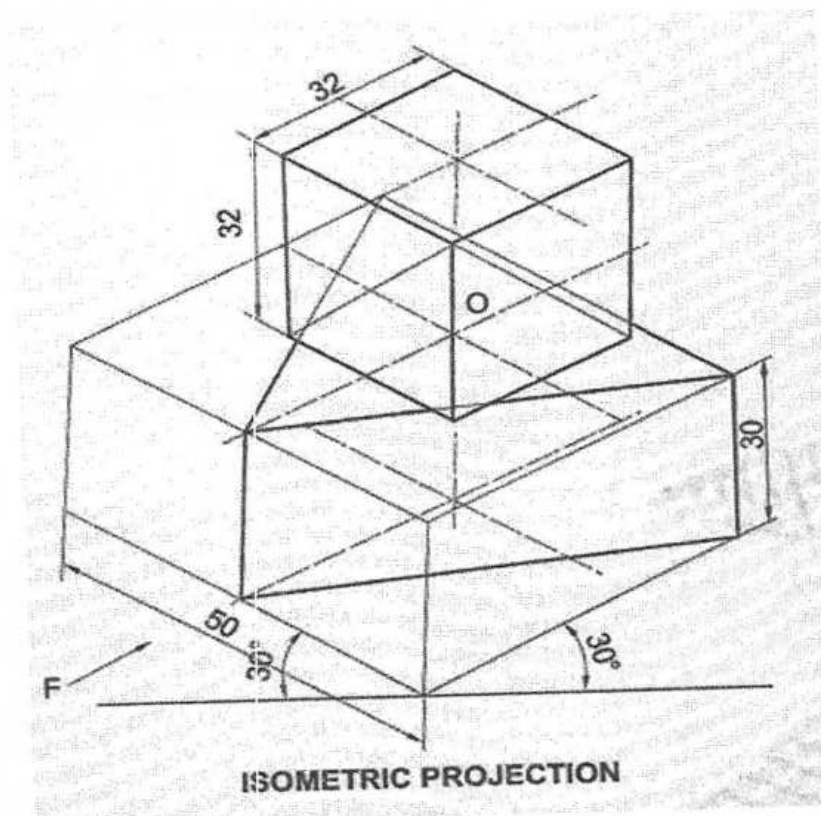
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13.



- (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.



- (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.

Contd...5

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:

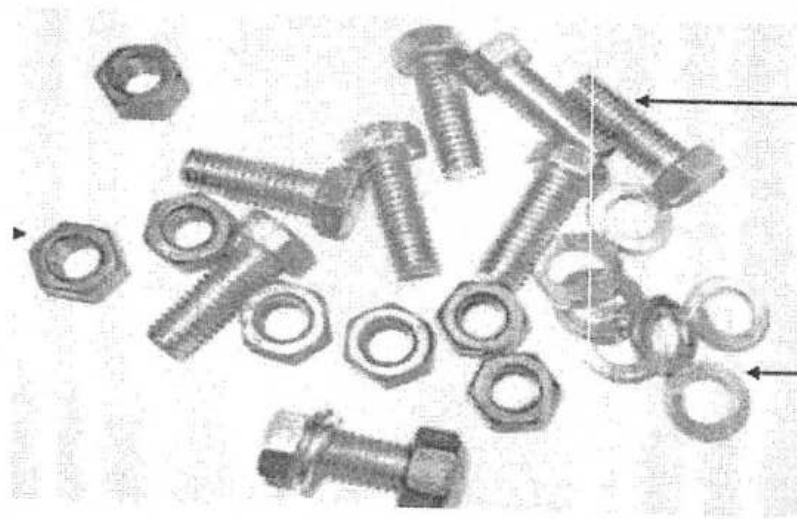
- (A) Both A and R are true and R is the correct explanation of A.
- (B) Both A and R are true and R is not the correct explanation of A.
- (C) A is true but R is false.
- (D) A is false and R is also false.

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.

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 nut-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.

(1×5=5)



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.

Contd...6

:: 6 ::

### 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 (Internal) with the pitch = 50mm. Give standard dimensions. (8)
- OR
- Draw to scale 1:1, the front view and side view of a Square headed bolt with diameter 25mm, keeping its axis parallel to both H.P. & V.P. Give standard dimensions. (8)
23. Figure -1 shows the assembly of a Bushed Bearing. Disassemble the parts correctly and then draw to scale 1 : 1 the following views of the following components. Keep the same position of both, Body and Bush, with respect to H.P. and V.P.
- (i) Body : (a) Front view, left half in section. (b) Top view. (8+7)
- (ii) Bush : (a) Full sectional front view. (b) Top view. (3+3)
- Print the titles of both and scale used. Draw the projection symbol. Give 6 important dimensions. (06)

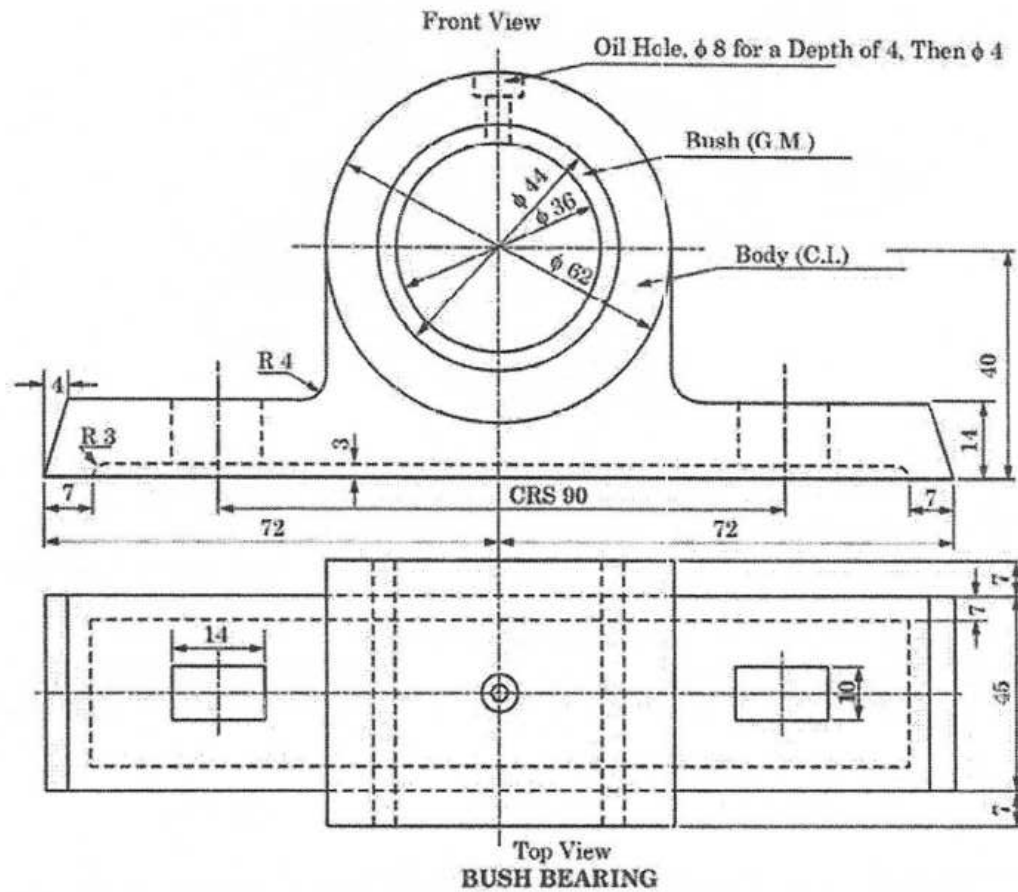


FIGURE-1

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**DELHI PUBLIC SCHOOL, BHILAI****Date : 01.09.2025****MIDTERM EXAMINATION 2025****Time : 50 Minutes****Class – XII****SUBJECT : GENERAL KNOWLEDGE****Max. Marks : 50**

Name of the student: \_\_\_\_\_ Class/Sec. \_\_\_\_\_ Roll No. \_\_\_\_\_  
 Invigilator's Signature \_\_\_\_\_ Marks Obtained : \_\_\_\_/50

**General Instructions:**

- All questions are compulsory. Answer all the questions by writing the correct option number in the space provided in capital letter only.
- There are 50 questions of 1 mark each.
- The question paper consists of 2 pages.

| S.No. | Questions                                                                                                                                                                                              | Option |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| (1)   | Goncha festival is celebrated in –<br>(A) Bijapur (B) Bastar (C) Raigarh (D) Kawardha                                                                                                                  |        |
| (2)   | Who proposed the law of independent migration of ions of an electrolyte?<br>(A) Raoult (B) Van't Hoff (C) Kohlrausch (D) Hess                                                                          |        |
| (3)   | The average salary of 5 employees is ₹ 50000. If the salary of one employee is ₹ 60000, what is the average salary of the remaining four employees?<br>(A) ₹ 45000 (B) ₹ 50000 (C) ₹ 47500 (D) ₹ 46000 |        |
| (4)   | In which Indian state is the Flamingo festival celebrated?<br>(A) Rajasthan (B) Assam (C) Manipur (D) Andhra Pradesh                                                                                   |        |
| (5)   | The organisms which cause diseases in plants and animals are called:<br>(A) Vectors (B) Pathogens (C) Insects (D) Worms                                                                                |        |
| (6)   | What is the span of time in which Census is collected in India?<br>(A) 10 years (B) 7 years (C) 11 years (D) 5 years                                                                                   |        |
| (7)   | If a cake is divided into 8 equal slices and you eat 3 slices, what portion of the cake is left?<br>(A) 3/8 (B) 4/8 (C) 5/8 (D) 6/8                                                                    |        |
| (8)   | Which ancient river significantly influenced trade and settlement patterns in early Chhattisgarh?<br>(A) Indravati (B) Shivnath (C) Hasdeo (D) Mahanadi                                                |        |
| (9)   | Which event marked the beginning of the Civil Disobedience Movement in 1930?<br>(A) Dandi March (B) Jallianwala Bagh (C) Round Table (D) Chauri Chaura                                                 |        |
| (10)  | Which river flows through Ayodhya?<br>(A) Gomti (B) Sarayu (C) Betwa (D) Tons                                                                                                                          |        |
| (11)  | 'The Edge of Time' is the biography of which of the following personalities?<br>(A) Kalpana Chawla (B) Sania Mirza (C) Priyanka Gandhi (D) Deepika Padukone                                            |        |
| (12)  | What is the launch date of the Aditya L1 mission?<br>(A) 14 Aug 2023 (B) 23 Aug 2023 (C) 02 Sep 2023 (D) 22 Sep 2023                                                                                   |        |
| (13)  | Which cleaning agent is also known as 'chloride of lime'?<br>(A) Caustic Soda (B) Baking Soda (C) Chlorine (D) Bleaching powder                                                                        |        |
| (14)  | The structural and functional unit of nervous system is called _____.<br>(A) Neuron (B) Nephron (C) Cerebrum (D) Cerebellum                                                                            |        |
| (15)  | Identify the wrong pair:<br>(A) Algeria:Algiers (B) Bahrain: Baku (C) Austria: Vienna (D) Belgium:Brussels                                                                                             |        |
| (16)  | Which of the following rivers is called the 'lifeline of Sarguja'?<br>(A) Shivnath (B) Mahanadi (C) Rihand (D) Sabari                                                                                  |        |
| (17)  | In which year was the National Thermal Power Plant (NTPC) established?<br>(A) 1975 (B) 1955 (C) 1987 (D) 1965                                                                                          |        |
| (18)  | In which country is the Headquarters of the Commonwealth Games Federation located?<br>(A) Ireland (B) Canada (C) England (D) Australia                                                                 |        |
| (19)  | Which Indian wrestler announced her retirement after being disqualified from the Olympics?<br>(A) Aman Sehrawat (B) Vinesh Phogat (C) Nisha Dahiya (D) Anshu Malik                                     |        |
| (20)  | Which nation is slated to host the 2026 Winter Olympic Games?<br>(A) France (B) China (C) South Korea (D) Italy                                                                                        |        |
| (21)  | If X is the brother of the son of Y's son, then how is X related to Y?<br>(A) Son (B) Brother (C) Grandson (D) Uncle                                                                                   |        |
| (22)  | Oranges are bought at 5 for Rs.10 and sold at 6 for Rs.15. The profit percentage is:<br>(A) 50% (B) 40% (C) 35% (D) 25%                                                                                |        |

|      |                                                                                                                    |                                                                                                                            |
|------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| (23) | Which of the following words can be formed using the letters of the word 'REVERENCE'?                              | (A) NEAR (B) SEER (C) PEER (D) NEVER                                                                                       |
| (24) | Which Indian athlete created history by winning India's first bronze medal in 200m race at 2024 Paris Paralympics? | (A) Preeti Pal (B) Palak Kohli (C) Karamjyoti Dalal (D) Ekta Bhyan                                                         |
| (25) | The term "Grand Slam" is most closely associated with which sport?                                                 | (A) Cricket (B) Tennis (C) Football (D) Badminton                                                                          |
| (26) | Who is the author of the classic, 'Pride and Prejudice'?                                                           | (A) Charlotte Bronte (B) Emily Bronte (C) Jane Austen (D) Mary Shelley                                                     |
| (27) | Which novel by Jhumpa Lahiri was adapted into a film directed by Mira Nair?                                        | (A) Interpreter of Maladies (B) The Namesake (C) Unaccustomed Earth (D) The Lowland                                        |
| (28) | Which company received approval to provide satellite internet in India?                                            | (A) OneWeb (B) Amazon Kuiper (C) Starlink (D) HughesNet                                                                    |
| (29) | Where was India's 1 MW indigenous green hydrogen power plant recently commissioned?                                | (A) Visakhapatnam Port (B) Mumbai Port (C) Kandla Port (D) Paradip Port                                                    |
| (30) | Tulsidas wrote the Ramcharitmanas in which regional language?                                                      | (A) Bhojpuri (B) Awadhi (C) Maithili (D) Braj                                                                              |
| (31) | Which body recommended the safeguard duty on steel?                                                                | (A) Ministry of Steel (B) NITI Aayog (C) Directorate General of Trade Remedies (DGTR) (D) Confederation of Indian Industry |
| (32) | When did Pope Francis pass away?                                                                                   | (A) April 13, 2025 (B) April 21, 2025 (C) March 21, 2025 (D) April 20, 2025                                                |
| (33) | When was the Simla Agreement signed?                                                                               | (A) 1971 (B) 1972 (C) 1973 (D) 1974                                                                                        |
| (34) | Which endangered species was recently released in Chennai?                                                         | (A) Hawksbill turtles (B) Leatherback turtles (C) Olive Ridley turtles (D) Green Sea turtles                               |
| (35) | In which year was the Taj Mahal declared a World Heritage Site by UNESCO?                                          | (A) 1973 (B) 1978 (C) 1983 (D) 1987                                                                                        |
| (36) | Which one of the following elements is associated with teeth disorder?                                             | (A) Chlorine (B) Bromine (C) Iodine (D) Fluorine                                                                           |
| (37) | Buddhism from India was introduced to which current region by Kasyapa Matanga?                                     | (A) China (B) South East Asia (C) Sri Lanka (D) Africa                                                                     |
| (38) | "Gayatri Mantra" has been mentioned in which of the Vedas?                                                         | (A) Rigveda (B) Samaveda (C) Yajurveda (D) Atharvaveda                                                                     |
| (39) | Which of the following represents Newton-meters per second?                                                        | (A) Ohm (B) Volt (C) Watt (D) Calorie                                                                                      |
| (40) | Which among the following radiations in Sunlight causes tanning and sunburn?                                       | (A) Ultraviolet (B) Visible (C) Infrared (D) Micro waves                                                                   |
| (41) | Who was announced as the first Indian ambassador of the International Table Tennis Federation (ITTF)?              | (A) Yuki Bhambri (B) Ashok Amritraj (C) Sharath Kamal (D) Sumit Nagal                                                      |
| (42) | Which Japanese animator has been honoured with the prestigious Ramon Magsaysay Award for 2024?                     | (A) Goro Fujita (B) Hiroyuki Imaishi (C) Hayao Miyazaki (D) Koji Nanke                                                     |
| (43) | Which state's tourism won the PATA Gold Award 2024 for innovative Holiday Heist campaign?                          | (A) Rajasthan (B) Gujarat (C) Kerala (D) Goa                                                                               |
| (44) | Which ancient art form discovered in Chhattisgarh's caves provides evidence of prehistoric human habitation?       | (A) Petroglyphs (B) Warli paintings (C) Madhubani art (D) Phad paintings                                                   |
| (45) | Which temple in Malhar is renowned for showcasing the early medieval architectural style of Chhattisgarh?          | (A) Bhoramdeo Temple (B) Rajiv Lochan Temple (C) Deor Temple (D) Pataleshwar Temple                                        |
| (46) | Which ministry has launched Swachh Survekshan Grameen (SSG) 2025, India's largest rural sanitation survey?         | (A) Ministry of Rural Development (B) Ministry of Panchayati Raj (C) Ministry of Agriculture (D) Ministry of Jal Shakti    |
| (47) | Which day is observed as World Milk Day every year?                                                                | (A) June 1 (B) June 2 (C) June 3 (D) June 4                                                                                |
| (48) | The Valley of Flowers National Park is located in which state?                                                     | (A) Uttarakhand (B) Himachal Pradesh (C) Arunachal Pradesh (D) Karnataka                                                   |
| (49) | Which countries are associated with the Tendulkar-Anderson Trophy?                                                 | (A) India-England (B) India-Australia (C) India-South Africa (D) India-Sri Lanka                                           |
| (50) | Which of the following protein is found in nails?                                                                  | (A) Actin (B) Histone (C) Keratin (D) Elastin                                                                              |



# DELHI PUBLIC SCHOOL, BHILAI

Date : 25.09.2025

MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : PHYSICAL EDUCATION (048)

M.M. : 70

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

## General Instructions:

- (1) This question paper consists of 5 sections and 37 questions.
- (2) **Section-A** consists of questions 1-18 carrying 1 mark each and are multiple choice questions. All questions are compulsory.
- (3) **Section-B** consists of questions 19-24 carrying 2 marks each and are very short answer types and should not exceed 60-90 words. Attempt any five.
- (4) **Section-C** consists of questions 25-30 carrying 3 marks each and are short answer types and should not exceed 100-150 words. Attempt any five.
- (5) **Section-D** consists of questions 31-33 carrying 4 marks each and are Case Studies. There is internal choice available.
- (6) **Section-E** consist of questions 34-37 carrying 5 marks each and are long answer types and should not exceed 200-300 words. Attempt any three.

## SECTION A [Multiple Choice Questions (MCQs)]

(1x18=18)

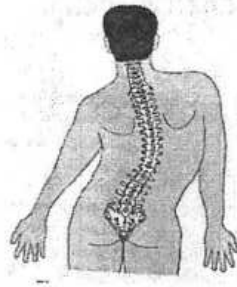
- Q.1** If there are 23 team in knock-out tournament the number of Byes will be: (1)  
 (A)  $\frac{N(N-1)}{2}$  (B)  $\frac{N-1}{2}$  (C) 9 (D) 17
- Q.2** Later childhood stage is between : (1)  
 (A) 1 to 2 years (B) 2 to 6 years (C) 7 to 15 years (D) 13 to 19 years
- Q.3** The symptoms of Diabetes are : (1)  
 (A) Fatigue and prolonged healing time (B) Pain at back  
 (C) Excess of fat in body (D) Coughing
- Q.4** When did first Paralympics played? (1)  
 (A) In 1960 at Rome (B) In 1968 at Paris  
 (C) In 1976 at London (D) In 1992 at Barcelona
- Q.5** Defensive food consist of: (1)  
 (A) Proteins (B) Carbohydrates (C) Vitamins and Minerals (D) All of the above
- Q.6** Match List I (No. of teams in knock-out tournament) with List II (No. of Byes) (1)

| S.No. | List I   |       | List II |
|-------|----------|-------|---------|
| (1)   | 13 teams | (i)   | 9 Byes  |
| (2)   | 19 teams | (ii)  | 3 Byes  |
| (3)   | 23 teams | (iii) | 27 Byes |
| (4)   | 37 teams | (iv)  | 13 Byes |

- (A) (ii), (i), (iv), (iii) (B) (ii), (iii), (i), (iv)  
 (C) (ii), (iv), (i), (iii) (D) (ii), (iv), (iii), (i)
- Q.7** In which Eating Disorder a person binges and purges? (1)  
 (A) Anorexia Nervosa (B) Bulimia Nervosa (C) Pitfall of Dieting (D) Food Intolerance
- Q.8** Paschimottanasana is performed: (1)  
 (A) Bending back (B) Bending forward and holding  
 (C) Bending sideward (D) Long breathing
- Q.9** The special Olympic Games are meant for: (1)  
 (A) All players (B) Disabled Person with Physical, Sensory disability  
 (C) Mental, Intellectual disability (D) Deaf athletes
- Q.10** Roughage is \_\_\_\_\_ food. (1)  
 (A) Macronutrient (B) Micronutrient (C) Non-nutritive (D) Nutritive
- Q.11** Which of these is a Combination Tournament? (1)  
 (A) League cum Knock-out (B) Knock-out cum League  
 (C) Both (A) and (B) (D) None of these

Contd...2

**Q.12** The deformity shown in the figure is: (1)



- (A) Lordosis      (B) Kyphosis      (C) Hollow Back      (D) Scoliosis

**Q.13** Which asana is helpful in maintaining normal Blood Pressure ? (1)

- (A) Shavasana and Makrasana      (B) Dhanurasana and Chakrasana  
(C) Shalabhasana and Yog mudra      (D) Vakrasana and Ushtrasana

**Q.14** Which of the following is not a Disability ? (1)

- (A) Cognitive impairment      (B) Autism Spectrum Disorder  
(C) Vision impairment      (D) Physical impairment

**Q.15** The vitamin soluble in water: (1)

- (A) Vitamin C and B      (B) Vitamin K and E  
(C) Vitamin D and A      (D) All of the above

**Q.16** In Cyclic Tournament, the teams are rotated: (1)

- (A) Clockwise      (B) Anti-clockwise      (C) Up to down      (D) All of them

**Q.17** Pes planus deformity is also known as: (1)

- (A) Knock-Knees      (B) Bow-Legs      (C) Flat-Foot      (D) Scoliosis

**Q.18** Given below are two statements, one of which is labelled as Assertion (A) and the other is labelled as Reason (R).

**Assertion (A) :** In obesity there is an increase of insulin causing excess of fat storage. (1)

**Reason (R) :** Obese person is more likely to be unfit to do strenuous activity.

- (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.

