Self Assessment Paper

1

General Instructions :
1. This question paper contains two parts A and B.
2. Both Part A and Part B have internal choices.

Part – A :
1. It consists of two sections- I and II
2. Section I has 16 questions. Internal choice is provided in 5 questions.
3. Section II has four case study-based questions. Each case study has 5 case-based sub-parts. An examinee is to attempt any 4 out of 5 sub-parts.

Part – B :
1. Question No 21 to 26 are Very short answer Type questions of 2 marks each,
2. Question No 27 to 33 are Short Answer Type questions of 3 marks each
3. Question No 34 to 36 are Long Answer Type questions of 5 marks each.
4. Internal choice is provided in 2 questions of 2 marks, 2 questions of 3 marks and 1 question of 5 marks.

PART - A

Section - I

Section I has 16 question of 1 mark each. Internal choice in provided in 5 questions.

1. What is the value of $(2/5)^{-3}$?   1

2. In triangles ABC and PQR, $AB = AC$, $\angle C = \angle P$ and $\angle B = \angle Q$. The two triangles are _____ but_____.   1

3. If $49x^2 - b = \left(7x + \dfrac{1}{2}\right)\left(7x - \dfrac{1}{2}\right)$, then find the value of b.   1

4. We multiply or divide both sides of a linear equation with a non-zero number, then the solution of linear equation _____ .   1

5. In given figure, if $OP \parallel RS$, $\angle OPQ = 110°$ and find $\angle QRS = 130°$, then find $\angle PQR$.   1

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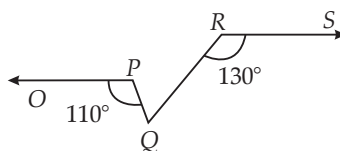
6. For drawing a frequency polygon of a continuous frequency distribution, we plot the points whose ordinates are the frequencies of the respective classes and abscissae are _____of the classes respectively.   **1**

7. How many linear equations in x and y can be satisfied by $x = 1$ and $y = 2$?   **1**

OR

What is the equation of a line parallel to y-axis ?   **1**

8. If $\dfrac{x}{y} + \dfrac{y}{x} = -1$ $(x, y \neq 0)$, then find the value of $x^3 - y^3$.   **1**

9. The sides of a triangle are 56 cm, 60 cm and 52 cm long. What is the area of the triangle ?   **1**

OR

What is the perimeter of a triangle with sides a, b and c ?   **1**

10. Two coins are tossed 1000 times and the outcomes are recorded as below :

Numbers of heads	2	1	0
Frequency	200	550	250

Based on this information, find the probability for at most one head.   **1**
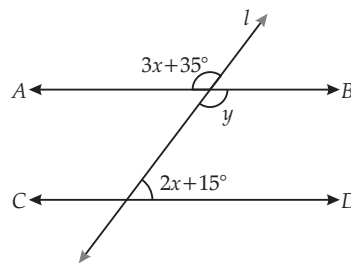
OR

What is the sum of probability of all possible outcomes ?   **1**

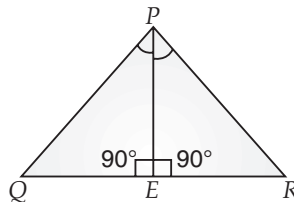**11.** Upper limit – lower limit = _____ .   **1**

OR

A vertical column graph with spacing between bars is called a _____ .   **1**

12. In the given figure, $AB \parallel CD$ and 'l' is transversal, then calculate the value of 'x'.   **1**

13. In ΔPQR, PE is the perpendicular bisector of $\angle QPR$, then prove that $PQ = PR$.   **1**
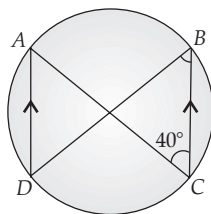

AI 14. If the graph of $2x + ky = 5$ passes through the point $(-2, 1)$, find k.   **1**

15. Expand : $\left(\dfrac{1}{3}x - \dfrac{2}{3}y\right)^3$ **1**

OR

Factorize : $8x^3 - (2x - y)^3$ **1**

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16. In the given figure, $AD \parallel BC$ and $\angle BCA = 40°$. The measure of $\angle DBC$ is equal to **1**


Section - II

Case study based questions are compulsory. Attempt any four sub parts from each question. Each question carries 1 mark.

17. Father's Day is a celebration of fathers, honouring fatherhood, paternal bonds and the role fathers play in society.

On this day, children show acknowledgement and appreciation to their father for their contribution to their own families and society at large.

Rohan wants to show gratitude towards his father by giving him a hand-made card to him. He has pasted three trapezium one above the other as shown below. $AB \parallel HC \parallel GD \parallel FE$. Also, $BC = CD = DE$ and $GF = 6$ cm. He wants to decorate the card by putting up a coloured tape on non-parallel sides of trapezium.
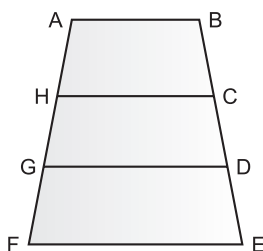
Answer the following :

(A) What statement is incorrect ?   **1**

(i) A trapezium has only one pair of parallel lines.

(ii) *ABEF* is a trapezium

(iii) $\angle F$ and $\angle E$ are base angle of trapezium *GDEF*.

(iv) *ABDG* is a parallelogram.