**SECTION B [Attempt any 5 questions]**

**(2x5=10)**

**Q.19** What is the meaning of the word Intramural ? (2)

**Q.20** Suggest any two exercises for correcting flat-foot. (2)

**Q.21** Write any two benefits of katichakrasana. (2)

**Q.22** Mention any two criteria of participating in Deaflympics. (2)

**Q.23** What is the meaning of Inclusive education ? (2)

**Q.24** Explain the importance of fluid intake during a competition. (2)

**SECTION C [Attempt any 5 questions]**

**(3x5=15)**

**Q.25** How is a Run for Fun different from a Health Run? (3)

**Q.26** How has women's participation in sports changed in recent times? (3)

**Q.27** Which asanas are helpful in reducing obesity? Explain the procedure of any one asana. (3)

**Q.28** Explain any three strategies to make physical activities accessible for CWSN. (3)

**Q.29** What are some steps one can take to maintain a healthy body weight ? (3)

**Q.30** Write the procedure of Anulom – Vilom. (3)

SECTION D [Internal Choices Available]

(4x3=12)

Q.31 In relation to the pictures, answer the following questions:



Figure A



Figure B



Figure C

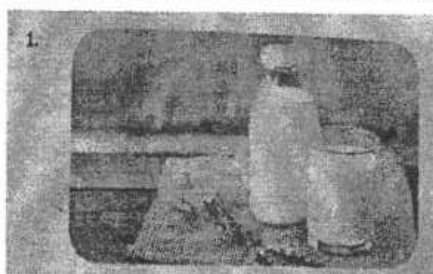
- (a) Logo shown in picture \_\_\_\_\_ refers to Special Olympic. (1)  
 (b) Who was the founder of Special Olympics? (1)  
 (c) How many countries participated in the first Paralympic Games in Rome (Italy) in 1960 ? (1)  
 (d) The motto of Paralympics is \_\_\_\_\_. (1)

OR

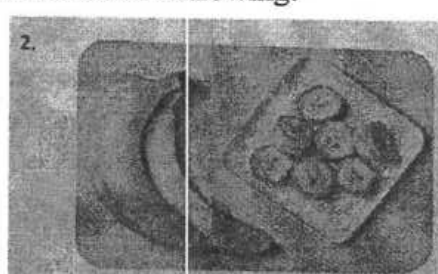
- (d) Logo shown in picture \_\_\_\_\_ refers to Paralympics.

32. Identify the food item and the micromineral found in the following:

(1x4=4)



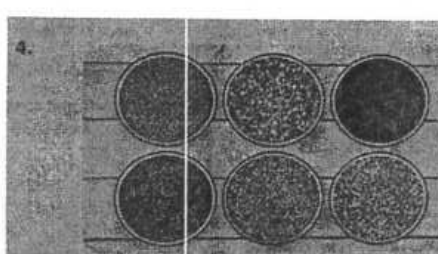
1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_

33. Given below is the tournament fixture procedure of national competition.

|     |     |     |     |     |     |     |  |  |
|-----|-----|-----|-----|-----|-----|-----|--|--|
| 1-2 |     |     |     |     |     |     |  |  |
| 1-3 | 2-3 |     |     |     |     |     |  |  |
| 1-4 | 2-4 | 3-4 |     |     |     |     |  |  |
| 1-5 | 2-5 | 3-5 | 4-5 |     |     |     |  |  |
| 1-6 | 2-6 | 3-6 | 4-6 | 5-6 |     |     |  |  |
| 1-7 | 2-7 | 3-7 | 4-7 | 5-7 | 6-7 |     |  |  |
| 1-8 | 2-8 | 3-8 | 4-8 | 5-8 | 6-8 | 7-8 |  |  |

On the basis of the above fixture, answer the following questions:

- (a) Which method is shown in the picture to draw fixture in league tournament? (1)  
 (b) What is the formula to calculate number of matches ? (1)  
 (c) In league tournament winner will be decided on the bases of \_\_\_\_\_. (1)  
 (d) If 7 teams participate in a league tournament. \_\_\_\_\_ number of matches will be played. (1)

OR

- (d) League Tournament is also known as \_\_\_\_\_.

SECTION E [Attempt any three questions]

(5x3=15)

- Q.34 What is a knockout tournament? Draw a fixture of 21 teams on a knockout basis. (5)  
 Q.35 Discuss the female athletes triad in detail. (5)  
 Q.36 List down **any four** asanas used for prevention of asthma. Explain the procedure for administration of any one of them with the help of a stick diagram. (5)  
 Q.37 What do you mean by balanced diet. Explain **any four** essential elements of diet. (5)



# DELHI PUBLIC SCHOOL, BHILAI

Date : 22.09.2025

## MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : BIOLOGY

M.M. : 70

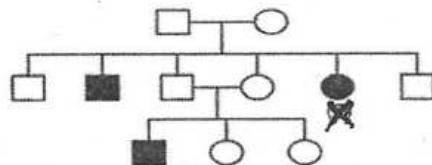
Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

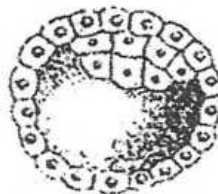
### General Instructions:

01. All questions are compulsory.
02. This question paper has **five sections** and **33 questions**. All questions are compulsory.
03. Section – A has 16 questions of 1 mark each; Section – B has 5 questions of 2 marks each; Section – C has 7 questions of 3 marks each; Section – D has 2 case-based questions of 4 marks each; and Section – E has 3 questions of 5 marks each.
04. 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.
05. Wherever necessary, neat and properly labelled diagrams should be drawn.

### SECTION – A

01. A female was incapable of producing ovum but can provide suitable environment for fertilization. Out of the option given below. Select the correct method suggested by the doctors for successful results  
(A) IUD (B) GIFT (C) IUI (D) ICSI (1)
02. Choose the option that correctly describes the gynoecium of Michelia  
(A) Bicarpellary, Syncarpous (B) Bicarpellary, Apocarpous  
(C) Multicarpellary, Apocarpous (D) Multicarpellary, Syncarpous (1)
03. The inoculum is added to fresh milk in order to convert milk into curd, the term inoculum here refers to  
(A) A starter rich in protein (B) A starter rich in B12  
(C) A starter containing millions of LAB (D) An aerobic digester (1)
04. In order to activate the immune system and destroy tumour which of the following are given to the cancer patients  
(A)  $\alpha$ -Inter ferons (B) Histamine (C) Interleukins (D) Morphine (1)
05. When two hybrids  $rTt$  and  $Rrtt$  are crossed. What would be the phenotypic ratio for offspring  
(A) 3:1 (B) 1:2:1 (C) 9:3:3:1 (D) 1:1:1:1 (1)
06. Remnants of nucellus are persistent during seed development in  
(A) Pea (B) Wheat (C) Black pepper (D) Ground nut (1)
07. What should be the genotype of the indicated member (X)  
  
(A) AA (B) Aa  
(C) XY (D) aa (1)
08. To produce 1600 seeds, the number of meiotic divisions required will be  
(A) 800 (B) 2000 (C) 1600 (D) 1000 (1)
09. Identify the incorrect pair from the following with respect to angiosperm  
(A) PEN –  $3n$  (B) Antipodal –  $2n$   
(C) Cells of nucellus of ovule –  $2n$  (D) Vegetative cell of male gametophyte –  $n$  (1)
10. Methanogens grow anaerobically on cellulosic material. The products produced during this kind of growth is/are  
(A) Methane (B) Methane and Hydrogen  
(C) Methane and Carbon dioxide (D) Methane, Carbon dioxide and Hydrogen (1)

11.



Identify the human development stage shown above as well as the related right place of its occurrence in a normal pregnant woman and select the right option for two together.

- |    | Development stage | Site of occurrence               |
|----|-------------------|----------------------------------|
| a. | Blastocyst        | Uterine wall                     |
| b. | Blastocyst        | Starting point of fallopian tube |
| c. | Blastula          | End part of fallopian tube       |
| d. | Late Morula       | Middle part of fallopian tube    |

(1)

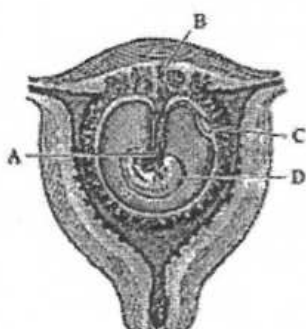
12. Ringworms are caused by  
 I. Wuchereria      II. Microsporium      (III) Haemophilus      (IV) Epidermophyton  
 (A) I and II      (B) II and III      (C) II and IV      (D) III and IV      (1)

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

- (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of 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.
13. **Assertion (A) :** Organ transplantation patients are given immune suppressive drugs.  
**Reason (R) :** Transplanted tissues have antibody which stimulate the specific immune response of the recipient.      (1)
14. **Assertion (A) :** Government of India legalised MTP in the year 1981.  
**Reason (R) :** It is mainly meant to get rid of unwanted pregnancies.      (1)
15. **Assertion (A) :** An acrosomal reaction must take place before a sperm fertilize a secondary oocyte.  
**Reason (R) :** Acrosome at the head of sperm is derived from mitochondrion of spermatid.      (1)
16. **Assertion (A) :** Continued self pollination in flowering plants results in inbreeding depression.  
**Reason (R) :** Flowering plants have developed many methods to discourage self-pollination.      (1)

### Section – B

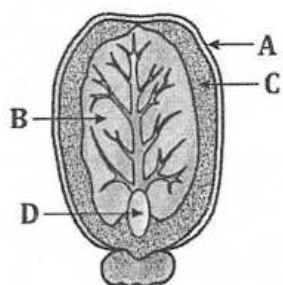
17.



**Answer the following questions.**

- (i) Name A, B, C and D. What does the above figure depict.      (2)  
 (ii) State the function of B in the development of the above.

18.



- (a) Name the plant from which the above seed is obtained.      (2)  
 (b) Label A, B, C and D. Write the function of A and C.

19. Can a child have blood group O if his parents have blood group A and blood group B. Explain.      (2)

**OR**

What is the inheritance pattern observed in the size of starch grain and seed shape of *Pisum sativum* and workout the monohybrid cross showing the above traits. How does this pattern of inheritance deviate from Mendel's Law of dominance?

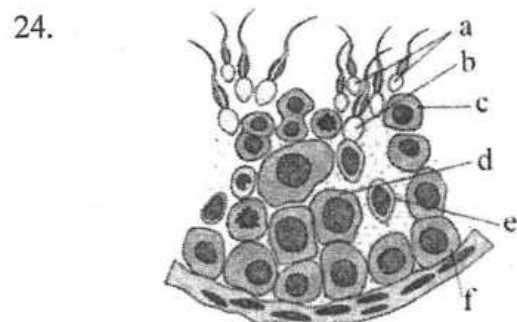
20. How and at what stage does plasmodium enters into a human body? Explain the stages of plasmodium life cycle in human body.      (2)
21. Following table gives certain terms associated with ART. Fill in the spaces a, b, c and d.      (2)

|            |                                                                         |
|------------|-------------------------------------------------------------------------|
| IVF and ET | a                                                                       |
| b          | Introduction of zygote/embryo with blastomeres into fallopian tube      |
| c          | Introduction of ova of a donor into the fallopian tube                  |
| d          | Introduction of semen from the husband or healthy donor into the uterus |

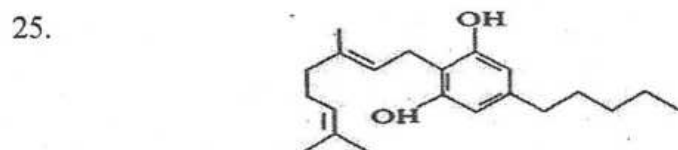
**Section – C**

22. A non haemophilic couple was informed by their doctor had there is a possibility of a haemophilic child be born to them. Explain on which basis the doctor conveyed this information. Give the genotype and phenotype of all the children who would be born to them. (3)

23. (a) Name a disorder, give the karyotype and write three symptoms a human suffers from as a result of monosomy of the sex chromosome.  
(b) What causes phenyl ketonuria? (3)



- (a) What does the above figure depict?  
(b) Label a, b, c, d, e and f.  
(c) What is the number of chromosome in Primary spermatocyte and spermatids.  
(d) Explain spermiogenesis and Spermiation. (3)



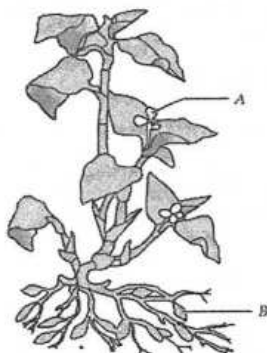
Given above is the skeletal structure of a drug.

- (a) Which group a drugs does this represent and which organ of the body will be affected by these drugs.  
(b) Name the source of this drug.  
(c) What are the modes of consumption and state its effect on human body. (3)
26. Explain the following by giving reasons.  
(a) Pollen grains are well preserved as fossils.  
(b) Apple is a false fruit but mango is a true fruit.  
(c) Endosperm development proceeds embryo development in angio spermiic seed. (3)
27. State the medicinal value and the bioactive molecule produced by the following.  
(a) Streptococcus (b) Monascus (c) Trichoderma  
Draw a well labelled diagram of an immuno globulin molecule. (3)
28. Study the following flow chart. Name the hormones A, E and C hormones involved at each stage. Explain their function.

*Hypothalamus* — *A* — *Pituitary gland* — *E* — *Testis* — *C* — *Sperms*

**OR**

(Flowering plants have evolved an amazing array of adaptations to achieve pollinations.

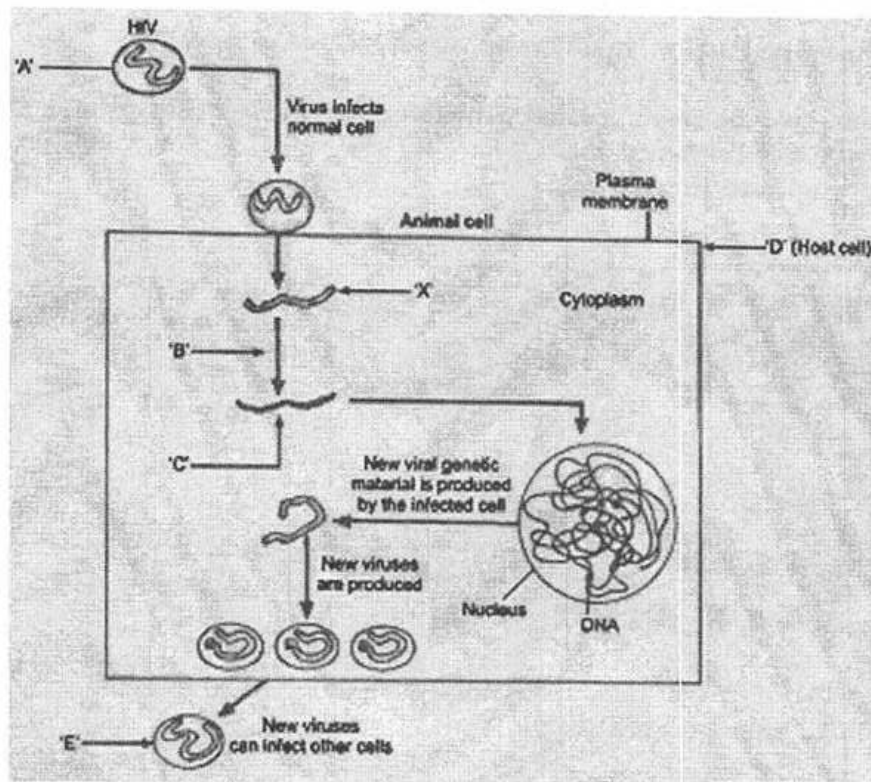


- (a) Identify A and B.  
(b) How does A differ from B?  
(c) B is advantageous or disadvantageous. Explain. (3)

Section – D

Case based study:

29.



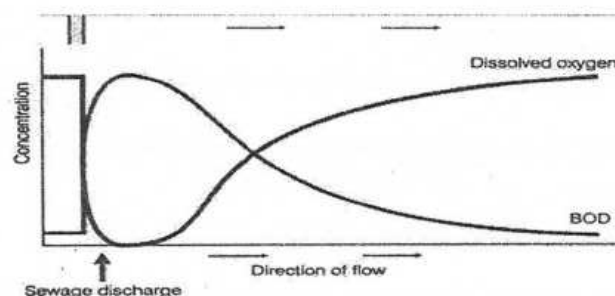
(4)

Study the diagram showing replication of HIV in humans and answer the following:

- Write the chemical nature of coat A and Name the disease the patient is suffering
  - Name B, C, D and E.
  - Name the test which the person has to undergo to diagnose HIV. How is the disease treated?
- OR
- How the HIV cause deficiency in the immune system of the infected person?

30. Study the graph given below and answer the questions that follow?

(4)



- What is the relationship between dissolved oxygen and biochemical oxygen demand?
- How will this affect aquatic life in river?
- Name the factors which affect dissolved oxygen.

OR

- Does the sewage treatment require aerobic conditions all through out? Justify your answer.

Section – E

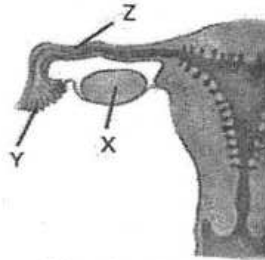
- Explain the mechanism of sex determination in honey bee.
- What is female heterogamety ? Give an example.

(5)

OR

- A homozygous tall pea plant with green seed is crossed with a dwarf pea plant with yellow seed.
- What would be the phenotype and genotype of  $F_1$  generation?
  - Work out the phenotypic ratio of  $F_2$  generation with the help of Punnett Square.

32. (a) The given diagram shows a part of the human female reproductive system.



- (i) Identify the labelled part X, Y and Z. Also name the gamete cells that would be present in 'X' if taken from a newborn baby.
  - (ii) What is the function of Y?
  - (iii) Write the events that take place in Z.
- (b) Name the muscular and the glandular layers of human uterus. Which one of these layers undergoes cyclic changes during menstrual cycle? Name the hormone essential for the maintenance of this layer.

(5)

**OR**

Write the help of flow sheet diagram explain oogenesis. How is placenta formed during embryonic development.

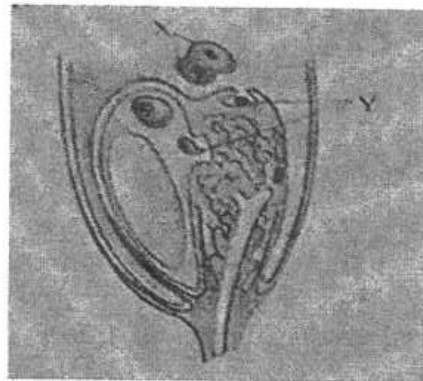
33. Explain the following terms with an example

- |                 |                  |                   |
|-----------------|------------------|-------------------|
| (a) Apomixis    | (b) Polyembryony | (c) Parthenocarpy |
| (d) Geitonogamy | (e) Xenogamy     |                   |

(5)

**OR**

- (a) Refer to the given figure and answer the following questions:



- (i) Identify the labelled parts X and Y.
  - (ii) Write the role of X and Y.
  - (iii) Draw a labelled diagram of the prior stage of the given figure.
- (b) Why is fertilisation in an angiosperm referred to as double fertilisation? Mention the ploidy of the cells involved.

~~~~~



# DELHI PUBLIC SCHOOL, BHILAI

Date : 22.09.2025

MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : COMPUTER SCIENCE

M.M. : 70

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

## General Instructions:

All questions are compulsory. However, internal choices have been provided in some questions.

The paper is divided into 5 sections: Section A, B, C, D, and E.

Section A, consists of 21 questions (1 to 21). Each question carries 1 mark.

Section B, consists of 7 questions (22 to 28). Each question carries 2 marks.

Section C, consists of 3 questions (29 to 31). Each question carries 3 marks.

Section D, consists of 4 questions (32 to 35). Each question carries 4 marks.

Section E, consists of 2 questions (36 and 37). Each question carries 5 marks.

## SECTION A (21x1 = 21 marks)

1. What is the output of the following expression ?  
`print(float(5+int(4.39+2.1)%2))`  
(A) 5.0 (B) 5 (C) 8.0 (D) 8
2. What is printed by the following Python code?  
`print(list(range(3)))`  
(A) [0,1,2,3] (B) [1,2,3] (C) [0,1,2] (D) 0,1,2
3. Which of the following will give an error if D1 is shown below?  
`D1={'a':1, 'b':2, 'c':3}`  
(A) `print(len(d1))` (B) `print(d1.get('b'))` (C) `d1['a']=5` (D) None of these
4. Which of the following is the correct identifier?  
(A) with (B) finally (C) class (D) sec
5. If you try to multiply by a variable a and a has a string value, ..... exception is raised.  
(A) ZeroDivisionError (B) ValueError  
(C) NameError (D) IOError
6. To insert five into the third position in list1, we use \_\_\_\_\_ command.  
(A) `list1.insert(3, 5)` (B) `list1.append(3, 5)`  
(C) `list1.insert(2, 5)` (D) `list1.add(3, 5)`
7. To read the remaining lines of the file from a file object infile, we use \_\_\_\_\_.  
(A) `infile.read(2)` (B) `infile.read()`  
(C) `infile.readline()` (D) `infile.readlines()`
8. What is the result of `math.trunc(3.1)`?  
(A) 3.0 (B) 3 (C) 0.1 (D) 1
9. Which of the following is a mode of both writing and reading in binary format in file?  
(A) `wb+` (B) `w` (C) `wb` (D) `w+`
10. Which of the following is not a DDL command?  
(A) alter (B) drop (C) create (D) select
11. Which aggregate function can be used to find the cardinality of a table?  
(A) `sum()` (B) `count()` (C) `avg()` (D) `max()`
12. What will be returned by the given query?  
`SELECT Round(153.669, 2);`  
(A) 153.60 (B) 153.66 (C) 153.67 (D) 153.70
13. Predict the output of the following query :  
`SELECT MOD(9, 0);`  
(A) 0 (B) NULL (C) NaN (D) 9
14. Suppose you are asked to display all the names using SQL command which have 'a' as their second character, then which query pattern you will use?  
(A) `__a%` (B) `a_` (C) `a%` (D) `_%a`

15. Which SQL commands are used for manipulation / modifying the data present in the table?  
(A) DML (B) DDL (C) DCL (D) DQL
16. The term ..... is used to refer to a field in a table.  
(A) Tuple (B) Field (C) Instance (D) Attribute
17. What will be the output of the following code snippet?  
message= "World Peace"  
print(message[-2::-2])  
(A) lo ey (B) eace (C) orld (D) Worl
18. If a table has one Primary key and two alternate keys, how many Candidate keys will this table have?  
(A) 1 (B) 2 (C) 3 (D) 4
19. Which of the following expressions evaluates to False?  
(A) not(True) and False (B) True or False  
(C) not(False and True) (D) True and not(False)

Questions 20 and 21 are Assertion (A) and Reason (R) based questions. Mark the correct choice as:

- (A) Both A and R are true, and R is the correct explanation for A.
  - (B) Both A and R are true, and R is not the correct explanation for A.
  - (C) A is True, but R is False.
  - (D) A is False, but R is True.
20. **Assertion (A):** Every small unit in a Python programming statement is termed as a token.  
**Reasoning (R):** Tokens are not interpreted but are an integral part of designing the code.
  21. **Assertion (A):** A foreign key is an attribute whose value is derived from the primary key of another relation.  
**Reasoning (R):** A foreign key is used to represent the relationship between tables or relations.

#### SECTION B (7x2 = 14 marks)

22. Define the term Degree, Cardinality. [2]
23. Predict the output of the Python code given below: [2]  

```

value = 30
for val in range(0,value)
    if val%5==0:
        print(val+5)
    elif val/5==6:
        print(val+15)
    else:
        print(val*10)

```
24. Differentiate between **Local variable** and **global variable** with suitable examples. [2]
25. Give two commands of TCL in SQL. [2]
26. Differentiate between **sysdate()** and **now()** with suitable example. [2]
27. Write any two examples of constraints use with attributes of SQL table. [2]
28. Differentiate between COUNT() and COUNT(\*) functions in SQL with appropriate example. [2]

#### SECTION C (3x3 = 9 marks)

29. A) Write a Python function **DISP\_OUTPUT()** that displays all the words that starts and ends with 'A' from a text file "eng.txt".  

**OR**

 B) Write a Python function **SEARCH\_DISPLAY()** that finds and displays all the words longer than 7 characters from a text file "PythonPDF.txt". [3]

:: 3 ::

30. Predict the output of the following code:
- ```
d = {"Rose": 25, "Lavender": 70, "Jasmine": 80}
str1 = ""
for key in d:
    str1 = str1 + str(d[key]) + "@" + "\n"
str2 = str1[:-1]
print(str2)
```

OR

- Predict the output of the following code:
- ```
line=[14,29,32,16,41]
for I in line:
    for j in range(1, I%5):
        print(j, '#', end = " ")
    print()
```

[3]

31. Write SQL commands for the given queries using the table STUDENTS:

| ROLL_NO | STUDENT_NAME | HOUSE  | ENG | PHY | CHEM | MATHS | CS   |
|---------|--------------|--------|-----|-----|------|-------|------|
| 1       | RAKESH       | CHENAB | 70  | 66  | 69   | 99    | 88   |
| 2       | SONAKSHI     | GANGES | 88  | 95  | 75   | 82    | 76   |
| 3       | SHAKEEL      | CHENAB | 83  | 91  | 83   | 55    | NULL |

- To find the min, max and average marks of ENG house-wise.
- To count the number of students in each house.
- To count the number of students absent in CS.

[3]

**SECTION D (4x4 =16 marks)**

32. A table, named **TEACHERS**, in the **CBSE database**, has the following structure:

```
Teacher_ID int(11)
Subject-Taught varchar(15)
Class-Taught int(11)
Experience int(11)
```

Write the following Python function to perform the specified operation:

**AddAndDisplay():** To input details of teachers and store it in the table **TEACHERS**. The function should then retrieve and display all records from the **TEACHERS** table where the Experience is more than 10 years. Assume for Python-Database connectivity: Host: localhost, User: DPS, Password: STAFF, database = 'CBSE'.

[4]

33. Saman has been entrusted with the management of Law University Database. He needs to access some information from **FACULTY** and **COURSES** tables for a survey analysis. Help him extract the following information by writing the desired SQL queries as mentioned below.

**Table: FACULTY**

| F_ID | FName | LName      | Hire_Date  | Salary |
|------|-------|------------|------------|--------|
| 102  | Rajan | Mishra     | 12-10-2000 | 12000  |
| 103  | Tarun | Vyas       | 24-12-2002 | 8000   |
| 104  | Komal | Soni       | 18-5-2003  | 74000  |
| 105  | Reena | Malhotra   | 11-9-2004  | 81000  |
| 106  | Teena | Srivastava | 05-06-2006 | 80000  |

**Table: COURSES C\_ID**

| C_ID | F_ID | CName             | Fees  |
|------|------|-------------------|-------|
| C21  | 102  | Grid Computing    | 40000 |
| C22  | 106  | System Design     | 16000 |
| C23  | 104  | Computer Security | 8000  |
| C24  | 106  | Human Biology     | 15000 |
| C25  | 102  | Computer Network  | 20000 |
| C26  | 105  | Visual Basic      | 6000  |

- To display complete details (from both the tables) of those Faculties whose salary is less than 12000.
- To display the details of courses whose fees are in the range of 20000 to 50000 (both values included).
- To increase the fees of all courses by 500 which have "Computer" in their Course names.
- (A) To display names (FName and LName) of faculty taking System Design.

OR

- (B) To display the Cartesian Product of these two tables.

[4]

34. Write Python function **DATE\_DISPLAY(dd,mm,yy)** to display as shown below (function should be valid for any date):  
Function call: **DATE\_DISPLAY(22,12,2024)**  
Output: 22<sup>nd</sup> December 2025. [4]
35. Explain the use of the following Python functions with examples:  
a. **join()** b. **randint()** c. **split()** d. **range()** [4]

**SECTION E (2x5 = 10 marks)**

36. Arya is a manager working in a recruitment agency. She needs to manage the records of various candidates. For this, she wants the following information of each candidate to be stored:  
**Candidate\_ID – integer**  
**Candidate\_Name – string**  
**Qualification – string**  
**Experience – float**
- You, as a programmer of the company, have been assigned to do this job for Arya.
- (a) Write a function to input the data of a candidate and append it to a binary file "**candidates.bin**".
- (b) Write a function to update the data of candidates whose experience is more than 5 years and change their designation to "General Manager".
- (c) Write a function to read the data from the binary file and display the data of all those candidates who are not "General Manager". [1+2+2=5]
37. The structure of the SQL table is as shown below:

Table: **LIBRARY**

|           |          |
|-----------|----------|
| ACCNO     | INT(11)  |
| BOOK_NAME | CHAR(20) |
| AUTHOR    | CHAR(20) |
| PRICE     | FLOAT    |
| PUBLISHER | CHAR(30) |

- a. Write SQL command to insert new column **PUB\_DATE** of type **DATE**.
- b. Write SQL command to assign **ACCNO** as the primary key.
- c. Write a SQL command to convert all **BOOK\_NAME** into upper case letters.
- d. Write SQL command to change the column name **ACCNO** to **ACC\_NO**.
- e. Write SQL command to delete all records from **ACCNO** 101 to 110. [1x5=5]



Date : 22.09.2025

MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : ECONOMICS

M.M. : 80

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

**General instructions-**

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

**SECTION-A (MACROECONOMICS)**

- Q.1 If NFIA is positive – (1)
- (A)  $NDP_{FC} = NNP_{FC}$  (B)  $NDP_{FC} > NNP_{FC}$
- (C)  $NDP_{FC} < NNP_{FC}$  (D) None of these
- Q.2 **Assertion (A)** : Credit creation power of commercial banks is indirectly proportional to Legal reserve ratio. (1)
- Reason (R)**: When LRR is increased, the overall liquidity of commercial banks decreases. (1)
- Choose the correct alternative for the above –
- (A) Both assertion and reason are true and reason is the correct explanation of the assertion.
- (B) Both assertion and reason are true but reason are not the correct explanation of assertion.
- (C) Assertion is true but reason is false
- (D) Both assertion and reason is false
- Q.3 **Assertion (A)** : Commercial banks are significant source of money supply in the economy. (1)
- Reason (R)** : Commercial banks cannot issue notes and coins. (1)
- Choose the correct alternative for the above-
- (A) Both assertion and reason are true and reason is the correct explanation of the assertion.
- (B) Both assertion and reason are true but reason are not the correct explanation of assertion.
- (C) Assertion is true but reason is false
- (D) Both assertion and reason is false
- Q.4 Due to setting -up of a factory near a residential area, the locality is experiencing an increase in .....but decrease in..... (1)
- (A) Welfare, GDP (B) GDP, Welfare
- (C) Equality, Welfare (D) GDP, employment opportunity
- Q.5 Which of the following statement is/are correct? (1)
- I. Unexpected obsolescence is a component of depreciation.
- II. Inventory is a stock variable
- (A) Only I (B) Only II (C) Both I and II (D) None of these
- Q.6 **Statement I** - All capital goods are producer goods but not all producers' goods are capital goods. (1)
- Statement II** - Capital goods are used for longer periods, where as producer goods can be either intermediate or capital good. (1)
- Alternatives:**
- (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.
- Q.7 Market price includes the impact of: (1)
- (A) Direct taxes (B) Indirect taxes (C) Subsidies (D) Both (B) and (C)
- Q.8 When nominal GDP is 840 and price index is 120, real GDP will be: (Show calculation) (1)
- (A) 7 (B) 700 (C) 720 (D) 960

- Q.9 If interest is ₹ 90 lakhs, dividend ₹ 20 lakhs, rent ₹ 100 lakhs, corporate tax ₹ 30 lakhs and undistributed profit is ₹ 10 lakhs then operating surplus will be: (Show calculation) (1)  
 (A) ₹ 190 lakhs (B) ₹ 200 lakhs (C) ₹ 230 lakhs (D) ₹ 250 lakhs
- Q.10 Identify the incorrect features of money supply in an economy, from the following – (1)  
 I. It is measured during a period of time.  
 II. It includes stock of money held by the government of a nation.  
 III. It always represents the currency held with central bank of the nation.  
 (A) Only I (B) II and III (C) I and II (D) I, II and III
- Q.11 In the past few decades, Indian economy has been fairly benefitted by positive externalities created by rapid rise in infrastructure. Justify the given statement with the valid argument. (3)  
**OR**  
 Describe how the distribution of gross domestic product limits the use of GDP as a welfare indicator.
- Q.12 Circular flow of income in a two-sector economy is based on the axiom that one's expenditure is other's income. Do you agree with the statement? Support your answer with valid reasons. (3)
- Q.13 Discuss the narrow measure concept of money Supply. Also write its component. (4)  
**OR**  
 "Growth of Indian economy requires investment". In this context how reserve bank of India can use the instruments of bank rate and open market operations.
- Q.14 What is value added method. In an economy, following transactions took place. Calculate value of output and value-added by firm B. (1+3=4)  
 i. Firm A sold to firm B goods of ₹ 80 crore, to firm C ₹ 50 crores, to households ₹ 30 crores and goods of value ₹ 10 crores remain unsold.  
 ii. Firm B sold to firm C goods of ₹ 70 crores, to firm D ₹ 40 crores, goods of value ₹ 5 crore was sold to government.
- Q.15 Read the following information carefully and answer the question: (4)  
 Can the GDP of a country be taken as an index of welfare of the people of that country? If a person has more income, he/she can buy more goods and services and his/her material wellbeing improve. So, it may seem reasonable to treat his/her income level as his/her level of wellbeing. GDP is sum total of value of goods and services created within the geographical boundary of a country in a particular year. It gets distributed among the people as income. So, we may be tempted to treat higher level of GDP of a country as a index of greater wellbeing of the people of that country (to account for price changes we may take the value of real GDP instead of normal GDP.)  
 (i) ..... is considered as a better index of welfare of the people:  
 (A) Actual GDP (B) Real GDP (C) Nominal GDP (D) Potential GDP  
 (ii) Environmental pollution related to production activity is an example of:  
 (A) Positive externality (B) Negative externality  
 (C) Zero externality (D) None of these  
 (iii) Increase in real GDP means:  
 (A) Increase in the level of output in the economy  
 (B) Greater availability of good per person  
 (C) Higher level of social welfare  
 (D) All of these  
 (iv) Which of the following makes GDP an appropriate or inappropriate index of welfare?  
 (A) Distribution of GDP (B) Externalities  
 (C) Non-monetary exchange (D) All of these
- Q.16 (a) Define credit multiplier. What role does it play in the determining credit creation power of the banking system. Use a numerical illustration to explain. (4+2=6)  
 (b) Explain bankers to government function of central bank. (4+2=6)  
**OR**  
 (a) To boost the falling demand in the economy, Reserve bank of India recently reduced Repo rate and Reverse repo rate. Elaborate the rationale behind the steps taken by the central bank. (4+2=6)  
 (b) Explain Banker's to bank function of central bank. (4+2=6)

- Q.17 Given the following data, find the missing value of 'Government Final Consumption Expenditure' and 'Mixed income of self-employed'. (6)

|       | <u>Particulars</u>                       | <u>₹ (in crores)</u> |
|-------|------------------------------------------|----------------------|
| i.    | National income                          | 71,000               |
| ii.   | Gross Domestic Capital Formation         | 10,000               |
| iii.  | Government Final Consumption Expenditure | ?                    |
| iv.   | Mixed income of self-employed            | ?                    |
| v.    | Net factor Income from Abroad            | 1000                 |
| vi.   | Net Indirect Taxes                       | 2000                 |
| vii.  | Profits                                  | 1200                 |
| viii. | Wages and salaries                       | 15,000               |
| ix.   | Net Exports                              | 5000                 |
| x.    | Private Final Consumption Expenditure    | 40,000               |
| xi.   | Consumption of fixed Capital             | 3000                 |
| xii.  | Operating Surplus                        | 30,000               |

### SECTION-B (INDIAN ECONOMY)

- Q.18 During British rule, the introduction of ..... led to the commercialization of agriculture in India.  
(A) Green revolution (B) Permanent Settlement Act (C) Railway (D) Zamindari System (1)

- Q.19 "Green revolution brings agricultural boom, but small farmers left behind. "Which of the following describe a feature of India's agriculture sector (1950-1990) – (1)

- (A) Mechanization benefitted all farmers equally  
(B) Large landowners benefitted more, increasing income disparity  
(C) Farming remained mostly traditional with little technology  
(D) Agricultural growth was uniform across all regions.

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

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

**Choose the correct alternative for the above –**

- (A) Both assertion and reason are true and reason is the correct explanation of the assertion.  
(B) Both assertion and reason are true but reasons are not the correct explanation of assertion.  
(C) Assertion is true but reason is false  
(D) Both assertion and reason is false

- Q.21 Which of the following is not a direct component of human capital formation –

- (A) Investment in health services  
(B) Expenditure on scientific research and development  
(C) Migration of skilled workers from India to other country  
(D) Investment in primary and secondary education (1)

- Q.22 **Statement I** – Non-farm activities have significantly contributed to the economic development of women in rural areas by provided them with independent sources of income.

**Statement II** – The diversification into non-farm activities primarily benefits wealthier households in rural areas, leaving poorer households largely unaffected. (1)

**Alternatives:**

- (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.

- Q.23 The architect of Indian planning was:

- (A) Jawaharlal Nehru (B) P.C. Mahalanobis (C) Sardar Patel (D) B.R. Ambedkar (1)

Q.24 Match the following –

(1)

|       | Column I               |        | Column II                     |      |
|-------|------------------------|--------|-------------------------------|------|
|       | a. Short term credit   |        | (i) Loan for purchasing land  |      |
|       | b. Medium term loan    |        | (ii) Loan for social purpose  |      |
|       | c. Long term loan      |        | (iii) Loan for farm machinery |      |
|       | d. Unproductive credit |        | (iv) Loan for buying seeds    |      |
| Code- | a                      | b      | c                             | d    |
|       | (A) (iv),              | (iii), | (i)                           | (ii) |
|       | (B) (ii),              | (iii), | (iv)                          | (i)  |
|       | (C) (iv),              | (ii),  | (iii)                         | (i)  |
|       | (D) (i),               | (ii),  | (iii)                         | (iv) |

Q.25 Which of the following combinations accurately represents the component of modernization as a planning objective – (1)

- i. Modernization in technology
- ii. Modernization in outlook
- iii. Modernization in education
- iv. Modernization in healthcare

Code - (A) – (i), and (ii) (B) – (iii) and (iv)  
(C) – (ii), (ii) and (iii) (D) – (i), (ii), (iii) and (iv)

Q.26 Which of the following is/are advantages of privatization? (1)

- i. Increased efficiency in operations
- ii. Reduction in government department
- iii. Job security for public sector employees

Code - (A) – Only i (B) – Only ii  
(C) – i and ii (D) – i, ii and iii

Q.27 Govt. of India introduced the Right to Education Act in the year..... (1)  
(A) 2005 (B) 2009 (C) 2010 (D) 2012

Q.28 “The economic policies imposed during the colonial period led to the marginalization and eventual collapse of several local industries and crafts in colonized regions.” Accept or deny the preceding assertion. Discuss. (3)

OR

“During the British rule contribution of industrial sector to the GDP remained very low.” Justify the given statement.

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

Q.30 The primary goal of the five-year plans in India have been to achieve growth with equity, focusing on sustained economic development while maintaining macroeconomic stability. Justify the statement with valid explanation. (4)

Q.31 On the job training enhances the skills and capabilities of employees, leading to improved performance and better alignment with organizational goal. Discuss the statement with valid reason. (4)

OR

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

Q.32 It is stated that “Indian agriculture is no longer a subsistence occupation”. State the value of statement highlighting the diversification of agriculture in India. (4)

Q.33 The industrial policy framework in India before 1991 was characterized by stringent regulations that restricted private sector participation and emphasized state control over industries.” Given this background – (3+3=6)

- i. Discuss about new economic policies
- ii. Evaluate the significant transformation of India’s industrial policy after the economic reforms of 1991.

OR

“The liberalization reforms of 1991 marked a turning point in India’s development.” Discuss.

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



# DELHI PUBLIC SCHOOL, BHILAI

Date : 15.09.2025

MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : INFORMATICS PRACTICES

M.M. : 70

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

## General Instructions:

- (i) All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- (ii) The paper is divided into 5 sections: Section A, B, C, D, and E.
- (iii) Section A, consists of 21 questions (1 to 21). Each question carries 1 mark.
- (iv) Section B, consists of 7 questions (22 to 28). Each question carries 2 marks.
- (v) Section C, consists of 3 questions (29 to 32). Each question carries 3 marks.
- (vi) Section D, consists of 4 questions (33 & 34). Each question carries 4 marks.
- (vii) Section E, consists of 2 questions (35 and 37). Each question carries 5 marks.

## SECTION A (21x1 = 21 marks)

1. To display the last five rows of series object 'S', you may write .....  
(A) S.last(5) (B) S.end(5) (C) S.tail(5) (D) none
2. To display the first four elements of series 'S', you may write .....  
(A) S[:3] (B) S[:4] (C) S[4:] (D) S[3:]
3. The axis 0 identifies a dataframe's .....  
(A) values (B) columns (C) rows (D) datatype
4. To delete a column from dataframe, you may choose ..... statement.  
(A) remove (B) del (C) drop (D) cancel
5. Which of the following function is used to create a vertical bar chart?  
(A) plot() (B) bar() (C) plotbar() (D) barh()
6. Which function lets you set the title of the plot?  
(A) plottitle() (B) title() (C) heading() (D) none
7. Which argument of bar() lets you set the thickness of the bar ?  
(A) thick (B) thickness (C) width (D) barwidth
8. To read data from CSV file, you will write, .....  
(A) read\_csvfile() (B) to\_csv() (C) csv\_read() (D) read\_csv()
9. To save content of dataframe df1 to file "account", you will write .....  
(A) df1.csv\_save('account') (B) df1.to\_csv('account')  
(C) csv\_df1('account') (D) none
10. Which of function is not available in mysql.connector module?  
(A) record() (B) is\_connect() (C) connect() (D) close()
11. To skip the first seven rows of the CSV file, which attribute will you use?  
(A) skiprows = 5 (B) skip = 5 (C) noread = 5 (D) skip\_rows = 5
12. Which of the following is a DDL command ?  
(A) SELECT (B) INSERT (C) ALTER (D) UPDATE
13. Which command is used to see the structure of a table?  
(A) desc (B) desc\_table() (C) describe\_table (D) show\_table
14. What will be returned by the given SQL query?  
SELECT SIGN(200);  
(A) 1 (B) -1 (C) 0 (D) 200
15. What will be returned by the given query?  
SELECT MONTH('2025-01-03');  
(A) Jan (B) 3 (C) 1 (D) January
16. Which of the following is not a numeric function?  
(A) mod() (B) sign() (C) mid() (D) pow()

17. To sort the records in descending order, which keyword is used?  
(A) Descend (B) Desc (C) Increase (D) order
18. Which of the following orders is valid and yields correct results in SQL?  
(A) Select, from, order by, where (B) Select from where order by  
(C) Select, order by, from (D) From, order by, where
19. The HAVING clause can be used with which of the following statements?  
(A) Select (B) Update (C) Delete (D) Insert

**Questions 20 and 21 are Assertion (A) and Reason (B) based questions.**  
**Mark the correct choice as:**

- (A) Both A and R are true, and R is the correct explanation for (A)
  - (B) Both A and R are true, and R is not the correct explanation for (A)
  - (C) A is True, but R is False.
  - (D) A is False, but R is True.
20. **Assertion (A) :** SQL SELECT's GROUP BY clause is used to divide the result in groups.  
**Reason (R) :** The GROUP BY clause combines all those records that have identical values in a particular field or in group by fields
  21. **Assertion (A) :** A GROUP BY query can also include functions.  
**Reason(R) :** ALL SQL functions can be used in a GROUP BY query.

### SECTION B (7x2 = 14 marks)

22. A survey gathers the contribution amount of students' stored as given below:  
amount = [100,300,343,456,655,678,700,390,870,760,43,24,\n256,234,200,500,700,500,400,600,300]  
Write a Python program to plot a histogram from the above data with 10 bins. [2]
23. Differentiate between a **Primary key** and a **Candidate key** with a suitable example. [2]
24. What is the difference between **sysdate()** and **now()** using in MYSQL? Explain with a suitable example. [2]
25. The data stored in the MYSQL table CRICKETERS is shown below:

| NAME       | AGE | COUNTRY      |
|------------|-----|--------------|
| Virat      | 33  | India        |
| Rohit      | 34  | India        |
| ABD        | 37  | South Africa |
| Williamson | 31  | New Zealand  |
| Stokes     | 30  | England      |
| Boult      | 32  | New Zealand  |
| Finch      | 35  | Australia    |
| Warner     | 35  | Australia    |

Write SQL commands to:

- a. Display the country name and the number of players in each country.
  - b. Display the name and average age of players country-wise in ascending order of country. [2]
26. Can we use a having clause with an aggregate function? If yes, give a suitable example. [2]
  27. Define **Domain** and **Cardinality** terms used in MYSQL with examples. [2]
  28. How to use functions **max()** and **min()** in a dataframe? Assume the dataframe has two columns **STUDENT\_NAME** and **ENG\_MARKS**. [2]

**SECTION C (7x3= 21 marks)**

29. In a database company, there are two tables given below:

**Table: SALES**

| SALES_MAN_ID | NAME    | SALES | LOCATION_ID |
|--------------|---------|-------|-------------|
| S1           | Rajeev  | 26000 | 102         |
| S2           | Sohan   | 33000 | 101         |
| S3           | Priya   | 15000 | 103         |
| S4           | Anamika | 30000 | 102         |
| S5           | Zainab  | 29000 | 103         |

**Table: LOCATION**

| LOCATION_ID | LOCATION_NAME |
|-------------|---------------|
| 101         | RAIPUR        |
| 102         | NAGPUR        |
| 103         | BILASPUR      |
| 104         | DURG          |

- (i) To display sales\_man\_id, the name of the salesmen with the corresponding location name.  
(ii) To display the salesmen name, sales and corresponding location name who have achieved sales of more than 25,000;  
(iii) To display the name of those salesmen who have 'mi' in their names. [3]
30. There is a table STUDENT which has the following column names, and there are 20 records stored sample data is shown as :

| class | sec | house  | name  | percentage |
|-------|-----|--------|-------|------------|
| 11    | A   | Chenab | Jatin | 93         |
| 12    | B   | Yamuna | Palak | 97         |

Write SQL commands:

- (i) To display all the details class-wise in ascending order, and percentage in descending order.  
(ii) To display the number of different house names entered in a column house.  
(iii) To display the average percentage class-wise for class 11 only. [3]
31. Write Python code to read the 'EMP.CSV' file and create a dataframe EMP\_DF to display the name and salary columns only. The columns of CSV file is as shown below:

**ENAME      POST      SALARY      AGE**

[3]

32. The STUDENT table of DPS database of MYSQL stores student details as (ROLLNO, NAME, EMAIL\_ID, BIRTH\_DATE). Write Python code to load the data STUDENT table to dataframe DF1 and display the NAME and BIRTH\_DATE of all the students whose names start with 'S'. (Use in 'root' and password is 'CBSE')

[3]

**SECTION D (2x4 =08 marks)**

33. Consider the given table WORKER and write SQL commands:

**Table: WORKER**

| ECODE | NAME          | DESIG      | PLEVEL | DOJ          | DOB          |
|-------|---------------|------------|--------|--------------|--------------|
| 21    | A Kumar       | Supervisor | P1     | 13-Sep-2024  | 23-Aug-1993  |
| 22    | P Prasad      | Operator   | P2     | 22-Feb-2020  | 12-July-1997 |
| 23    | Rina Gupta    | Operator   | P2     | 14-June-2021 | 14-Oct-1989  |
| 24    | Akbar Ali     | Mechanic   | P3     | 21-Aug-2024  | 13-Mar-1988  |
| 25    | Jaspreet Kaur | Clerk      | P4     | 19-Dec-2023  | 09-Sep-1989  |

- (i) To display the details of all workers in descending order of DOB.  
(ii) To convert the NAME into an upper-case letter in the table itself.  
(iii) To add a new row with the following data:  
26, Raghav Verma, Clerk, P4, 20-Dec-20024, 01-Jan-1995.  
(iv) To display the details of all the workers whose DOB is in between "13-Jan-1988" and "31-Dec-1989".

**OR**

**Table: Furniture**

| Item name     | Type         | Date of stock | Price | Discount |
|---------------|--------------|---------------|-------|----------|
| White lotus   | Double Bed   | 23/02/2023    | 30000 | 25       |
| Pink feather  | Baby Cot     | 22/01/2022    | 9000  | 20       |
| Dolphin       | Baby Cot     | 12/03/2022    | 9500  | 20       |
| Decent        | Office Table | 12/04/2021    | 25000 | 30       |
| Conmfort Zone | Double Bed   | 24/05/2023    | 35000 | 25       |

Based on the above table, write the SQL commands for the following:

- To show all the information about the Baby Cot from the furniture table.
- To list the Item\_name, which are priced more than 10000 from the furniture table.
- To list the Item\_name, Type and Price in descending order of Price.
- To insert a new row in the furniture table:  
Baby Soft, Baby Cot, 19/08/2024, 15000, 15

[4]

34. Hotel Sky Pie data is shown below (Number of plates ordered):

| Menu_item           | MON | TUE | WED |
|---------------------|-----|-----|-----|
| Paneer Tikka Masala | 120 | 90  | 87  |
| Veg Biryani         | 80  | 130 | 100 |
| Paneer Chilli       | 87  | 180 | 200 |
| Cheese Pizza        | 130 | 160 | 178 |

- Write Python code to create Dataframe HOTEL from the above data
- Write Python code to display Menu\_item and WED data
- Write Python code to display Menu\_item and MON's order of only those items where the number of plates are more than 100.
- Write Python code to add a new row in the dataframe HOTEL:  
Crispy Paneer Wrap, 177, 200,256.

[4]

**SECTION E (3x5 = 15 marks)**

35. A dataframe FLIGHTS stores data about passengers as shown below:

| S_NO | YEAR | MONTHS   | MALE_PASSENGERS | FEMALE_PASSENGERS |
|------|------|----------|-----------------|-------------------|
| 1    | 2024 | JANUARY  | 900             | 300               |
| 2    | 2024 | FEBRUARY | 700             | 400               |
| 3    | 2024 | MARCH    | 850             | 500               |
| 4    | 2025 | APRIL    | 1000            | 800               |

Write Python code:

- Add both male and female passengers and assign to the column "TOTAL\_PASSENGERS".
- Display the maximum passengers and minimum passengers in female passengers.
- Display details of the last three rows of the given dataframe.
- Insert new row in the given dataframe with the following data:  
1, 2024, MAY, 1200, 1300
- To change the number of MALE\_PASSENGERS of JANUARY as 1500.

[5]

36. Write a Python code to generate a **bar chart** for the given data:

**SALES REPORT 2025**

|         | APRIL | MAY | JUNE | JUNE |
|---------|-------|-----|------|------|
| LAPTOP  | 100   | 145 | 123  | 333  |
| DESKTOP | 200   | 150 | 175  | 122  |
| MOBILE  | 300   | 333 | 440  | 590  |

(use declaration for display bar, different colour for each bar, grid, legend, different labels, heading)

[5]

37. Explain the use of the following function using suitable examples:

(A) lcase() (B) rtrim() (C) mid() (D) power()

**OR**

Write the output of the following SQL commands:

- Select round(7896.345,2);
- Select substr('Amateurs sit and wait for inspiration, the rest of us just get up and go to work.',6,12);
- Select instr("I have no special talent. I am only passionately curious","special");
- Select dayofweek('2025-08-15');
- Select dayofyear('2025-09-10');

[5]



# DELHI PUBLIC SCHOOL, BHILAI

Date : 15.09.2025

Class : XII

Name : \_\_\_\_\_

## MIDTERM EXAMINATION 2025

SUBJECT : MATHEMATICS (041)

Time : 3 Hrs.

M.M. : 80

Roll No. : \_\_\_\_\_

### General Instructions:

Read the following instructions very carefully and strictly follow them:

1. This Question paper contains 38 questions. All questions are compulsory.
2. This Question paper is divided into five Sections - A, B, C, D and E.
3. In Section A, Questions no. 1 to 18 are multiple choice questions (MCQs) with only one correct option and Questions no. 19 and 20 are Assertion-Reason based questions of 1 mark each.
4. In Section B, Questions no. 21 to 25 are Very Short Answer (VSA)-type questions, carrying 2 marks each.
5. In Section C, Questions no. 26 to 31 are Short Answer (SA)-type questions, carrying 3 marks each.
6. In Section D, Questions no. 32 to 35 are Long Answer (LA)-type questions, carrying 5 marks each.
7. In Section E, Questions no. 36 to 38 are Case study-based questions, carrying 4 marks each.
8. There is no overall choice. However, an internal choice has been provided in 2 questions in Section B, 2 questions in Section C, 2 questions in Section D and one subpart each in 2 questions of Section E.
9. Use of calculator is not allowed.

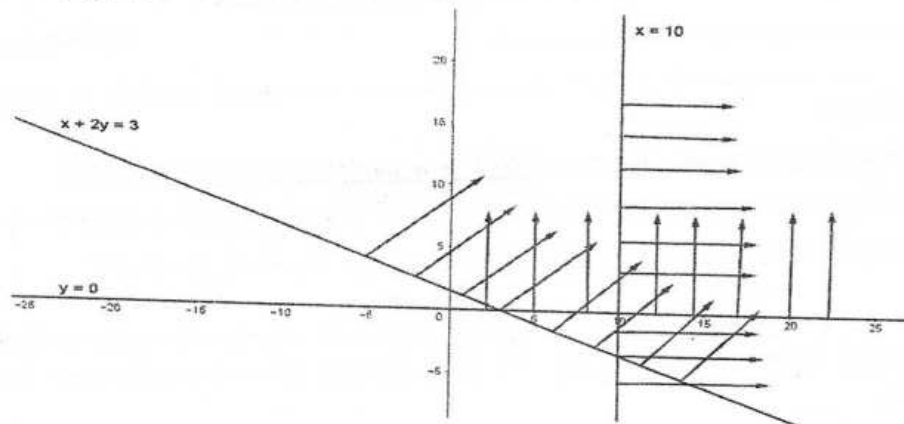
### SECTION-A

(This section comprises of multiple choice questions (MCQs) of 1 mark each)

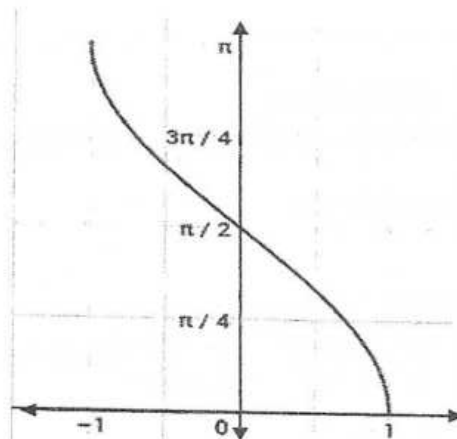
Select the correct option (Question 1 - Question 18):

1. If for a square matrix  $A$ ,  $A(Adj A) = \begin{bmatrix} 2000 & 0 & 0 \\ 0 & 2000 & 0 \\ 0 & 0 & 2000 \end{bmatrix}$ , then the value of  $|A| + |Adj A|$  is equal to  
(A) 1 (B)  $2000 + 1$  (C)  $2000^3$  (D)  $2000 + 2000^2$
2. Assume  $X, Y, Z, W$  and  $P$  are matrices of order  $2 \times n, 3 \times k, 2 \times p, n \times 3$  and  $p \times k$  respectively. Then, the restriction on  $n, k$  and  $p$  so that  $PY + WY$  will be defined are  
(A)  $k = 3, p = n$  (B)  $k$  is arbitrary,  $p = 2$   
(C)  $p$  is arbitrary,  $k = 3$  (D)  $k = 2, p = 3$
3. The interval in which the function  $f$  defined by  $f(x) = e^x$  is strictly increasing, is  
(A)  $[1, \infty)$  (B)  $(-\infty, 0)$  (C)  $(-\infty, \infty)$  (D)  $(0, \infty)$
4. If  $A$  and  $B$  are non-singular matrices of same order with  $|A| = 5$ , then  $|(B^{-1}AB)^2|$  is equal to  
(A) 5 (B)  $5^2$  (C)  $5^3$  (D)  $5^4$
5. If  $A = \begin{bmatrix} 0 & 1 & c \\ -1 & a & -b \\ 2 & 3 & 0 \end{bmatrix}$  is a skew symmetric matrix, then the value of  $a + b + c$  is  
(A) 1 (B) 2 (C) 3 (D) 4
6. In LPP the decision variables are  
(A) negative (B) non-negative (C) non-positive (D) none of these

- 7 The constraints of a linear programming problem along with their graphs is shown below:  
 $x + 2y \geq 3$ ,  $x \geq 10$ ,  $y \geq 0$



- Which of the following inequality may be removed so that the feasible region remains the same in above graph?  
 (A)  $x + 2y \geq 3$  (B)  $x \geq 10$  (C)  $y \geq 0$  (D)  $x \geq 0$
- 8  $\int \frac{dx}{x^3(1+x^4)^{\frac{1}{2}}}$  equals  
 (A)  $-\frac{1}{2x^2}\sqrt{1+x^4} + c$  (B)  $\frac{1}{2x}\sqrt{1+x^4} + c$  (C)  $\frac{1}{4x^2}\sqrt{1+x^4} + c$  (D)  $-\frac{1}{4x}\sqrt{1+x^4} + c$
- 9  $\int_0^{2\pi} \operatorname{cosec}^7 x \, dx$  equals  
 (A) 0 (B) 1 (C) 4 (D)  $2\pi$
- 10 The graph drawn below depicts



- (A)  $y = \sin^{-1} x$  (B)  $y = \cos^{-1} x$  (C)  $y = \operatorname{cosec}^{-1} x$  (D)  $y = \cot^{-1} x$
- 11 The number of points of discontinuity of function  $f$  defined by  $f(x) = |x - 1| + |x + 1|$  is  
 (A) 1 (B) 2 (C) 0 (D) none of these
- 12 The function  $f: \mathbb{R} \rightarrow \mathbb{Z}$  defined by  $f(x) = [x]$  where  $[.]$  denotes the greatest integer function, is  
 (A) Continuous at  $x = 2.9$  but not differentiable at  $x = 2.9$   
 (B) Continuous at  $x = 2.9$  but not differentiable at  $x = 2.9$   
 (C) Not continuous at  $x = 2.9$  and not differentiable at  $x = 2.9$   
 (D) Continuous as well as differentiable at  $x = 2.9$
- 13 A function  $f: \mathbb{R} \rightarrow \mathbb{R}$  defined as  $f(x) = x^2 - 4x + 5$  is  
 (A) injective but not surjective (B) surjective but not injective  
 (C) both injective and surjective (D) neither injective nor surjective
- 14 Find the matrix  $A^2$ , where  $A = \{a_{ij}\}$  is  $2 \times 2$  matrix whose elements are given by  
 $a_{ij} = \text{maximum of } (i, j) - \text{minimum of } (i, j)$   
 (A)  $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$  (B)  $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$  (C)  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  (D)  $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$
- 15 The value of  $\int_{-1}^1 x|x| \, dx$  is  
 (A)  $\frac{1}{6}$  (B)  $\frac{1}{3}$  (C)  $-\frac{1}{6}$  (D) 0
- 16 If  $xe^y = 1$ , then the value  $\frac{dy}{dx}$  at  $x = 1$  is  
 (A) -1 (B) 1 (C) -e (D)  $-\frac{1}{e}$

- 17 The function  $f(x) = \frac{x}{2} + \frac{2}{x}$  has a local-minima at  $x =$   
 (A) 2 (B) 1 (C) 0 (D) -2
- 18 The value of  $\tan^{-1} \left[ 2 \sin \left( 2 \cos^{-1} \frac{\sqrt{3}}{2} \right) \right]$  is  
 (A)  $-\frac{\pi}{3}$  (B)  $\frac{\pi}{3}$  (C)  $\frac{2\pi}{3}$  (D)  $\frac{\pi}{6}$

### ASSERTION-REASON BASED QUESTIONS

(Question numbers 19 and 20 are Assertion-Reason based questions carrying 1 mark each. Two statements are given, one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer from the options (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 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):  $\int_0^{\frac{\pi}{2}} \frac{1}{1+\tan x} dx = \frac{\pi}{4}$   
 Reason (R):  $\int_0^a f(x) dx = \int_0^a f(a-x) dx$
- 20 Assertion(A): If  $y = \cos^{-1}x$ , then  $(1-x^2)y_2 = xy_1$   
 Reason(R): If  $y = x^x$ , then  $y_1 = x^x(1 + \log x)$

### SECTION B

(This section comprises of 5 very short answer (VSA) type questions of 2 marks each)

- 21 Find the value of  $k$ , if  $\sin^{-1} \left[ k \tan \left( 2 \cos^{-1} \frac{\sqrt{3}}{2} \right) \right] = \frac{\pi}{3}$
- 22(a) Find  $\int \cos^3 x e^{\log \sin x} dx$   
 OR  
 22(b) Find  $\int \frac{dx}{5+4x-x^2}$
- 23 The area of the circle is increasing at a uniform rate of  $2\text{cm}^2/\text{s}$ . How fast is the circumference of the circle increasing when the radius  $r = 5\text{cm}$ ?
- 24(a) A square matrix  $A$  satisfies  $A^2 = I - A$ , where  $I$  is the identity matrix. If  $A^n = 5A - 3I$ . Find the value of  $n$ .  
 OR  
 24(b) Prove that the inverse of every square matrix, if it exists, is unique.
- 25 A linear programming problem is as follows:  
 Minimize  $z = 2x + y$   
 Subject to  $x \geq 3, x \leq 9, y \geq 0, x - y \geq 0, x + y \leq 14$ , then find the corner points of the feasible solution region.

### SECTION C

(This section comprises of 6 short answer (SA) type questions of 3 marks each)

- 26(a) Find  $\frac{dy}{dx}$ , if  $(\cos x)^y = (\cos y)^x$   
 OR  
 26(b) If  $\sqrt{1-x^2} + \sqrt{1-y^2} = a(x-y)$ , prove that  $\frac{dy}{dx} = \sqrt{\frac{1-y^2}{1-x^2}}$
- 27 If  $x = a \sin^3 t, y = \cos^3 t$ , then find  $\frac{d^2y}{dx^2}$  at  $t = \frac{\pi}{4}$ .
- 28 Evaluate  $\int_0^{\pi} \frac{e^{\cos x}}{e^{\cos x} + e^{-\cos x}} dx$
- 29 Solve the following LPP graphically maximize  $z = 60x + 40y$   
 Subject to the constraints  
 $x + 2y \leq 12; 2x + y \leq 12; 4x + 5y \geq 20$  and  $x \geq 0, y \geq 0$ .

30(a) Show that the relation  $R$  on set  $A = \{x \in \mathbb{Z} : 0 \leq x \leq 12\}$ , given by  $R = \{(a, b) : |a - b| \text{ is divisible by } 4\}$  is an equivalence relation. Find set of all elements related to 1.

OR

30(b) Show that the function  $f: \mathbb{R} \rightarrow \{x \in \mathbb{R} : -1 < x < 1\}$  defined by  $f(x) = \frac{x}{1+|x|}$ ,  $x \in \mathbb{R}$  is one-one and onto function.

31 If  $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ , then show that  $A^2 - 5A + 7I = 0$ . Also find  $A^{-1}$  using  $A^2 - 5A + 7I = 0$ .

#### SECTION D

(This section comprises of 4 long answer (LA) type questions of 5 marks each)

32(a) Solve the following system of equations by matrix method  
 $3x - 2y + 3z = 8$ ;  $2x + y - z = 1$ ;  $4x - 3y + 2z = 4$

OR

32(b) The sum of three numbers is 6. If we multiply third number by 3 and add second number to it, we get 11. By adding first and third numbers, we get double of the second number. Represent it algebraically and find the numbers using matrix method.

33(a) Find the intervals in which the function  $f(x) = \sin x + \cos x$ ,  $0 \leq x \leq 2\pi$  is strictly increasing or decreasing.

OR

33(b) Find the intervals in which the function  $f(x) = \log(1+x) - \frac{x}{1+x}$  is strictly increasing or strictly decreasing.

34 If  $(ax + b)e^{y/x} = x$ , then show that  $x^3 \frac{d^2y}{dx^2} = \left(x \frac{dy}{dx} - y\right)^2$

35 A printed page is to have a total area of 80 sq. cm with a margin of 1 cm at the top and on each side and a margin of 1.5 cm at the bottom. What should be the dimensions of the page so that the printed area will be maximum?

#### SECTION E-CASE BASED

(All questions are compulsory)

In case of internal choice attempt any one question only, also write steps in support of your answers)

36 Sippy, the owner of a sweet selling shop purchased some rectangular card board sheets of dimension 25 cm by 40 cm to make container packets without top. Let  $x$  cm be the length of the side of the square to be cut out from each corner to give that sheet the shape of the container by folding up the flaps. Based on the above information, answer the following questions  
 (i) express the volume  $V$  of each container as function of  $x$  only.

(ii) Find  $\frac{dV}{dx}$

(iii) (a) for what value of  $x$ , the volume of each container is maximum?

OR (iii)(b) check whether  $V$  has a point of inflection at  $x = \frac{65}{6}$  or not?

37 An organization conducted a bike race whose track length in km(s) is an integer associated to the square matrix  $A = \begin{bmatrix} 1 & 2 & 0 \\ -1 & 3 & 1 \\ 2 & 2 & 2 \end{bmatrix}$ . Contestant  $X$  won the race, based on the above information answer the following questions

(i) distance covered by  $X$

(ii) calculate  $|\text{adj } A|$

(iii) (a) for another square matrix  $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$  Find the value of  $|\text{adj } (AB)|$

OR

(iii) (b) Find the value of  $|\text{adj}(\text{adj } A)|$

38 In a library, exhibition hall has 3 desktops as  $A = \{D1, D2, D3\}$  and reception has 2 laptops as  $B = \{L1, L2\}$ . Ram visited the library and tried to create relation(s) between desktops and laptops.

Based on the above information answer the following questions

(i) How many relations are there from  $A$  to  $B$  and how many of these are functions?

(ii) How many of these functions are one-one from  $A$  to  $B$  if exists. Is this relation from  $A$  to  $B$  is bijective?



# DELHI PUBLIC SCHOOL, BHILAI

Date : 15.09.2025

MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : APPLIED MATHEMATICS

M.M. : 80

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

## GENERAL INSTRUCTIONS

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

## SECTION-A

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

1. The solution set of the inequality  $|3x - 2| \leq \frac{1}{2}$ , is  
(A)  $[\frac{1}{2}, \frac{3}{2}]$  (B)  $[\frac{1}{2}, \frac{3}{4}]$  (C)  $[\frac{1}{2}, \frac{5}{3}]$  (D)  $[\frac{1}{2}, \frac{5}{6}]$
2. If  $A = \begin{bmatrix} -2 & 0 & 0 \\ 1 & 2 & 3 \\ 5 & 1 & -1 \end{bmatrix}$ , then the value of  $|A(adjA)|$  is:  
(A)  $100I$  (B)  $10I$  (C)  $10$  (D)  $1000$ .
3. 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.
4. The total revenue (in ₹) received from the sale of  $x$  units of a product is given by  $R(x) = 3x^2 + 6x + 5$ . The marginal revenue, when  $x = 5$  is  
(A) ₹ 36 (B) ₹ 35 (C) ₹ 34 (D) ₹ 33
5. In a 100m race, A runs at a speed of  $\frac{5}{6}$  m/s. If A gives a start of 4m to B and still beats him by 12s. Then, the speed of B is  
(A)  $\frac{5}{4}$  m/s (B)  $\frac{7}{5}$  m/s (C)  $\frac{4}{3}$  m/s (D)  $\frac{6}{5}$  m/s
6. Given that matrices A and B are of order  $3 \times n$  and  $m \times 5$  respectively, then the order of matrix  $C = 5A + 3B$  is  
(A)  $3 \times 5$  (B)  $5 \times 3$  (C)  $3 \times 3$  (D)  $5 \times 5$
7. If  $f(x) = 3x^4 - 5x^3 + 2x^2 - e^{-2x} + 2$ , then  $f''(x)$  is equal to  
(A)  $36x - e^{-2x} + 4$  (B)  $36x^2 - 30x - 4e^{-2x} + 4$   
(C)  $36x^2 - 90 + 4e^{-2x}$  (D)  $36x - 90$
8. An even number is the determinant of  
(i)  $\begin{bmatrix} 1 & -1 \\ -1 & 5 \end{bmatrix}$  (ii)  $\begin{bmatrix} 13 & -1 \\ -1 & 15 \end{bmatrix}$  (iii)  $\begin{bmatrix} 16 & -1 \\ -11 & 15 \end{bmatrix}$  (iv)  $\begin{bmatrix} 6 & -12 \\ 11 & 15 \end{bmatrix}$   
Choose the correct answer from the options given below:  
(A) (i), (ii) & (iv) only (B) (i), (ii) & (iii) only  
(C) (i), (ii), (iii) & (iv) (D) (ii), (iii) & (iv) only
9. In a trend line equation  $y = a + bx$ , where 'a' is the  
(A) mean of  $x$  (B) mean of  $y$  (C) slope (D) deviation.
10. The feasible region for a linear programming problem is  
(A) bounded (B) unbounded (C) convex (D) any one of these
11. For two matrices A and B, given that  $A^{-1} = \frac{1}{4}B$ , then inverse of  $(4A)$  is:  
(A)  $4B$  (B)  $B$  (C)  $\frac{1}{4}B$  (D)  $\frac{1}{16}B$
12. The speed of boat in still water is 500% more than the speed of current. The respective ratio between the speed of the boat downstream and speed of the boat upstream is  
(A) 9 : 2 (B) 7 : 3 (C) 7 : 5 (D) 9 : 4

Contd...2

13. If A is a square matrix of order 2 and  $|A| = -2$ , then value of  $|5A^T|$  is:  
 (A) -50 (B) -10 (C) 10 (D) 50
14. The time series analysis helps  
 (A) to make predictions. (B) to compare two or more series.  
 (C) to know the behaviour of business. (D) All of the above
15. If  $e \begin{bmatrix} e^x & e^y \\ e^y & e^x \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ , then  $xy$  is equal to:  
 (A) -1 (B) 0 (C) 1 (D) 2
16. In an LPP, if the objective function  $Z = ax + by$  has same maximum value on two corner points of the feasible region, then the number of points at which maximum value of Z occurs is  
 (A) 0 (B) 1 (C) 2 (D) infinite.
17.  $\int \frac{f'(x) dx}{f(x) \log(f(x))}$  is equal to  
 (A)  $f(x) \log f(x) + C$  (B)  $\log|\log(f(x))| + C$   
 (C)  $\frac{f(x)}{\log(f(x))} + C$  (D) None of these.
18. A vessel contains liquid A and liquid B in the ratio 5 : 7. If 10L of liquid A is added to the vessel, the new ratio becomes 6 : 7. The quantity of liquid A in the original mixture is  
 (A) 45L (B) 30L (C) 50L (D) 55L

#### ASSERTION REASON BASED QUESTIONS:

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

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

19. The total revenue received from the sale of 'x' units of a product is given by  
 $R(x) = 3x^2 + 36x + 5$  in rupees.

**Assertion (A) :** The marginal revenue when  $x = 5$  is 66.

**Reason (R) :** Marginal revenue is the rate of change of total revenue with respect to the number of items sold at an instance.

20. **Assertion (A) :** If  $A = \begin{bmatrix} 3 & -2 & 5 \\ 1 & 4 & 9 \\ 6 & 2 & 3 \end{bmatrix}$  and  $B = A + A^T$ , then  $B^{100}$  is a symmetric matrix.

**Reason (R) :** If A is a square matrix, then  $A - A^T$  is a skew-symmetric matrix.

#### SECTION - B

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

21. If  $\begin{bmatrix} x^2 \\ y^2 \end{bmatrix} + 2 \begin{bmatrix} 2x \\ 3y \end{bmatrix} = 3 \begin{bmatrix} 7 \\ -3 \end{bmatrix}$ , find the values of  $x$  and  $y$ .

22. Evaluate  $\int \frac{1}{\sqrt{x+a} + \sqrt{x+b}} dx$ .

OR

Evaluate  $\int \log x dx$ .

23. Solve  $|3x + 2| \geq 5$  and represent the solution on a number line.

24. Find  $(AB)^{-1}$ , if  $A = \begin{bmatrix} 1 & 0 \\ -4 & 2 \end{bmatrix}$  and  $B^{-1} = \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$ .

OR

Given a square matrix A of order 3 such that  $A^2 = \begin{bmatrix} 3 & -4 & 4 \\ 0 & -1 & 0 \\ -2 & 2 & -3 \end{bmatrix}$ , show that  $A^3 = A^{-1}$ .

25. Find  $\frac{dy}{dx}$ , when  $x = \frac{1+\log t}{t^2}$  and  $y = \frac{3+2\log t}{t}$ .

**SECTION - C**

[This comprises of short answer type questions (SA) of 3 marks each]

26. Find the integral value of  $x$  if  $[x \ 4 \ -1] \begin{bmatrix} 2 & 1 & -1 \\ 1 & 0 & 0 \\ 2 & 2 & 4 \end{bmatrix} [x \ 4 \ -1]^T = 0$

**OR**

Express the following matrix as the sum of a symmetric matrix and a skew-symmetric matrix and verify your result:  $\begin{bmatrix} 3 & -2 & -4 \\ 3 & -2 & -5 \\ -1 & 1 & 2 \end{bmatrix}$ .

27. A company has two factories located at P and Q and has three depots situated at A, B and C. The weekly requirement of the depots at A, B and C is respectively 5, 5 and 4 units, while the production capacity of the factories at P and Q are respectively 8 and 6 units. The cost (in ₹) of transportation per unit is given below:

| From \ To | A   | B   | C   |
|-----------|-----|-----|-----|
| P         | 160 | 100 | 150 |
| Q         | 100 | 120 | 100 |

Formulate a Linear Programming Problem to find how many units should be transported from each factory to each depot in order that the transportation cost is minimum.

28. Write a trend line equation to the following time series data.

| Year                     | 2008 | 2009 | 2010 | 2011 | 2012 |
|--------------------------|------|------|------|------|------|
| Sale of sugar (in tonne) | 80   | 90   | 92   | 83   | 94   |

29. If  $C(x) = ax^2 + bx + k$  is the total cost function, then find the slope of average cost curve.

**OR**

If  $y = \sqrt{x+1} - \sqrt{x-1}$ , prove that  $(x^2 - 1) \frac{d^2y}{dx^2} + x \frac{dy}{dx} - \frac{1}{4}y = 0$

30. For the following series of observations, calculate 5-yearly moving averages.

| Year                          | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------------------------|------|------|------|------|------|------|------|------|
| Annual Sales (₹ in thousands) | 4    | 3    | 2    | 1    | 2    | 6    | 7    | 3    |

**OR**

The data below shows the figures of income of a municipal corporation over the years. Calculate 4 - yearly centered moving averages.

| Year                | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---------------------|------|------|------|------|------|------|------|
| Income (₹ in lakhs) | 4    | 5    | 7    | 6    | 3    | 4    | 6    |

31. If  $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ , show that  $A^2 - 5A + 7I = O$ . Hence find  $A^{-1}$ .

**SECTION - D**

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

32. (a) If 'x' is an odd integer, prove that  $x^2 \equiv 1 \pmod{8}$ .  
 (b) Find the quantity of water that must be added to 30L of milk at ₹ 60 per litre, so as to have mixture worth ₹ 50 per litre.
33. Solve the following linear programming problem graphically:  
 Minimise  $Z = 3x + 5y$  subject to the constraints :  
 $x + 2y \geq 10, x + y \geq 6, 3x + y \geq 8, x, y \geq 0$ .

**OR**

A furniture trader deals in only two items – chairs and tables. He has ₹ 50000 to invest and a space to store atmost 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 to maximise the profit and solve it graphically.

34. Find the product of the matrices  $\begin{bmatrix} 1 & 2 & -3 \\ 2 & 3 & 2 \\ 3 & -3 & -4 \end{bmatrix} \begin{bmatrix} -6 & 17 & 13 \\ 14 & 5 & -8 \\ -15 & 9 & -1 \end{bmatrix}$  and hence solve the system of

linear equations: 
$$\begin{aligned} x + 2y - 3z &= -4 \\ 2x + 3y + 2z &= 2 \\ 3x - 3y - 4z &= 11 \end{aligned}$$

35. (a) If  $y = x^3 \log\left(\frac{1}{x}\right)$ , then prove that  $x \frac{d^2y}{dx^2} - 2 \frac{dy}{dx} + 3x^2 = 0$ .

- (b) Differentiate  $\frac{x^3}{1-x^3}$  with respect to  $x^3$ .

OR

- (a) Show that the function  $f(x) = 4x^3 - 18x^2 + 27x - 7$  has neither maxima nor minima.  
 (b) Find the intervals in which the following function is strictly increasing or strictly decreasing:  
 $2x^3 - 3x^2 - 36x + 7$ .

### SECTION -E

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

#### 36. CASE STUDY - 1

A cistern has three pipes A, B and C. Pipes A and B can fill it in 5 hours and 10 hours respectively, while pipe C can empty it in 30 hours.

Based on the above information, answer the following questions.

- (i) If pipes A and B are opened, then find the time taken to fill the cistern.
- (ii) If all the pipes are opened, then find the time taken to fill the cistern.
- (iii) If the pipes A and B are opened together and pipe A is turned off after 1 hour, then find the time taken to fill the cistern.

OR

If the tap A is opened partially in such a way that its efficiency of filling the cistern becomes half, then find the time taken by all the three taps to fill the tank.

#### 37. CASE STUDY - 2

A cable network provider in a small town has 500 subscribers and he used to collect ₹ 300 per month from each subscriber. He proposes to increase the monthly charges and it is believed from past experience that for every increase of ₹ 1, one subscriber will discontinue the service.

Based on the above information, answer the following questions:

- (i) If ₹  $x$  is the monthly increase in subscription amount, then find the number of subscribers that will continue the subscription?
- (ii) Express the total revenue 'R' in terms of 'x'.
- (iii) Find the number of subscribers which will generate maximum revenue.

OR

What is the maximum revenue generated?

#### 38. CASE STUDY - 3

A boy visits a restaurant with his friends and orders 1 pizza, 2 burgers and 2 packs of fries, which cost ₹ 520. On another day, he orders 2 pizzas, 1 burger, and 2 packs of fries for ₹ 780. Additionally, the cost a meal that includes a pizza, a burger and a pack of fries is ₹ 410. Let  $x$ ,  $y$  and  $z$  represent the cost of a pizza, a burger and a pack of fries, respectively.

On the basis of the above information, answer the following questions.

- (i) Frame the situation as a set of linear equation. If A denotes the coefficient matrix, find  $A^{-1}$ .
- (ii) What is the ratio of  $x : y : z$ ?

**General Instructions:**

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

1. A CNG business needs to be managed as a hospital or school. What managers do in India, the USA, Germany or Japan is the same. How they do it may be quite different. This difference is due to the difference in culture, traditions and history. Identify the characteristic of management that has been mentioned here:  
(A) Management is a goal oriented process (B) Management is all pervasive  
(C) Management is a continuous process (D) Management is multi-dimensional (1)
2. Brilliant Logistics faced dissatisfaction among its employees due to unfair wage policies. Some employees felt underpaid compared to others, leading to decreased morale. The company then reviewed its wage structure and ensured that wages were fair and reflected the employees' work contributions, while still remaining within the company's paying capacity. Which principle of management is being referred to in this scenario?  
(A) Remuneration (B) Equity (C) Order (D) Initiative (1)
3. In 2016, the government of India implemented demonetization, aiming to eliminate black money and reduce corruption by invalidating Rs. 500 and Rs. 1000 currency notes. This sudden move impacted various businesses, forcing them to rely more on digital transactions. Companies like Paytm and other digital payment platforms experienced a surge in users, while those heavily dependent on cash transactions faced significant disruptions. Which feature of business environment is highlighted by the impact of demonetization on companies like Paytm.  
(A) Dynamic nature (B) Interrelatedness  
(C) Complexity (D) Specific and general forces (1)
4. Preeti wants to start her own cafe. Her long term goal is to get 40% of the market share. She gathered information and made forecasts about the potential demand, purchasing powers of the consumers as well as preferences of the consumers and of the government policy towards the proposed business. Preeti, had completed some steps in the process of planning. Choose the step in the planning process that Preeti has to follow next.  
(A) Setting Objectives (B) Developing Premises  
(C) Identifying alternative courses of action (D) Evaluating alternative courses (1)
5. Recruitment of employees from external sources increases dissatisfaction among the present employees as their chances of \_\_\_\_\_ are reduced.  
(A) Promotion (B) Voluntary retirement (C) Salary increment (D) Bonus (1)
6. Read the following statements – **Assertion (A) and Reason (R)**.  
**Assertion (A) :** Organising leads to the optimum utilization of resources.  
**Reason (R) :** Organising helps in establishing authority and responsibility relationships among employees. (1)  
Choose one of the correct alternatives 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) A is false but R is true.
7. What is the function, receiving the application of candidate called?  
(A) Recruitment function (B) General function  
(C) Advertisement function (D) Selection function (1)
8. Madan, a Sales Manager in Essential Oils Ltd., exercises complete power and control over his subordinates. He does not like consulting his subordinates in any matter. Which leadership style is being followed by Madan?  
(A) Democratic leadership (B) Autocratic leadership  
(C) Free-rein leadership (D) Paternalistic leadership (1)

9. Which of the following function is the prerequisite for controlling?  
 (A) Staffing (B) Organising (C) Planning (D) Directing (1)
10. Read the following statements carefully:  
**STATEMENT 1** : Balance of payments and changes in foreign exchange reserves are components of political environment of business.  
**STATEMENT 2** : Expansion of transportation and communication facilities is a component of economic environment of business. (1)
- In the light of the given statements, choose the correct alternative from the following:  
 (A) Statement 1 is true and Statement 2 is false.  
 (B) Statement 1 is false and Statement 2 is true.  
 (C) Both statements 1 and 2 are true.  
 (D) Both statements 1 and 2 are false.
11. Akshay works as a Production Manager in Dazzle Enterprises, manufacturing LED lights. Due to festival season, there is a lot of demand for their lights. Akshay was given the task of producing 100 units of LED lights at ₹ 200 per unit within 5 days for an urgent order. Akshay was able to achieve the target of 100 units LED lights within 5 days at ₹ 220 per unit. Identify from the following whether Akshay is:  
 (A) Efficient only (B) Effective only  
 (C) Both efficient and effective (D) Neither efficient and effective (1)
12. A network of social relationships that arises spontaneously due to interaction at work is called –  
 (A) Formal organization (B) Informal organization  
 (C) Decentralisation (D) Delegation (1)
13. Read the following statements – Assertion (A) and Reason (R)  
**Assertion (A)** : Controlling is considered to be a goal oriented function.  
**Reason (R)** : It enables the manager to be certain that the work is moving in the right direction. (1)
- Choose one of the correct alternatives 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) A is false but R is true.
14. Use of 'Technical Jargon' is which type of communication barrier?  
 (A) Organisational barrier (B) Psychological barrier  
 (C) Semantic barrier (D) Personal barrier (1)
15. The CEO of Prerna Cycles Pvt. Ltd. Mr. Kumar wants to get the maximum output from the employees at a competitive cost. On the other hand, Ramakant, an employee of the company, wants to get the maximum salary while working the least. The principle of management given by Fayol being violated by Ramakant is \_\_\_\_\_.  
 (A) Remuneration (B) Equity  
 (C) Discipline (D) Subordination of individual interest to general interest (1)
16. Micromax was India's largest seller of mobile handsets. It launched low-cost Chinese manufactures handsets with some smart packaging and features like long-lasting batteries and dual-sim functionality to garner 20% market share in India's value-conscious mobile handset market.  
 Identify the two types of plans being described in the above lines.  
 (A) Strategy and Objective (B) Rule and programme  
 (C) Programme and objective (D) Method and objective (1)
17. **Statement I** : Directing involves issuing instructions and supervising subordinates.  
**Statement II** : Directing is solely about planning and does not include supervision. (1)
- Alternatives:**  
 (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
18. Choose the statement that correctly highlights the benefit of using external sources of recruitment:  
 (A) Competitive spirit among the existing staff  
 (B) Reduction in employee turnover  
 (C) Helps in increasing employees satisfaction  
 (D) Develops a sense of security amongst employees (1)

19. Match the following :

| COLUMN I                 | COLUMN II                                                                 |
|--------------------------|---------------------------------------------------------------------------|
| a. Functional structure  | I. It is costly as all resources are required in each department.         |
| b. Divisional structure  | II. It leads to functional specialisation                                 |
| c. Formal organisation   | III. It emerges spontaneously and is not created deliberately.            |
| d. Informal organisation | IV. It specifies the reporting relationships among various job positions. |

(A) a – III, b – IV, c – I, d – II  
(C) c – III, b – I, c – IV, d – II

(B) a – II, b – III, c – I, d – IV  
(D) a – II, b – I, c – IV, d – III

(1)

20. Identify the type of communication demonstrated in the given image:



(A) Formal (B) Informal (C) Official (D) Single chain (1)

21. Explain the various objectives of management. (3)

22. Write about any three points that highlight the significance of business environment. (3)

OR

Explain any three dimensions of business environment. (3)

23. The first step in the controlling process is 'setting up performance standards'. Explain the subsequent three steps in the process of controlling. (3)

OR

'Planning and controlling are considered to be inseparable twins of management.' Explain. (3)

24. Identify and state the type of training involved and also categorise whether it is 'on the job' or 'off the job' training in the following cases:

(a) In a shoe manufacturing company a group of new recruits are being trained by an experienced trainer Mr. Arun. He is teaching them skills, which will require atleast six months of dedication and practice under real work environment.

(b) A student of Brilliance MBA College is having a combined training analysis where he is having two mentors. One mentor is from the college and the other is from the company. The idea is to give real knowledge about the corporate functioning. (3)

25. Gomati Ltd. is a famous company. Different functions are performed by different individuals in the company who are bound together in a hierarchy of relationships. Every individual in the hierarchy is responsible for successful completion of a particular work. Mr. Gurpreet Singh is responsible for the welfare and survival of the organization. He formulates overall organizational goals and strategies for their achievement. Mr. Nikhil maintains the quality of output, minimizes wastage of materials and checks safety standards are maintained. Mr. Sameer assigns necessary duties and responsibilities to the personnel and motivates them to achieve desired objectives.

What are the different levels of management? At what levels of management are Mr. Gurpreet, Mr. Nikhil and Mr. Sameer working in Gomati Ltd. Justify. (4)

26. State any four features of planning. (4)  
OR  
Write any four limitations of planning. (4)

27. DEF Ltd., a leading manufacturing company, has a strict hierarchy where every employee has a clear set of duties and responsibilities.

The company follows a very official structure, where communication flows through established channels and everyone knows their role within the organization. This structure has led to a high degree of discipline and clarity in operations, with well-defined rules and procedures guiding every action.

(i) Identify the type of organization being used by DEF Ltd.

(ii) State three benefits of this organization. (4)

28. Write about any four Semantic Barriers.  
**OR**  
Explain any four Organisational Barriers. (4)
29. Crystal Constructions Ltd. had never given any importance to employees suggestions. All employees of the company considered themselves superior to others. They neither helped anybody nor got help from anybody. Last year Mr. Pankaj was appointed as Chief Manager of the company. He was an MBA from IIM Ahmedabad and also had seven years experience of the same post. Immediately after taking charge, he decided to deal with both the problems of the company. He convened the meeting of all the employees and said "All the employees are free to give their suggestions. Besides, the one who gives the best suggestion will be rewarded." In addition, he advised them to discard ego and extend help in each other's work. Pankaj proved to be a good leader.  
Identify and explain the two principles discussed above by quoting the lines. (4)
30. Mr. Rajesh Khanna started a business of manufacturing different spices like Rajma Masala, Shahi Paneer Masala, Chhole Masala etc. Although, he is good in planning but performance of his business is always below average. He analysed his problems and noticed some facts about his business. Once the plan is made, managers follow them blindly. Employees are only carrying out orders and not showing any initiative. Ashutosh, his manager has a tendency to rely on previously tried and tested successful plans.  
What do you mean by planning ? Identify and explain the limitations of planning which are referred here by quoting the lines from the given paragraph. (1+3)
31. State any six principles of Fayol.  
**OR**  
Write short notes on the following : (6)  
(a) Science, not rule of thumb (b) Cooperation not individualism  
(c) Time Study (d) Motion Study  
(e) Fatigue Study (f) Differential Piece Wage System
32. Distinguish between Functional and Divisional structure on the basis of:  
(a) Focus (b) Nature (c) Specialisation  
(d) Centralisation of authority (e) Suitability (f) Coordination (6)
33. Zenith Ltd. is a highly reputed company and many people want to join this company. The employees of this organization are very happy and they discussed how they came to work here. Aman said that he was introduced by the present Sales Manager, Mr. John. Beena said that she had applied through the newspaper and was appointed as HR Manager. Vaibhav said he was directly called by the company from his IIM institute after completing MBA.  
(a) Identify the function of management discussed in the above paragraph.  
(b) The management function identified follows a particular process. Identify and explain the step of this process.  
(c) Identify the methods of the concept identified in part (b) by quoting the lines from the above para. (1+2+3)
34. Explain Maslow's Need Hierarchy Theory with assumptions. (6)  
**OR**  
What are the different styles of leadership? Explain each style with diagram.



# DELHI PUBLIC SCHOOL, BHILAI

Date : 18.09.2025

## MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : CHEMISTRY

M.M. : 70

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

### General Instructions:

Read the following instructions and follow them:

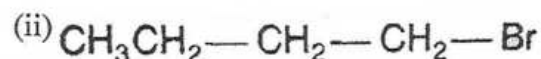
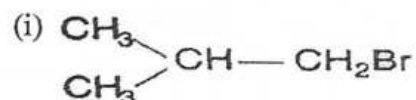
- (i) This question paper contains 33 questions. All questions are compulsory.
- (ii) This question paper is divided into five sections – Sections A, B, C, D and E.
- (iii) Section A – Question number 1 to 16 are multiple choice questions. Each question carries 1 mark each.
- (iv) Section B – Question number 17 to 21 are very short answer type questions. Each question carries 2 marks.
- (v) Section C – Questions number 22 to 28 are short answer type questions. Each question carries 3 marks.
- (vi) Section D – Question number 29 and 30 are case based questions. Each question carries 4 marks.
- (vii) Section E – Question number 31 to 33 are long answer type questions. Each question carries 5 marks.
- (viii) There is no overall choice given in the question paper. However, an internal choice has been provided in few questions in all the sections except Section A.
- (ix) Use of calculator is not allowed.

### SECTION – A

01. A compound  $CaCl_2 \cdot 6H_2O$  undergoes complete dissociation in water. The Vant Hoff factor (i) is :  
(A) 9 (b) 6 (C) 4 (D) 3 (1)
02. The standard electrode potential of 'A', 'B' and 'C' are +0.68V, - 2.54 V and -0.50 V respectively. The order of their reducing power is:  
(A)  $A > B > C$  (B)  $A > C > B$  (C)  $B > C > A$  (D)  $C > B > A$  (1)
03. If the half-life period of a first order reactions is 1386 seconds, then the rate constant of this reaction is:  
(A)  $0.5 \times 10^{-2} S^{-1}$  (B)  $0.5 \times 10^{-3} S^{-1}$  (C)  $5 \times 10^{-2} S^{-1}$  (D)  $5 \times 10^{-3} S^{-1}$  (1)
04. Which of the following molecules will undergo  $S_N1$  reaction most readily?  
(A)  $(CH_3)_3C - F$  (B)  $(CH_3)_3C - Cl$  (C)  $(CH_3)_3C - Br$  (D)  $(CH_3)_3C - I$  (1)
05. What is the correct order of reactivity of alcohols in the following reaction?  
 $ROH + HCl \xrightarrow{ZnCl_2} R - Cl + H_2O$   
(A)  $1^\circ > 2^\circ > 3^\circ$  (B)  $1^\circ < 2^\circ < 3^\circ$  (C)  $3^\circ > 2^\circ > 1^\circ$  (D)  $3^\circ > 1^\circ > 2^\circ$  (1)
06. Which of the following reactions confirms the presence of carbonyl group ( $C = O$ ) in glucose?  
(A) Reaction with HI (B) Reaction with  $NH_2OH$   
(C) Reaction with HCN (D) Both (B) and (C) (1)
07. An azeotropic solution of two liquids has a boiling point lower than either of the two when it :  
(A) shows a positive deviation from Raoult's Law  
(B) shows a negative deviation from Raoult's Law  
(C) shows no deviation from Raoult's Law  
(D) is saturated (1)
08. The synthesis of alkyl fluoride is best obtained from:  
(A) Free radicals (B) Swartz reactions  
(C) Sandmeyer reaction (D) Finkelstein reactions (1)
09. The glycosidic linkage involved in linking the glucose units in amylose part of starch is:  
(A)  $C_1 - C_6 \alpha$  linkage (B)  $C_1 - C_6 \beta$  linkage  
(C)  $C_1 - C_4 \alpha$  linkage (D)  $C_1 - C_4 \beta$  linkage (1)
10. Ethanol on heating with conc.  $H_2SO_4$  at 413 K gives:  
(A)  $C_2H_5OSO_3H$  (B)  $C_2H_5OCH_3$   
(C)  $C_2H_5OC_2H_5$  (D)  $CH_2 = CH_2$  (1)

Contd...2

11. Arrange the following compounds in increasing order of their boiling points



- (A) (ii) < (i) < (iii)                      (B) (i) < (ii) < (iii)  
(C) (iii) < (i) < (ii)                      (D) (iii) < (ii) < (i)

(1)

12. Disaccharides that are reducing in nature:

- (A) Sucrose and lactose                      (B) Sucrose and Maltose  
(C) Lactose and Maltose                      (D) Sucrose, lactose, Maltose

(1)

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

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

13. **Assertion (A) :** Conductivity decreases with decrease in concentration of electrolyte.  
**Reason (R) :** No. of ions per unit volume that carry the current in a solution decreases on dilution. (1)

14. **Assertion (A) :** The molecularity of the reactions  $\text{H}_2 + \text{Br}_2 \rightarrow 2\text{HBr}$  appears to be 2.  
**Reason (R) :** Two molecules of the reactants are involved in the given elementary reaction. (1)

15. **Assertion (A) :** Nitration of chlorobenzene leads to the formation of m - nitro chlorobenzene.  
**Reason (R) :**  $\text{NO}_2$  group is a m - directing group. (1)

16. **Assertion (A) :** Sucrose is called invert sugar.  
**Reason (R) :** Sucrose on hydrolysis, produces a solution which is laevorotatory, whereas sucrose was dextrorotatory. (1)

#### Section - B

17. Concentrated nitric acid is 68% nitric acid by mass in aqueous solution. What is the molarity of such a sample of the acid if the density of the solution is  $1.504 \text{ g mL}^{-1}$ ? (2)

18. (i) Suggest a way to determine the  $\Lambda^\circ M$  value of water.  
(ii) What is cell constant? (2)

19. A reaction is second order with respect to a reactant. How is the rate of reaction affected if the concentration of the reactant is (a) doubled (b) reduced to  $1/2$ ? (2)

20. What happens when –  
(i) Phenol reacts with conc.  $\text{HNO}_3$ ?  
(ii) Ethylchloride reacts with  $\text{NaOC}_2\text{H}_5$ ? (2)

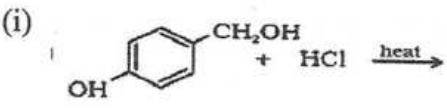
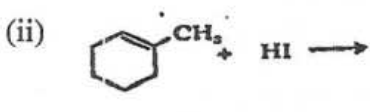
21. (i) State Henry's Law.  
(ii) Give any two applications of Henry's Law. (2)

OR

- (i) State Raoult's Law.  
(ii) Define Azeotropes and give example of minimum boiling azeotrope.

#### Section - C

22. Give reason for the following: (3)  
(a) Phenol is more acidic than alcohol.  
(b) t-butyl bromide on reaction with sodium ethoxide gives alkene as main product and not ether.  
(c) p-nitrophenol is not steam volatile while o-nitrophenol is steam volatile.

23. Determine the osmotic pressure of a solution prepared by dissolving 25 mg of  $K_2SO_4$  in 2 litres of water at  $25^\circ C$ , assuming that it is completely dissociated.  
(Gram molar mass of K=39 g, S=32 g, O=16 g) (3)
24. (a) State Kohlrausch's Law.  
(b) Give the reactions taking place at anode and at cathode in lead storage battery during discharge. (3)
- OR**
- (a) Give statement of 1<sup>st</sup> law of Faraday.  
(b) Predict the products of electrolysis of the following:  
(i) An aqueous solution of  $AgNO_3$  with Platinum electrodes.  
(ii) An aqueous solution of  $CuCl_2$  with Platinum electrodes.
25. (a) Define activation Energy.  
(b) For a 1<sup>st</sup> order reaction. Show that the time required for 99% completion of a first order reaction is twice the time required for the completion of 90%. (3)
26. (a) Why is sulphuric acid not used during reactions of alcohols with KI ?  
(b) Draw the structures of major monohalo products in each of the following: (3)
- (i)  (ii) 
27. (a) Define denaturation of proteins  
(b) Differentiate between Globular and Fibrous proteins. (3)
28. (a) Draw a graph to depict elevation in boiling point as a colligative property.  
(b) Calculate the mass of ascorbic acid ( $C_6H_8O_6$ ) to be dissolved in 75 g of acetic acid to lower its melting point by  $1.5^\circ C$ . [ $K_f = 3.9 K Kg mol^{-1}$ ; Molar Mass of ascorbic acid=176 g/mole. (3)

#### Section – D

The following questions are case-based questions.

Read the case carefully and answer the question that follow:

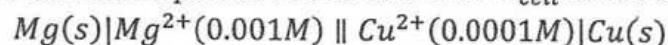
29. The rate of a given reaction at a given temperature may depend on concentration of one or more reactants. The representation of rate of reaction in terms of the concentration is called rate law. The rate law for a given reaction has to be established by experimental study of the rate of the reaction over a wide range of concentration of the reactants and products.
- (i) A reaction is first order in A and second order in B.  
(a) How is the rate affected on increasing the concentration of B three times ?  
(b) How is the rate affected when concentration of both A and B are doubled? (2)
- (ii) In a reaction,  $2A \rightarrow \text{Products}$ , the concentration of A decreases from 0.5 M to 0.4 M in 10 minutes. Calculate the rate. (1)
- (iii) Give factors which that effect the rate of reaction.
- OR**
- What is pseudo first order reaction? (1)
30. Carbohydrates are optically active polyhydroxy aldehydes and Ketones. All those carbohydrates which reduce Fehling's solution or Tollen's reagent are called as reducing sugars. Vitamins are important for proper structural and dynamic functions in the organism. Deficiency of vitamins leads to many diseases.
- (i) The penta – acetate of glucose does not react with hydroxylamine. What does it indicate? (1)
- (ii) Deficiency of Vitamin  $B_{12}$  causes which medical condition?
- OR**
- Scurvy is caused by deficiency of which vitamin?  
(iii) Define the following: (a) Anomers (b) Peptide Linkage (2)

**Section – E**

31. (a) A solution of  $Ni(NO_3)_2$  is electrolysed between platinum electrodes using a current of 5.0 amperes for 20 minutes. What mass of nickel will be deposited at the cathode? (At mass of Ni=58.7) (2)

- (b) (i) Can you store  $CuSO_4$  solution in a zinc pot? ( $E_{Cu^{2+}/Cu}^0 = 0.34 V$ ,  $E_{Zn^{2+}/Zn}^0 = 0.76 V$ ) (1)

- (ii) Write the balanced equation and calculate the  $E_{cell}$  at 298 K for the following cell:



Given :  $[E_{Mg^{2+}/Mg}^0 = -2.37 V ; E_{Cu^{2+}/Cu}^0 = 0.34 V]$

**OR**

- (a) What are the functions of salt bridge? (2)

- (b) Conductivity of 0.00241 M acetic acid is  $7.896 \times 10^{-5} S cm^{-1}$ . Calculate its molar conductivity and its degree of dissociation. (3)

32. (a) (i) Define racemic mixture.  
(ii) Explain why Grignard reagents should be prepared under anhydrous condition? (2)

- (b) Convert the following:  
(i) Toluene to benzyl alcohol.  
(ii) Ethyl Chloride to propanoic acid.  
(iii) Benzene to diphenyl.

**OR**

- (a) Explain the following : (Write proper equations)  
(i) Swartz reaction  
(ii) Finkelstein reaction

- (b) Convert the following:  
(i) Propene to 1 – nitro propane  
(ii) 2 – Bromopropane to 1 – Bromopropane  
(iii) Aniline to phenyl isocyanide.

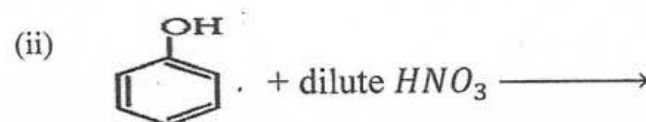
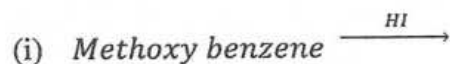
33. (a) Write the mechanism of acid – catalysed dehydration of ethanol to ethene. (2)

- (b) Explain : (Write proper equation)  
(i) Kolbe's reaction  
(ii) Reimer – Tiemann reaction  
(iii) Williamson's synthesis (3)

**OR**

- (a) (i) Give test to distinguish between Primary, Secondary and tertiary alcohol. (1)  
(ii) Give two limitations of Williamson's synthesis. (1)

- (b) Complete the following:





**General Instructions:**

1. This question paper has 13 questions. All questions are compulsory.
2. This question paper contains three sections –  
**Section A : Reading Skills, Section : B Creative writing Skills and Section C : Literature**
3. Attempt all questions based on specific instructions for each part.  
Write the correct question number and part there of in your answer sheet.
4. Separate instructions are given with each question/part, wherever necessary.
5. Adhere to the prescribed word limit while answering the questions.

**Section A : Reading (22 Marks)**

1. **Reading the following passage carefully:** (22 Marks)

Among the natural resources which can be called upon in national plans for development, possibly the most important is human labour. Since the English language suffers from a certain weakness in its ability to describe groups composed of both male and female members, this is usually described as "manpower".

Without a productive labour force, including effective leadership and intelligent middle management, no amount of foreign assistance or natural wealth can ensure successful development and modernization.

The manpower for development during the next quarter of century will come from the world's present population of infants, children and adolescents. But we are not sure that they will be equal to task. Will they have the health, the education, the skills, the socio-cultural attitudes essential for the responsibilities of development?

For far too many of them the answer is no. The reason is basic. A child's most critical years, with regard to physical, intellectual, social and emotional development, are those before he reaches five years of age. During those critical formative years he is cared for almost exclusively by his mother and in many parts of the world the mother may not have the capacity to raise a better child. She is incapable of doing so by reason of her own poor health, her ignorance and her lack of status and recognition of social and legal rights, and economic-parity of independence. One essential factor has been overlooked and ignored. The forgotten factor is the role of women. Development will be handicapped as long as women remain second class citizens, uneducated without any voice in family or community, decisions without legal or economic status, married when they are still practically children, and henceforth producing one baby after another, often to see half of them die before they are of school age.

We can enhance development by improving 'women power', by giving women the opportunity to develop themselves. Statistics show that the average family size increases in inverse ratio to the mother's years of education is lowest among college graduates, highest among those with only primary school training, or no education. Malnutrition is most frequent in large families, increases in frequent in large families, and increases in frequency with each additional sibling. The principle seems established that an educated mother has healthier and more intelligent children, and that is related to the fact that she has fewer children. The tendency of educated, upper class mothers to have fewer children operates even without access to contraceptive services.

The educational level of women is significant also because it has a direct influence upon their chances of employment, and the number of employed women in a country's total labour of employed women in a country's total labour force has a direct bearing on both the gross national product and disposable income of the individual family. Disposable income, especially in the hands of women, influences food purchasing and therefore the nutritional status of the family. The fact that the additional income derives from the paid employment of women provides a logical incentive to restrict the size of the family.

**On the basis of your understanding of the above passage, answer the following questions given below.** (12 Marks)

- (i) How is a women's development necessary for the overall development of mankind? (2)
- (ii) Why is human labour usually described as 'manpower'? (1)
- (iii) The manpower for development during the next quarter century will come from the world's present population of \_\_\_\_\_. (1)
- (iv) Why is the education of women important? (2)

- (v) Pick out the option that is **NOT TRUE** with reference to the above passage. (1)
1. In many parts of the world, a woman is not capable to raise a better child due to her poor health.
  2. Mother plays an important role in overall development of a child.
  3. Development can never be improved till the time women are considered second-class citizen.
  4. The larger a family is, the healthier it will be since it has more members to work and earn money.
- (a) Both 1 and 2      (b) Only 4      (c) Only 3      (d) Both 2 and 3
- (vi) According to the passage, malnutrition is most common in \_\_\_\_\_. (1)
- (vii) What are the factors that weaken a woman's identity as an individual? (1)
1. Consideration of women as a second class citizen.
  2. Responsibilities that are laid on a woman's shoulder.
  3. Marriage at a very young age.
  4. Ignorance of her social and legal rights.
  5. Being financially independent.
- (a) 1, 2 and 3      (b) 2, 3 and 4      (c) 1, 3 and 4      (d) 2, 4 and 5
- (viii) The above passage stresses on the \_\_\_\_\_. (1)
- (ix) What do you mean by the term 'women power'? (2)

**2. Read the passage given below.**

(10 Marks)

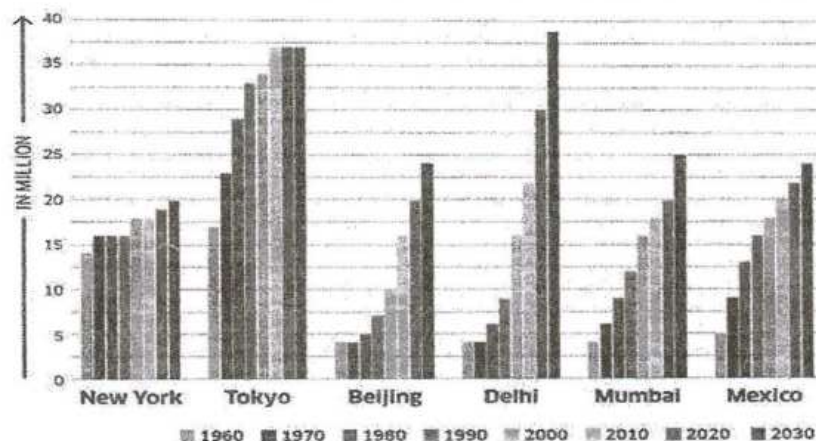
1. Politics and now Pollution keep Delhi forever in the news, but a third P (Pollution Growth) has gone missing from the discourse on the capital : population growth, which has soared during the last two decades, and its disastrous fallout.

Already, India's capital city is the world's second most populous urban agglomeration. The future is even more frightening: a United Nations report released in mid-2018 says Delhi could be the world's most populous city by 2028 with 37.2 million people. That is eight million more in just 10 years.

2. According to the report called World Urbanisation Prospects 2018 by the Population Division of the UN Department of Economic and Social Affairs, the population of Delhi and its immediate neighbourhood is now estimated to be 29 million, second only to Tokyo with 37 million people. But Delhi will zoom past Tokyo, whose population is projected to decline to 36.8 million by 2028.

Will Delhi be worth living in? Can the city state of Delhi escape the pressure but on it by an ever expanding National Capital Region (NCR), which touches as far as Alwar now? Are we prepared at all for this population explosion?

**POPULATION GROWTH IN MAJOR GLOBAL CITIES**



3. In a small office in Delhi's India Habitat Centre, a group of urban planners – all belonging to the National Institute of Urban Affairs (NIUA) – have just started collecting baseline data on land, housing, transport, environment, heritage, water, among others, for Master Plan for Delhi (MPD) 2041. "Our deadline for preparing the Master Plan is 2021. But unlike its earlier editions, it won't be a flat 20 year plan. This one will be divided into various achievables, say for every five years," says Nilesch Rajadhyaksha, lead coordinator of MPD and urban specialist in NIUA.
4. The NIUA – an autonomous research and advisory body that comes under the Ministry of Housing and Urban Affairs – has been roped in by the Delhi Development Authority (DDA) to undertake this colossal strategy plan for Delhi 2041. The current master plan, MPD-2021, which was notified in 2007 and was prepared by an in-house team of the DDA, would expire in 2021.

5. The concern is that a sense of urgency to fix Delhi is missing. Many crucial elements of MPD-2021 still remain on paper, with just two years left for the plan to expire. AK Jain, former commissioner-planning in DDA and key architect of MPD-2021, gives a long list of what have not been implemented. The master plan talks about brownfield redevelopment of rehabilitation colonies such as Lajpat Nagar, Old Rajendra Nagar and Mukherjee Nagar, which were originally meant for Partition refugees. Nothing has been done on that front so far nor for the redevelopment of 45 resettlement colonies such as Ambedkar Nagar and Trilokpuri, which were developed during Emergency to rehabilitate slum dwellers. The rejuvenation of the Yamuna is also on the plan, but the river remains severely polluted in the Delhi stretch.

Will Delhi be liveable? Jain is not very hopeful. He says Delhi won't be a highly liveable city even if the master plan is implemented in its entirety. "Delhi is part of the National Capital Region (NCR). So, Delhi's development can't happen in isolation," he explains.

**Based on your understanding of the passage, answer the questions given below.**

- (i) Complete the sentence appropriately. (1)  
If the Master plan is implemented in its entirety, then \_\_\_\_\_.
- (ii) "The concern is that a sense of urgency to fix Delhi is missing." With reference to this statement, select the correct inference from the following. (1)
  - (a) Delhi needs to be evacuated sooner or later.
  - (b) The need to control population in Delhi is crucial.
  - (c) The resources in Delhi need to be readjusted according to its rising population.
  - (d) Delhi's resources will extinguish soon.
- (iii) Why does the passage say that the future is frightening for the Indian capital city? What is the crucial issue regarding Master plans created for Delhi? (2)
- (iv) Paragraph 5 includes words – 'concerns' and 'plans'. Classify the following sentence as 'concern' or 'plan'. (1)  
**Sentence 1** The ever expanding NCR region is becoming an overcrowded space due to increasing population.  
**Sentence 2** A strategy is being charted out by collaborating with many government authorities to make Delhi liveable.
- (v) Prateek lives in Noida while his best friend Akanksha lives in Alwar region. They had a debate on inclusion of regions in the ever expanding National Capital Region (NCR). (1)  
Select the option that identified the correct regions included in the NCR.
 

|                                         |                                   |
|-----------------------------------------|-----------------------------------|
| (a) NCR – Delhi, Alwar, Noida, Gurugram | (b) NCR – Alwar, Noida, Rajasthan |
| (c) NCR – Delhi, Alwar, Uttar Pradesh   | (d) NCR – Delhi, Noida, Tokyo     |
- (vi) Who did the Delhi Development Authority hire to look into the development of Delhi? (1)
- (vii) Why does Jain say that Delhi will not be liveable? (2)
- (viii) The urban planners are collecting data based on \_\_\_\_\_. (1)
 

|              |          |               |                  |
|--------------|----------|---------------|------------------|
| (a) heritage | (b) land | (c) transport | (d) All of these |
|--------------|----------|---------------|------------------|

### Section B : Creative Writing Skills (18 Marks)

3. Attempt ANY ONE from A and B given below. (4)
  - A. There has been an increase in the number of cyberbullying cases in our schools. This has led to parents and students getting worried. As Manish/Meena Barua, the school counsellor of Glitz International School, Guwahati. You are organising a talk during the morning assembly by Mr. Prahlad Kakkar, Director, Cybercrime Department inviting both students and parents. Draft a notice in 50 words informing the students of the same. Do mention day, date, time and venue.
  - OR**
  - B. Your school is planning to organise a Water Conservation Awareness Programme for the students. As school captain of SLV Public School, Lucknow. Draft a notice in about 50 words informing the students about the programme mentioning day, date, time and venue. You are Sanjay/Sanjana Kapoor.
4. Attempt ANY ONE from A and B given below. (4)
  - A. You are a student of Vibrant Public School, Jamshedpur. Your school is holding its Annual Function on 12 September 2025. The Education Minister of State Mr. Chetan Singh has consented to be the Chief Guest. Design an invitation card to be sent to parents and other invitees. Mention necessary details of date, time and venue. Do not exceed 50 words.
  - OR**
  - B. You are Sonali Gupta, a renowned nutritionist. You are invited by the Principal of Radiant Public School, Raipur to address the students on 'Forming Healthy Food Habits.' Write a formal letter of reply accepting the invitation.

5. Attempt ANY ONE from A and B given below.

(5)

- A. Recently, the paper leakage of the esteemed NEET and NET have created an uproar all over the country regarding the efficiency of our education system. In order to increase the reliability of such prestigious competitive exams, the Government of India has introduced the Public Examinations (Prevention of Unfair Means) Act, 2024. You recently researched on the act while preparing for an inter – state debate competition. Write a letter to the editor of a national newspaper, expressing your views on the act. Use the given clues along with your own ideas to form the letter in 120 – 150 words.

- Key Features
  - Transparency, credibility and fairness in exams
  - Anti Cheating Law
  - Punishment in the form of imprisonment and fine for fifteen crimes listed in the Act.
  - Exams conducted by UPSC, SSC, RRB, IBPS, NTA are covered.
- Impact
- Your suggestions.

OR

- B. You are Mohit/Mahak Parmar from Bhopal. You read the advertisement given below and wish to apply for the post advertised. Write a job application in 120 – 150 words along with your bio-data for the provided advertisement.

Join our Creative Team!  
A renowned publishing house in Bhopal  
A NEW WORLD  
is seeking a talented illustrator for children's books.  
Creative individuals with a passion for story telling through art,  
Welcome

Experience, not mandatory  
Team players with degree/diploma in Fine Arts/Graphic Design may apply with 5 samples  
from portfolio illustrating a variety of work.  
Write to the Project Head, 23 – C, Rani Laxmi Bai Road, Bhopal.

6. Attempt ANY ONE from A and B given below.

(5)

- A. On the threshold of being a World Super Power, India does have a large, young work force but unfortunately not many in this force are employable for want of necessary skills. Write an article for a newspaper on the topic 'Skill Development is the need of the hour' using cues given below along with your own ideas. You are Aarav/Anita Mahapatra.
- Research by Tata Institute of Social Sciences: Growth is hindered by unskilled workforce, more than thirty five per cent of the Indian Youth in cities are unskilled.
  - Demand of the new era
  - Practical experience
  - Necessary if we want to see India a developed nation by 2047 and top most economy of the world.

OR

- B. You are Sunil/Megha Sinha, School Head Boy/Head Girl of Sun Public School, Patna. On competition of 25 years of meritorious service to the cause of quality education, your school celebrated its Silver Jubilee with great pomp and show. The celebrations lasted three days and in true tradition of the school. Each day was devoted to a noble cause of service. Special attention was paid to children with special Needs, Old Age Homes and orphanages. Students shared experiences of voluntary services and the Theatre Club put up short skits highlighting social concerns. Write your report in 120 – 150 words about the event to be published in your school magazine.

**Section C : Literature Textbook (40 Marks)**

7. Read the given extracts and answer the questions for ANY ONE of the two given.

(1x6=6)

- A. I saw my mother  
Beside me,  
doze, open mouthed her face  
ashen like that  
of a corpse and realised with  
pain that she was as old as she  
looked but soon  
put that thought away and  
looked out at young  
Trees sprinting, merry children spilling  
out of their homes.

- (i) Identify the phrase that indicates youthful energy

(1)

- (ii) Which thought is the poet trying to put away? (1)  
 (a) Missing the flight (b) fear to losing her mother  
 (c) leaving her mother behind (d) Reaching Cochin
- (iii) The poet's mother is described as open mouthed because ..... (1)  
 (a) She is curious (b) She is surprised  
 (c) She is dead (d) She was dozing
- (iv) Complete the analogy. (1)  
 Children spilling : Metaphor :: \_\_\_\_\_ Personification
- (v) The sight of the trees and children helped the poet \_\_\_\_\_. (1)
- (vi) In the given extract, the phrase 'realised with pain' indicates the poet's (1)  
 (a) anxiety (b) depression (c) troubled past (d) ill health

**OR**

**B.** "It would be an exotic moment  
 Without rush, without engine  
 We would all be together  
 in a sudden strangeness

- (i) Why will the moment be strange? (1)
- (ii) Pick out phrases that portray 'exotic moment' in the poem. (1)  
 (1) Fishermen will not harm whales  
 (2) Salt gatherers would not have hurt hands  
 (3) Victory with no survivors  
 (4) People would walk around with their brothers  
 (5) I want no truck with death  
 (a) 1, 2 and 4 (b) 2, 3 and 5  
 (c) 1, 2 and 5 (d) Only 1 and 2
- (iii) The moment will be exotic because ..... (1)
- (iv) Select the correct option from those given in the bracket, to fill in the blank. (1)  
 The reference to 'without rush, without engines' indicates the \_\_\_\_\_  
 (monotony/busyness) of everyday life.
- (v) Read the Assertion and Reason below, with reference to the given extract (1)  
**Assertion :** The contrast between 'without rush' and 'without engines' juxtaposes the usual hurry of modern life with the idea of tranquility.  
**Reason :** The idea of being 'together' emphasises unity, while 'sudden strangeness' evokes a shared yet surreal experience.  
 (a) Both the Assertion and the Reason are true, and the Reason is correct explanation of the Assertion.  
 (b) Both the Assertion and the Reason are true, but the Reason is not the correct explanation of the Assertion.  
 (c) The Assertion is true, but the Reason is false.  
 (d) The Assertion is false, but the Reason is true.
- (iv) Does the poet propagate total inactivity when he says 'without rush, without engines'? (1)

**8.** Read the given extracts and answer the questions for **ANY ONE** of the two given: (1x4=4)

- A.** To make sure, I walked over to the newsboy and glanced at the stack of papers at his feet. It was The World and The World hasn't been published for years. The lead story said something about President Cleveland. I've found that front page since, in the public library files, and it was printed on 11 June, 1894. I turned toward the ticket windows knowing that here-on the third level at Grand Central – I could buy tickets that would take Louisa and me anywhere in the United States we wanted to go. In the year 1894. And I wanted two tickets to Galesburg.
- (i) The newspaper that covered the lead story about President Cleveland was (1)  
 (a) The Pioneer (b) The New York Times (c) The World (d) The Times
- (ii) The narrator wanted to buy tickets to \_\_\_\_\_. (1)
- (iii) Which of the following in the extract most nearly means the opposite of 'stare'? (1)  
 (a) Glance (b) Peek (c) Ignore (d) Examine
- (iv) Charley wanted two tickets because he wanted to go with (1)  
 (a) Sam (b) Cleveland (c) Louisa (d) His grandfather

**OR**

- B.** You lose all earthly sense of perspective and time here. The visual scale ranges from the microscopic to the mighty: midges and mites to blue whales and icebergs as big as countries (the largest recorded was the size of Belgium). Days go on and on in surreal 24 hour austral summer light and a ubiquitous silence, interrupted only by the occasional avalanche or calving ice sheet, consecrates the place. It's an immersion that will force you to place yourself in the context of the Earth's geological history and for humans, the prognosis is not good.
- (i) Complete the sentence suitably. (1)  
 The 'Visual Scale' refers to \_\_\_\_\_.

- (ii) Which of the following fits the category of 'microscopic to the mighty' out of the ones given below. (1)
1. Trace of skin cell : trace of a bird's egg.
  2. A grain of rice : field of wheat.
  3. A scoop of ice cream : ice cream cone.
  4. A drop of water : Pacific Ocean
- (a) 1 and 2                      (b) 1 and 3                      (c) 3 and 4                      (d) 2 and 4
- (iii) Choose the option listing the elements that influences one to think of Earth's physicality.
1. Breakage of an iceberg from a glacier
  2. Midges and mites
  3. A regular seen avalanche
  4. Summer light in Southern hemisphere.
- (a) 1 and 2                      (b) 3 and 4                      (c) 1 and 4                      (d) 2 and 3
- (iv) How does the narrator feel in the given extract?

9. Read the given extracts and answer the questions for **Any ONE** of the two given (1x6=6)

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

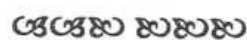
- (i) Identify the line from the text that enforces the theme of patriotism in the story. (1)
- (ii) Select the correct option from those given in brackets to fill in the blank. (1)  
She puts off learning till tomorrow. The phrase 'puts off' suggests \_\_\_\_\_  
(to become sad / delaying)
- (iii) Complete the sentence appropriately (1)  
'You must feel bad enough.' Through these words M. Hamel urges the people that \_\_\_\_.
- (iv) State whether the following statement is **True** or **False** with reference to the context. (1)  
M. Hamel endorses the belief that there is plenty of time to learn their language.
- (v) 'And now you see where we've come out'  
The tone of M. Hamel in the above line is that of (1)  
(a) kindness                      (b) happiness                      (c) regret                      (d) enthusiasm
- (vi) 'We've all a great deal to reproach ourselves with' 'Reproach' means similar to  
(a) Approach                      (b) appreciate                      (c) persuade                      (d) reprimand

**OR**

B. And in dark hutments, Next to lines of flames of flickering oil lamps, sit boys and girls with their fathers and mothers, welding pieces of coloured glass into circles of bangles. Their eyes are more adjusted to the dark than to the light outside. That is why they often end up losing their eyesight before they become adults.

- (i) What can be said about the tone of the given extract ? (1)
- (ii) Select the correct option from those given in the brackets to fill in the blanks. (1)  
'Flickering oil lamps' suggests a lack of \_\_\_\_\_ (electricity / day)
- (iii) Complete the sentence with reference to the context (1)  
Their eyes are more adjusted to the dark than to the light outside because \_\_\_\_\_.
- (iv) Why do bangle makers lose their eyesight before they become adults? (1)
- (v) Which of the following would not be true? (1)  
(a) The hutments were shiny and inviting.  
(b) The Children's lives were as bleak as their surrounding.  
(c) There were no electricity connections.  
(d) The boys and girls had got used to the dark.
- (vi) Which of the following most nearly means 'adjusted' in the context of the extract? (1)  
(a) Conditioned                      (b) Favoured                      (c) Accepted                      (d) Reconciled

10. Answer **ANY FIVE** of the following six questions in 40 – 50 words each. (2x5=10)
- (i) How did Douglas' experience at the beach in California affect him?
  - (ii) Is Saheb happy working at the tea-stall? Give reasons for your answer.
  - (iii) How did Franz's feelings about M. Hamel and school change?
  - (iv) What does a thing of beauty do for us?
  - (v) What made the peddler accept Edla Will Mansson's invitation?
  - (vi) Life is what it is all about.' How is keeping quiet related to life?
11. Answer **ANY TWO** of the following three questions in 40 – 50 words each. (2x2=4)
- (i) What did the Maharaja and Dewan do to avoid the danger of losing the throne?
  - (ii) Why did Geoff Green include high school students in the 'Students on Ice' expedition?
  - (iii) What was the servants' reaction to Sadao's decision of treating the American soldier?
12. Answer **ANY ONE** of the following two questions in 120 – 150 words. (1x5=5)
- A. How do the stories 'The Last Lesson' by Alphonse Daudet and 'Lost Spring' by Anees Jung illustrate the impact of socio – political factors on education?
- OR**
- B. 'A Thing of Beauty is a joy forever.' This is what John Keats says in the poem. Do you think in the present times of acute stress and violence, proximity to beautiful things can lead man to ever lasting happiness. Discuss
13. Answer **ANY ONE** of the following two questions in 120 – 150 words.
- A. "Until then the Maharaja had given his entire time and energy to tiger hunting. He had no time to spare for the crown prince. (The Tiger King) In present times, we see people following their profession and running after money and neglect their children. As a professional counsellor, you address working parents, stressing the need to spend quality time with children. Text detail from the story "The Tiger King" will help you enforce your point of view.
- You may begin like this:**
- Spending time with children will boost their confidence .....
- .....
- OR**
- B. "The Enemy" portrays the victory of humanity over narrow prejudices especially in a moment of crisis." Illustrate this fact through the actions taken by Dr. Sadao for the enemy soldier.







# DELHI PUBLIC SCHOOL, BHILAI

Date : 10.09.2025

## MIDTERM EXAMINATION 2025

Time : 3 Hrs.

Class : XII

SUBJECT : PHYSICS

M.M. : 70

Name : \_\_\_\_\_

Roll No. : \_\_\_\_\_

### General Instructions:

- There are 33 questions in all. All questions are compulsory.
- This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
- Section A contains sixteen questions, twelve MCQs and four Assertion Reasoning based of 1 mark each, Section B contains five questions of two marks each, Section C contains seven questions of three marks each, Section D contains two case study based questions of four marks each and Section E contains three long answer questions of five marks each.
- There is no overall choice. However, an internal choice has been provided in one question in Section B, one question in Section C, one question in each CBQ in Section D and all three questions in Section E. Attempt only one of the choices in such questions.

### SECTION – A

- An infinitely long uniformly charged wire produces an electric field of  $18 \times 10^4 \text{ N/C}$  at a distance of 1.0 cm. The linear charge density on the wire is:  
 (A)  $1.12 \times 10^{-14} \text{ C/m}$  (B)  $3.08 \times 10^{-15} \text{ C/m}$   
 (C)  $1.0 \times 10^{-9} \text{ C/m}$  (D)  $1.0 \times 10^{-7} \text{ C/m}$
- To make an uncharged object have a positive charge :  
 (A) remove some neutrons (B) add some neutrons  
 (C) add some electrons (D) remove some electrons
- Two hollow conducting spheres of radii  $R_1$  and  $R_2$  ( $R_1 \gg R_2$ ) have equal charges. The potential would be-  
 (A) More on bigger sphere (B) More on smaller sphere  
 (C) Equal on both the spheres (D) Dependent on the material property of the sphere
- Two points P and Q are maintained at the potentials of 10V and -4V respectively. The work done in moving 100 electrons from P to Q is-  
 (A)  $-19 \times 10^{-17} \text{ J}$  (B)  $9.60 \times 10^{-17} \text{ J}$  (C)  $-2.24 \times 10^{-16} \text{ J}$  (D)  $2.24 \times 10^{-16} \text{ J}$
- The SI unit of mobility of charge carriers is :  
 (A)  $\Omega \text{ s}^{-1}$  (B)  $\text{m}^2 \text{V}^{-1} \text{s}^{-1}$  (C)  $\text{ms}^{-1} \text{V}^{-1}$  (D)  $\Omega \text{ m}$
- A battery supplies 0.9 A current through a  $2\Omega$  resistor and 0.3 A current through a  $7\Omega$  resistor when connected one by one. The internal resistance of the battery is:  
 (A)  $2\Omega$  (B)  $1.2\Omega$  (C)  $1\Omega$  (D)  $0.5\Omega$
- Two students A and B calculate the charge flowing through a circuit. A concludes that 300 C of charge in 1 min. B concludes that  $3.125 \times 10^{19}$  electrons flow in 1 second. If the current measured in the circuit is 5 A, the correct calculation is done by:  
 (A) A (B) B (C) Both (D) Neither A nor B
- Ampere's circuital law is used to find the:  
 (A) direction of current (B) magnetic field  
 (C) direction of magnetic motion of conductor (D) magnitude of current
- When current in a coil changes from 4 A to 0 A in 0.1s, an emf of 100 V is induced. Its self inductance L will be:  
 (A) 0.25H (B) 0.4H (C) 2.5H (D) 4H
- If  $R$ ,  $X_L$  and  $X_C$  represent resistance, inductive reactance and capacitive reactance. Then which of the following is dimensionless:-  
 (A)  $RX_LX_C$  (B)  $\frac{R}{X_LX_C}$  (C)  $\frac{R}{X_LX_C}$  (D)  $\frac{RX_L}{X_C}$
- Using an ac voltmeter, the voltage in electric line in a house is read as 234 V. If the line frequency is 50 Hz, the equation for the line voltage (in Volt) :  
 (A)  $v = 165 \sin 100\pi t$  (B)  $v = 234\sqrt{2} \sin 100\pi t$   
 (C)  $v = 234 \sin 100\pi t$  (D)  $v = 440 \sin 100\pi t$

Contd...2

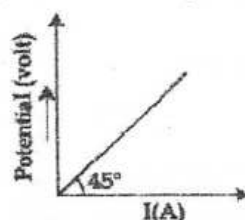
12. Current becomes extremely large in LCR circuit when-
- frequency is increased
  - frequency decreased
  - inductive reactance becomes equal to capacitive reactance
  - inductance becomes equal to capacitance

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

- If both Assertion and Reason are true and Reason is correct explanation of Assertion.
  - If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
  - If Assertion is true but Reason is false.
  - If both Assertion and Reason are false.
13. **Assertion (A) :** If no electric flux comes out of a closed surface ,no net charge can be present inside it.  
**Reason (R) :** A free charge can not be present inside a closed surface.
14. **Assertion (A) :** The internal resistance of a cell is constant.  
**Reason (R) :** Ionic concentration of the electrolyte remains same during use of a cell.
15. **Assertion (A) :** Lenz's law violates the principle of conservation of energy.  
**Reason (R) :** Induced emf supports always the change in magnetic flux responsible for its production.
16. **Assertion (A) :** For purely resistive ac circuit ,power factor is one.  
**Reason (R) :** In this case , $V$  and  $I$  are in phase.

### SECTION – B

17. A 12 pF capacitor is connected to a 50 V battery. How much electrostatic energy is stored in the capacitor? (2)
18. Define 'relaxation time' and 'mobility'. Write about the effect of temperature on them. (2)
19. The variation of applied potential and current flowing through a given wire is shown in figure. The length of wire is 31.4 cm. The diameter of wire is measured as 2.4 cm. Calculate the resistivity of the given wire. [Take  $\pi = 3.14$ ] (2)



20. A long straight wire carries a current of 35 A. What is the magnitude of magnetic field at a point 20 cm from the wire ? (2)
- OR**
- Two parallel wires carry 8 A and 5 A and kept 4 cm apart. Find force of magnetic interaction on 10 cm length of first wire. (2)
21. What is meant by the term 'displacement current'? Briefly explain how this current is different from a conduction current. (2)

### SECTION – C

22. (a) State Gauss' law. (1)  
 (b) Derive an expression for electric field due to infinitely long thin straight charged wire. (2)
23. (a) Write dimensional formula of capacitance. (1)  
 (b) Derive an expression for the capacity of a parallel plate capacitor without dielectric. (2)
24. (a) Write Biot Savart law . (1)  
 (b) Derive an expression for magnetic field at the centre of a current carrying circular loop. (2)
- OR**
- Two long straight parallel current carrying conductors are kept 'a' distant apart in air. The direction of current in both the conductors is same. Find the magnitude of force per unit length and direction of the force between them. Hence define one ampere. (3)

25. (a) What is drift velocity ? (1)  
 (b) Two conducting wires X and Y of same diameter but different materials are joined in series across a battery. If the number density of electrons in X is twice that in Y, find the ratio of drift velocity of electrons in the two wires. (2)
26. What is the working principle of a transformer? Describe its working with suitable diagram. (3)
27. Explain the working principle of an ac generator with suitable diagram. Derive expression for its output voltage. (3)
28. Suppose that the electric field part of an em wave in vacuum is –  
 $\vec{E} = (3.1 \text{ N/C}) \cos[(1.8 \text{ rad/m})y + (5.4 \times 10^8 \text{ rad/s})t] \hat{i}$   
 (a) what is the direction of propagation ?  
 (b) What is wavelength?  
 (c) What is frequency?

### SECTION – D Case Study Based Questions

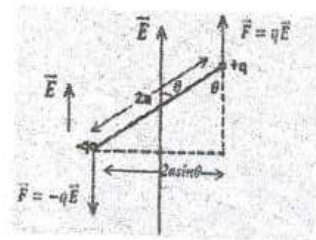
Questions number 29 and 30 are case study based questions. Read the following paragraph and answer the questions that follow –

29. Consider a dipole of dipole moment  $p$  suspended freely in a uniform electric field  $E$  such that the dipole axis makes an angle  $\theta$  from field direction. There is a force  $qE$  on charge  $q$  and  $-qE$  on  $-q$ . Unlike parallel forces will act on it, resulting in a torque given by –  
 Torque  $\tau = \text{one of the force} \times \text{separation between them}$   
 $= qE \times (2a \sin \theta)$   
 $= pE \sin \theta$

Let  $dw$  be the work done in rotating dipole by  $d\theta$ .

$$dw = \tau d\theta = pE \sin \theta d\theta$$

$$W = \int_{\theta_1}^{\theta_2} pE \sin \theta d\theta$$



- (i) An electric dipole placed in a non-uniform Electric field, then:  
 (a) It experiences a torque only  
 (b) It experiences a force only  
 (c) Both  
 (d) The dipole moment is perpendicular  $E$
- (ii) A dipole of dipole moment  $p$  is lying along field  $E$ . The work done to rotate it by  $90^\circ$  –  
 (a)  $pE$  (b)  $2pE$  (c)  $\frac{1}{2}pE$  (d)  $\sqrt{2}pE$
- (iii) A dipole of length 4cm is kept at  $\theta = 60^\circ$  in electric field  $E = 4 \times 10^5 \text{ N/C}$ . If torque acting is  $8\sqrt{3} \text{ Nm}$ , then the charge  $q$   
 (a)  $10^{-3} \text{ C}$  (b)  $10^{-5} \text{ C}$  (c)  $10^3 \text{ C}$  (d) none of the above
- (iv) The correct expression in vector form –  
 (a)  $\vec{\tau} = \vec{p} \times \vec{E}$  (b)  $\vec{\tau} = \vec{E} \times \vec{p}$  (c)  $\vec{\tau} = \vec{p} \cdot \vec{E}$  (d)  $\tau = \vec{p} \times \vec{E}$

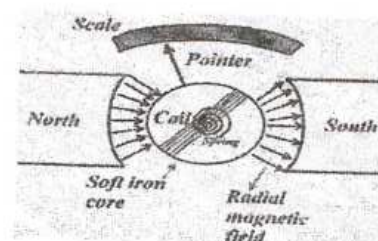
OR

In the diagram shown, if  $\theta = 180^\circ$  then –

- (a) the equilibrium will be unstable (b) the equilibrium will stable  
 (c) the equilibrium will neutral (d) no equilibrium

30. The working of a moving coil galvanometer is based on the fact that when a current loop is placed in a magnetic field, it experiences a torque. The torque tends to rotate the coil about its axis of suspension in such a way that the magnetic flux passing through the coil is maximum.

- (i) A galvanometer is an instrument which is –  
 (a) used to measure emf  
 (b) used to measure potential difference  
 (c) used to measure resistance  
 (d) to detect presence of small current



:: 4 ::

- (ii) To make the field radial –
- number of turns kept small
  - magnet is taken in the form of horse – shoe
  - Poles are of strong magnets
  - poles are cylindrically cut
- (iii) The sensitivity of a galvanometer will decrease if –
- radius of coil is increased
  - number of turns decreased
  - number of turns increased
  - a strong magnetic field is used.
- (iv) The conversion of a galvanometer into a voltmeter is done by:
- introducing a resistance of large value in series
  - introducing a resistance of small value in parallel
  - introducing a resistance of large value in parallel
  - introducing a resistance of small value in series

OR

Two galvanometers A and B require 6 mA and 2 mA respectively to produce the same deflection of division. Then,

- B is more sensitive than A
- A is more sensitive than B
- A and B are equally sensitive
- cannot predict

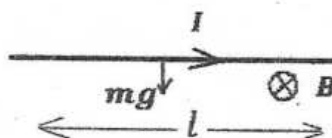
### SECTION – E

31. (a) Two cells of emf  $E_1$  and  $E_2$ , internal resistances  $r_1$  and  $r_2$  respectively are connected in series (supporting each other) and connected to an external resistance  $R$ . Obtain an expression for equivalent emf and equivalent internal resistance. (3)
- (b) State Kirchhoff's rules. (2)

OR

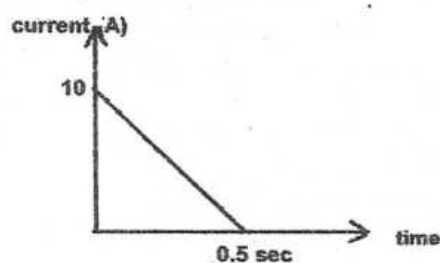
- Explain the formation of Wheatstone's bridge and find condition for its balancing. (3)
- A resistor dissipates 192 J of energy in 1 s when a current of 4 A is passed through it. Now, when the current is doubled, find the amount of thermal energy dissipated in 5 s. (2)

32. (a) Derive an expression for magnetic force  $\vec{F}$  acting on a straight conductor of length  $\vec{L}$  carrying current  $I$  in an external magnetic field  $\vec{B}$ . Draw necessary diagram.
- (b) A straight wire of mass 200 g and length 1.5 m carries a current of 2 A. It is suspended in mid-air by a uniform horizontal magnetic field  $B$ . What is the magnitude of the magnetic field?



OR

- Obtain an expression for the torque  $\vec{\tau}$  acting on a current carrying loop in a uniform magnetic field  $\vec{B}$ . Draw necessary diagram.
  - An electron is moving with velocity  $\vec{v} = (2\hat{i} + 3\hat{j})$  m/s in a magnetic field  $\vec{B} = (2\hat{i} + 3\hat{j})$  T. Find force on it.
33. (a) An ac source with instantaneous voltage  $v = v_0 \sin \omega t$  is connected to a capacitor of capacitance  $C$ . Obtain expression for instantaneous current and determine the phase relationship between voltage and current. (3)
- (b) In a coil resistance 100 ohm, a current is induced by changing the magnetic flux through it as shown. The magnitude of change in flux through the coil is: (2)



OR

- State Faraday's laws of electromagnetic induction. (1)
- Derive an expression for mutual inductance between two co axial solenoids. (3)
- Write the dimensional formula of coefficient of mutual induction. (1)



# DELHI PUBLIC SCHOOL, BHILAI

Date : 10.09.2025

Class : XII

Name : \_\_\_\_\_

## MIDTERM EXAMINATION 2025

### SUBJECT: ACCOUNTANCY

Time : 3 Hrs.

M.M. : 80

Roll No. : \_\_\_\_\_

#### GENERAL INSTRUCTIONS:

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

#### Part – A

#### (Accounting for Partnership Firms)

1. Pawan and Manoj are partners in a firm with capitals of ₹ 2,00,000 and ₹ 4,00,000 respectively sharing profits and losses equally. As per the Partnership Deed, the partners are allowed a salary of ₹ 1,00,000 and ₹ 1,20,000 p.a. and interest on capital @ 10% p.a. on their capitals. Net Profit for the year ended on 31<sup>st</sup> March 2025 amounted to ₹ 2,10,000. The total amount on account of interest on capital and salary, Manoj will be getting is:  
(a) ₹ 1,60,000 (b) ₹ 1,20,000 (c) ₹ 1,05,000 (d) ₹ 1,40,000 (1)
2. P and Q are partners. B draws a fixed amount at the end of every month. Interest on drawings is charged @ 15% p.a. At the end of the year interest on Q's drawings amounts to ₹ 16,500. Drawings of Q were: (1)  
(a) ₹ 2,40,000 (b) ₹ 2,88,000 (c) ₹ 2,16,000 (d) ₹ 2,00,000

(OR)

- A and B are partners sharing profits in the ratio of 1:2. C, the manager of the firm, received a salary of ₹ 25,000 per month in addition to a commission of 10% of the Net Profit after charging such commission. The total remuneration of C amounted to ₹ 4,50,000. Profit for the year before charging salary and commission was:
- (a) ₹ 18,00,000 (b) ₹ 19,50,000 (c) ₹ 15,00,000 (d) ₹ 16,50,000 (1)
3. Which one of the following items is not dealt through Profit and Loss Appropriation Account? (1)  
(a) Interest on Capital (b) Interest on Drawings  
(c) Rent paid to a Partner (d) Partner's Salary
  4. Average Capital Employed of a firm is ₹ 5,00,000 and the Normal Rate of Return is 10%. Average Profit of the firm is ₹ 1,00,000 per annum. If remuneration of the partners is estimated to be ₹ 25,000 per annum, then on the basis of two years' purchase of Super Profits, the value of goodwill will be: (1)  
(a) ₹ 25,000 (b) ₹ 50,000 (c) ₹ 1,50,000 (d) ₹ 2,00,000

(OR)

Given below are the two statements, one labelled as Assertion (A) and the other labelled as Reason (R):  
**Assertion (A):** Goodwill is the value of the reputation of a firm because of profits expected in future over and above the super profits.

**Reason (R):** Goodwill is the present value of expected super profits of a firm.

- (a) Both Assertion (A) and Reason (R) are correct and (R) is the correct explanation of (A).  
(b) Both Assertion (A) and Reason (R) are correct but (R) is not the correct explanation of (A).  
(c) Assertion (A) is correct but Reason (R) is not correct.  
(d) Only Reason (R) is correct. (1)
5. Govind and Hari are partners in a firm sharing profits and losses in the ratio of 3:1. With effect from 1<sup>st</sup> April 2025, they agreed to share the profits in the ratio of 2:1. Due to the change in profit-sharing ratio, Govind's gain or sacrifice will be: (1)  
(a) Gain 1/12 (b) Sacrifice 1/12 (c) Gain 1/30 (d) Sacrifice 1/20
  6. At the time of reconstitution of the firm by way of change in profit-sharing ratio among existing partners, the gaining partner compensates the sacrificing partner by paying the proportionate amount of: (1)  
(a) Capital (b) Goodwill (c) Both (a) and (b) (d) Either (a) or (b)

7. X and Y are partners sharing profits and losses in the ratio of 3:2. Z was admitted for the  $\frac{1}{5}$ th share and for this he brings ₹ 1,50,000 as capital. If capitals are to be proportionate to profit-sharing ratio, the respective capitals of the partners will be: (1)
- (a) ₹ 3,00,000; ₹ 3,00,000; ₹ 1,50,000 (b) ₹ 3,60,000; ₹ 2,40,000; ₹ 1,50,000  
(c) ₹ 1,50,000; ₹ 1,50,000; ₹ 1,50,000 (d) ₹ 1,50,000; ₹ 2,00,000; ₹ 4,00,000
8. A and B are partners in a firm. C is admitted as a new partner for  $\frac{1}{6}$  share. C acquired  $\frac{1}{3}$  of his share from A and the remaining from B. The sacrificing ratio of A and B is: (1)
- (a) 1:2 (b) 1:1 (c) 16:9 (d) 2:1
- (OR)
- A, B and C are partners in a firm sharing profits and losses in the ratio of  $\frac{1}{2}$ ;  $\frac{1}{3}$  and  $\frac{1}{6}$ . D was admitted in the firm for  $\frac{1}{6}$ th share. C would retain his original share. The new profit-sharing ratio will be: (1)
- (a) 12:8:5:5 (b) 21:14:18:12 (c) 21:14:15:10 (d) 2:2:1:1
9. When a new partner is admitted, the balance of General Reserve appearing in the Balance Sheet at the time of admission is credited to: (1)
- (a) Profit and Loss Appropriation Account (b) Capital Accounts of all the partners  
(c) Capital Accounts of Old Partners (d) Revaluation Account
10. M, N and P are partners sharing profits and losses in the ratio of 5:3:2. N retired from the firm. M and P decided to share the future profits equally. The goodwill of the firm is valued at ₹ 1,00,000. N's share of goodwill will be adjusted: (1)
- (a) By debiting M's Capital Account and P's Capital Account with ₹ 15,000 each.  
(b) By debiting M's Capital Account and P's Capital Account with ₹ 21,429 and ₹ 8,571 respectively.  
(c) By debiting only M's Capital Account with ₹ 30,000.  
(d) By debiting only P's Capital Account with ₹ 30,000.
11. Ram, Shyam and Tarun are partners sharing profits in the ratio of 2:2:1. The new profit-sharing ratio after Shyam's retirement is 3:2. The gaining ratio is: (1)
- (a) 3:2 (b) 2:1 (c) 1:1 (d) 1:2

(OR)

R, S and T are partners sharing profits equally. On T's retirement, his share is acquired by R and S in the ratio of 3:2. The new profit-sharing ratio between R and S will be: (1)

- (a) 8:7 (b) 4:5 (c) 3:2 (d) 2:3

**Read the following hypothetical situation and answer questions no. 12 and 13.**

A, B and C were partners sharing profits and losses in the ratio of 3:2:1. B died. The firm decided to value the goodwill on the basis of 3 years of purchase of an average of 5 years' profits. The profits of the firm for the last five years before charging interest on capital were ₹ 11,000; ₹ 9,000; ₹ 11,000; ₹ 7,000 and ₹ 8,000. The capital of the firm stood at ₹ 50,000 and the interest rate is 8%. The legal heirs of B will also be entitled to a profit for the intervening period of 5 months on the basis of the average divisible profit.

12. Interest on capital credited to B's Capital Account will be: (1)
- (a) ₹ 4,000 (b) ₹ 1,667 (c) ₹ 3,333 (d) ₹ 1,333
13. B's share of profit for current year up to the date of his death will be debited to: (1)
- (a) Profit and Loss Appropriation Account (b) Capital Accounts of A and C  
(c) Profit and Loss Suspense Account (d) B's Capital Account
14. On dissolution of a firm, the following balances are supplied to you:  
Sundry Assets ₹ 1,26,000; Creditors ₹ 24,000 and the Profit and Loss Account (Dr.) ₹ 12,000. If Profit on realisation was ₹ 15,600. The total amount realised from assets was: (1)
- (a) ₹ 1,62,000 (b) ₹ 1,41,600 (c) ₹ 1,53,600 (d) ₹ 1,50,000
15. On dissolution of a firm, Raman's Capital Account showed a credit balance of ₹ 21,000. His share of profit in Realisation Account is ₹ 4,500. He has paid firm's realisation expenses of ₹ 1,500. He will finally get a payment of: (1)
- (a) ₹ 27,000 (b) ₹ 19,500 (c) ₹ 21,000 (d) ₹ 24,000
16. A, B and C are partners. The firm had given loan to B. They decided to dissolve the firm. Loan to B will be settled by: (1)
- (a) Transferring it to the debit side of Realisation Account.  
(b) Transferring it to the credit side of Realisation Account.  
(c) Transferring it to debit side of B's Capital Account.  
(d) B paying loan amount through cash or cheque.
17. X, Y and Z entered into partnership on 1<sup>st</sup> October 2024 to share profits and losses in the ratio of 3:2:1 with capitals of ₹ 3,00,000; ₹ 2,00,000 and ₹ 1,00,000 respectively. X personally guaranteed that Z's share of profit after charging interest on capital @ 5% p.a. would not be less than ₹ 30,000 in a year. Profit for the year ended 31<sup>st</sup> March 2025 amounted to ₹ 1,20,000. You are required to prepare Profit and Loss Appropriation Account. (3)

(OR)

- A and B are partners sharing profits and losses in the ratio of 5:3. Their fixed capitals on 31<sup>st</sup> March 2024 were ₹ 6,00,000 and ₹ 8,00,000 respectively. They agreed to allow interest on capital @ 12% p.a. The profits of the firm for the year ended 31<sup>st</sup> March 2025 before allowing interest on capital was ₹ 1,26,000. Pass necessary journal entries for the above transactions in the books of the firm. (3)
18. X, Y and Z are sharing profits and losses in the ratio of 5:3:2. They decided to share future profits and losses in the ratio of 2:5:3 with effect from 1<sup>st</sup> April 2025. Land (having book value of ₹ 1,00,000) was found undervalued by ₹ 50,000 and Stock (having book value of ₹ 4,00,000) was found overvalued by ₹ 30,000. Pass the necessary adjusting entry without affecting the book value of the above items. (3)
19. X and Y are partners sharing profits and losses in the ratio of 3:1. They agree to admit Z as a partner for 1/4<sup>th</sup> share. On his admission, the following items appeared in the Balance Sheet: General Reserve ₹ 60,000; Workmen Compensation Reserve ₹ 90,000; Investment Fluctuation Reserve ₹ 60,000 and Investments ₹ 3,00,000. Give journal entry in the following cases:
- There is a claim of ₹ 60,000 against Workmen Compensation Reserve.
  - Market value of investment is ₹ 2,85,000.
  - ₹ 15,000 from General Reserve is to be transferred to Machinery Replacement Fund.
20. Record necessary journal entries in the following cases on dissolution of a firm: (3)
- Creditors of ₹ 55,000 accepted ₹ 30,000 as cash and Stock of ₹ 30,000 in full settlement of their claim.
  - Old furniture of ₹ 28,000 which had been written off from the books was sold for ₹ 20,000.
  - Nimay, a partner, was appointed to look after the process of dissolution for which he was allowed a remuneration of ₹ 27,000. P agreed to bear the dissolution expenses. Actual dissolution expenses ₹ 24,000 were paid by P.
21. Ajay, Bhanu and Chaman are partners sharing profits in the ratio of 5:3:2. Bhanu retires on 1<sup>st</sup> April 2025 from the firm, on which date capitals of Ajay, Bhanu and Chaman after all adjustments stood at ₹ 1,03,680; ₹ 87,840 and ₹ 26,880 respectively. Cash and Bank balance on that date was ₹ 9,600. It was decided that the amount payable to Bhanu will be brought by Ajay and Chaman in such a way as to make their capitals proportionate to their profit-sharing ratio. Calculate the amount to be brought by Ajay and Chaman if minimum Cash and Bank balance of ₹ 7,200 to be maintained and record necessary journal entries for the same. The new profit-sharing ratio between Ajay and Chaman will be 3:2. (4)

(OR)

- A and B are partners sharing profits and losses in the ratio of 5:3. On 1<sup>st</sup> April 2023, B died. On that date, the Balance Sheet showed a balance of ₹ 1,04,000 in Workmen Compensation Reserve and ₹ 27,000 in Investment Fluctuation Reserve. Pass the necessary journal entries in each of the following cases:
- The market value of investments (book value ₹ 3,00,000) is ₹ 3,20,000.
  - There is a claim on account of Workmen's Compensation estimated at ₹ 1,36,000.
22. Kavish and Sachit were partners in a firm sharing profits and losses in the ratio of 2:1. On 31<sup>st</sup> March 2025, the balances in their capital accounts after making adjustments for profit and drawings were ₹ 90,000 and ₹ 80,000 respectively. The net profit for the year ended 31<sup>st</sup> March 2025 amounted to ₹ 30,000. During the year Kavish withdrew ₹ 40,000 and Sachit withdrew ₹ 20,000. Subsequently, it was discovered that interest on capital @ 10% p.a. was not provided to the partners. Also, interest on drawings to Kavish ₹ 3,000 and to Sachit ₹ 2,000 was not charged. Pass necessary adjusting journal entry. Show your workings clearly. (4)
23. L, M and N were partners sharing profits in the ratio of 2:2:1. On 31<sup>st</sup> March 2025, their Balance sheet was as follows:

Balance Sheet as on 31.3.2025

| Liabilities       |          | Amount    | Assets                  |  | Amount    |
|-------------------|----------|-----------|-------------------------|--|-----------|
|                   |          | ₹         |                         |  | ₹         |
| Sundry Creditors  |          | 3,00,000  | Land and Building       |  | 7,00,000  |
| General Reserve   |          | 1,00,000  | Stock                   |  | 2,00,000  |
| Capital Accounts: |          |           | Debtors                 |  | 1,50,000  |
| L                 | 4,00,000 |           | Cash at Bank            |  | 3,00,000  |
| M                 | 3,50,000 |           | Profit and Loss Account |  | 50,000    |
| N                 | 2,50,000 | 10,00,000 |                         |  |           |
|                   |          | 14,00,000 |                         |  | 14,00,000 |

M died on 30<sup>th</sup> November 2025. According to the partnership deed, his executors are entitled to:

- Balance in his capital account.
- His share of goodwill which will be calculated on the basis of thrice the average of the past four years' profits.
- His share in profits up to the date of death on the basis of average profits of the last two years.
- Interest on capital @ 12% p.a. up to the date of his death.
- The firm's profits for the last four years were: 2021-22 ₹ 1,20,000; 2022-23 ₹ 2,00,000; 2023-24 ₹ 2,60,000; and 2024-25 ₹ 2,20,000.

(vi) M's executors were paid the amount due immediately.

Prepare M's Capital Account to be presented to his executors and his Executors' Account. (6)

24. Radha and Sarita were partners in a firm sharing profits and losses in the ratio of their capitals. On 31<sup>st</sup> March 2025, their Balance Sheet was as follows:

| Liabilities                    |          | Amount   | Assets                  |  | Amount   |
|--------------------------------|----------|----------|-------------------------|--|----------|
|                                |          | ₹        |                         |  | ₹        |
| Sundry Creditors               |          | 42,000   | Cash at Bank            |  | 35,000   |
| Employees' Provident Fund      |          | 60,000   | Stock                   |  | 24,000   |
| Radha's Brother's Loan         |          | 9,000    | Debtors                 |  | 19,000   |
| Sarita's Loan                  |          | 35,000   | Furniture               |  | 40,000   |
| Workmen Compensation Reserve   |          | 20,000   | Plant                   |  | 2,10,000 |
| Investment Fluctuation Reserve |          | 4,000    | Investments             |  | 32,000   |
| Capital Accounts:              |          |          | Profit and Loss Account |  | 10,000   |
| Radha                          | 1,20,000 |          |                         |  |          |
| Sarita                         | 80,000   | 2,00,000 |                         |  |          |
|                                |          | 3,70,000 |                         |  | 3,70,000 |

On the above date, they decided to dissolve the firm on the following terms:

- Radha agreed to take over furniture at ₹ 38,000 and pay off her brother's loan.
- Debtors realised ₹ 18,500 and the plant realised 10% more.
- Sarita took over 40% of the stock at 20% less than the book value. The remaining stock was sold at a gain of 10%.
- Sundry Creditors took over investments in full settlement.
- Realisation expenses amounted to ₹ 8,000.

You are required to prepare Realisation Account on the dissolution of the firm. (6)

25. A and B share profits in the ratio of 3:2. Their Balance Sheet on 31<sup>st</sup> March 2025 was as follows:

| Liabilities                  |          | Amount   | Assets                  |         | Amount   |
|------------------------------|----------|----------|-------------------------|---------|----------|
|                              |          | ₹        |                         |         | ₹        |
| Sundry Creditors             |          | 1,54,000 | Cash at Bank            |         | 8,000    |
| Employees' Provident Fund    |          | 16,000   | Bills Receivable        |         | 6,000    |
| General Reserve              |          | 10,000   | Sundry Debtors          | 37,600  |          |
| Workmen Compensation Reserve |          | 10,000   | Less: Provision for D/D | (1,600) | 36,000   |
| Capital Accounts:            |          |          | Stock                   |         | 60,000   |
| A                            | 1,04,000 |          | Plant and Machinery     |         | 76,000   |
| B                            | 52,000   | 1,56,000 | Furniture               |         | 20,000   |
|                              |          | 3,46,000 | Land and Building       |         | 1,40,000 |
|                              |          |          |                         |         | 3,46,000 |

C was admitted as a new partner and brought ₹ 64,000 as capital and ₹ 15,000 for his share of goodwill premium. The new profit-sharing ratio was 5:3:2. On C's admission, the following terms were agreed upon:

- Stock was to be depreciated by 5%.
- Provision for doubtful debts was to be made at ₹ 2,000.
- Furniture was to be depreciated by 10%.
- Land and Buildings to be appreciated by ₹ 20,000.
- Capitals of A and B were to be adjusted on the basis of C's capital by bringing or paying off cash.

Prepare Revaluation Account and Partners' Capital Accounts. (6)

26. P, Q and R were partners in a firm sharing profits and losses in the ratio of 5:3:2. On 31<sup>st</sup> March 2025, their Balance Sheet was as under:

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

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

- (i) Debtors of ₹ 2,000 will be written off as bad debts and a provision of 5% on debtors for bad and doubtful debts will be maintained.
- (ii) Patents will be completely written off and stock, machinery and building will be depreciated by 5%.
- (iii) An unrecorded creditor of ₹ 10,000 will be taken into account.
- (iv) Q and R will share the future profits in the ratio of 2:3.
- (v) Goodwill of the firm on P's retirement was valued at ₹ 3,00,000.

Pass necessary journal entries for the above transactions on retirement of P.

(6)

### Part – B

#### (Analysis of Financial Statements)

27. 'Calls-in-advance' appears in the company's Balance Sheet under the head: (1)
- |                             |                         |
|-----------------------------|-------------------------|
| (a) Non-Current Liabilities | (b) Current Liabilities |
| (c) Non-Current Assets      | (d) Current Assets      |

(OR)

- 'Security Deposits' appear in the Balance Sheet of a company under the sub-head: (1)
- |                               |                                   |
|-------------------------------|-----------------------------------|
| (a) Other Current Liabilities | (b) Other Current Assets          |
| (c) Other Non-Current Assets  | (d) Other Non-Current Liabilities |

28. Which of the following statements is/are correct? (1)
- (I) Loose Tools are shown as inventories in the Balance Sheet of a Company.
  - (II) Reserve Capital is that part of Share Capital which a company resolves not to call at any time it desires.

**Alternative Codes:**

- |                                                               |  |
|---------------------------------------------------------------|--|
| (a) Both statements are correct.                              |  |
| (b) Both statements are incorrect.                            |  |
| (c) Statement (I) is correct and statement (II) is incorrect. |  |
| (d) Statement (I) is incorrect and statement (II) is correct. |  |
29. Which analysis helps in determining the borrowing capacity of a prospective buyer? (1)
- |              |              |              |          |
|--------------|--------------|--------------|----------|
| (a) External | (b) Internal | (c) Security | (d) Debt |
|--------------|--------------|--------------|----------|

(OR)

- Which of the following statements is/are correct? (1)
- (I) Financial analysis is used for credit analysis.
  - (II) An objective of financial analysis is to determine operating efficiency and profitability.

**Alternative Codes:**

- |            |             |                   |                      |
|------------|-------------|-------------------|----------------------|
| (a) Only I | (b) Only II | (c) Both I and II | (d) Neither I nor II |
|------------|-------------|-------------------|----------------------|
30. Profit after interest and tax ₹ 1,05,000; 5,000, 8% Debentures of ₹ 100 each; 10% Preference Shares of ₹ 100 each ₹ 3,00,000; 20,000 Equity Shares of ₹ 10 each; Tax Rate 50%. Return on Investment will be: (1)
- |         |         |         |         |
|---------|---------|---------|---------|
| (a) 20% | (b) 25% | (c) 30% | (d) 15% |
|---------|---------|---------|---------|

(OR)

- Net Profit Before Interest and Tax ₹ 3,20,000; 10% Long-term Borrowings ₹ 4,00,000. Interest Coverage Ratio will be: (1)
- |             |             |             |              |
|-------------|-------------|-------------|--------------|
| (a) 4 Times | (b) 6 Times | (c) 8 Times | (d) 10 Times |
|-------------|-------------|-------------|--------------|

31. Quick Ratio of Arihant Ltd. is 2:1. State giving reason, whether the ratio will increase, decrease or not change in each of the following cases: (3)

- (i) Purchase of Stock-in-trade for cash ₹ 50,000.
- (ii) Cash sale of inventory costing ₹ 20,000 for ₹ 25,000.
- (iii) Cash collected from Trade Receivables ₹ 25,000.

32. Classify the following items under Major-Heads and Sub-Heads (if any) in the Balance Sheet of a Company as per Schedule III of the Companies Act, 2013: (3)

- (i) Current Maturities of Long-term Debts
- (ii) Building under Construction
- (iii) Advances recoverable in cash within the operating cycle

(OR)

Under which Sub-Heads will the following items be presented in the Balance Sheet of a company as per Schedule III, Part I of the Companies Act, 2013?

- (i) Trademarks
- (ii) Unpaid Dividends
- (iii) Premium on Redemption of Debentures
- (iv) Securities Premium
- (v) Employees' earned leaves payable on retirement
- (vi) Accrued Income

(3)

33. Prepare a Comparative Statement of Profit and Loss of KLS and LKS Ltd. with the help of the following information: (4)

| Particulars                | 31 <sup>st</sup> March 2025 | 31 <sup>st</sup> March 2024 |
|----------------------------|-----------------------------|-----------------------------|
|                            | ₹                           | ₹                           |
| Revenue from Operations    | 40,00,000                   | 25,00,000                   |
| Purchase of Stock-in-trade | 21,00,000                   | 11,00,000                   |
| Employees Benefit Expenses | 1,00,000                    | 2,00,000                    |
| Other Incomes              | 4,00,000                    | 3,00,000                    |
| Income Tax                 | 50%                         | 40%                         |

34. From the following information, calculate the following ratios:

- (i) Operating Ratio  
(ii) Inventory Turnover Ratio  
(iii) Current Ratio

Information: Cash Revenue from Operations ₹ 10,00,000; Credit Revenue from Operations 120% of Cash Revenue from Operations; Operating Expenses 10% of Total Revenue from Operations; Rate of Gross Profit 40%; Opening Inventory ₹ 1,50,000; Closing Inventory ₹ 20,000 more than Opening Inventory; Current Liabilities ₹ 3,00,000; Quick Ratio 2:1. (6)

~~~~~

- ① Phy Edu
- ② Bio
- ③ Eng. Graphics
- ④ Eco
- ⑤ Com. Sci
- ⑥ I.P.
- ⑦ Maths
- ⑧ A. Maths
- ⑨ B. Std
- ⑩ He
- ⑪ Eng
- ⑫ Phy
- ⑬ Accounty
- ⑭ W.K