(B) If $\angle A = 140°$ then $\angle F =$ **1**

(i) 50°   (ii) 30°

(iii) 40°   (iv) 20°

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(C) What is the perimeter of trapezium $HCDG$ if $HC = 7$ cm, $BC = 3$ cm and $DG = 8$ cm ?   **1**

 (i) 14 cm   **(ii)** 20 cm

 (iii) 23 cm   **(iv)** 24 cm

(D) Find the total length of coloured tape used on the non-parallel boundary of the card, if $DE = 4$ cm   **1**

 (i) 30 cm   **(ii)** 18 cm

 (iii) 19 cm   **(iv)** 20 cm

(E) A trapezium can be called a parallelogram if :   **1**

 (i) its base angles are equal

 (ii) its non-parallel sides are equal

 (iii) its non-parallel sides are parallel

 (iv) any two pair of adjacent angles are supplementary.

18. The number of road accidents in the first six months of the year (January to June) were around 1,60,000, 35% less than the average number of accidents reported in the corresponding period in the previous six years, an obvious result of a nationwide lockdown imposed in March to slow the spread of the Covid-19 infection. The number of people who died also dropped by 30% this year.

A survey was held on 200 drivers in a city with the aim to find the relationship between ages and accidents. Number of accidents in 4 weeks was recorded.

Age of Drivers (in years)	0 accidents	1 accidents	2 accidents	Above 2 accidents
18 – 30	17	23	37	20
30 – 50	13	20	14	11
Above 50	15	16	9	5

Look at the table and answer the following :

(A) Find the probability of the event for a driver chosen at random from the city being 18 – 30 years of age and having exactly 2 accidents.   **1**

 (i) 37/200   **(ii)** 23/200

 (iii) 14/200   **(iv)** 20/200

(B) Find the probability of the event for a driver chosen at random from the city being 30 – 50 years of age and having 1 or more accidents.   **1**

 (i) 40/200   **(ii)** 20/200

 (iii) 45/200   **(iv)** 14/200

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(C) Find the probability of the event for a driver chosen at random from the city being 50 years and having above 2 accidents.　　　　　　　　　　　　**1**
(i) 5/200　　　　　　　　　　　　　　　　　　**(ii)** 9/200
(iii) 15/200　　　　　　　　　　　　　　　　　**(iv)** 16/200

(D) Find the probability of the event for a driver chosen at random from the city being above 50 years and having no accidents.　　　　　　　　　　**1**
(i) 12/200　　　　　　　　　　　　　　　　　　**(ii)** 21/200
(iii) 15/200　　　　　　　　　　　　　　　　　**(iv)** 9/200

(E) If probability of having an event is $\frac{2}{3}$, then what is the probability of not having that event?　**1**

(i) – 1　　　　　　　　　　　　　　　　　　　　**(ii)** 1/3
**(iii)** 4/4　　　　　　　　　　　　　　　　　　　**(iv)** 0

19. A team is planning to construct a triangular field of sides 50 m, 65 m and 65 m. So, prepare a map for it. But before starting construction they want to clear following doubts :
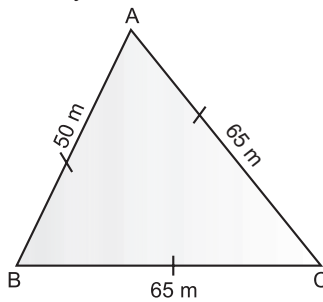
(A) What is the type of triangular field ?　　　　　　　　　　　　　　　**1**
(i) scalene　　　　　　　　　　　　　　　　　　**(ii)** equilateral
(iii) isosceles　　　　　　　　　　　　　　　　　**(iv)** right-angled

(B) If $\angle A = 40°$ then $\angle B + \angle C$ is　　　　　　　　　　　　　　**1**
(i) 100°　　　　　　　　　　　　　　　　　　　**(ii)** 120°
(iii) 140°　　　　　　　　　　　　　　　　　　**(iv)** 130°

(C) Semi perimeter of $\triangle ABC$ =　　　　　　　　　　　　　　　　**1**
(i) 90 m　　　　　　　　　　　　　　　　　　　**(ii)** 180 m
(iii) 50 m　　　　　　　　　　　　　　　　　　**(iv)** 150 m

(D) What is the area of the triangular field ?　　　　　　　　　　　　　**1**
(i) 1000 m^2　　　　　　　　　　　　　　　　　**(ii)** 1200 m^2
(iii) 1300 m^2　　　　　　　　　　　　　　　　**(iv)** 1500 m^2

(E) Height of the triangular field is :　　　　　　　　　　　　　　　　**1**
(i) 40 m　　　　　　　　　　　　　　　　　　　**(ii)** 46.15 m
(iii) 50 m　　　　　　　　　　　　　　　　　　**(iv)** 60.34 m

20. Sohan draws a gate of a temple on the graph paper. He has following points :
(– 1, 0), (1, 0), (1, 1), (– 1, 1) and (0, 2)

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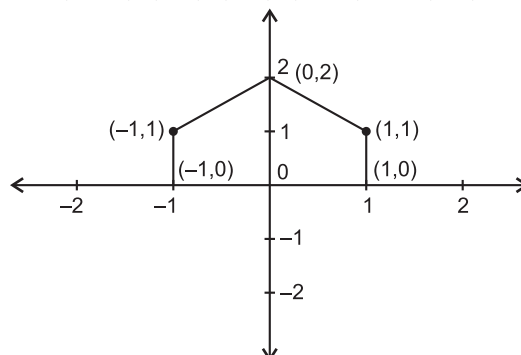
Answer the below questions :

(A) Name the closed figure obtained.   1

    (i) Triangle   **(ii)** Quadrilateral

    (iii) Pentagon   **(iv)** Hexagon

(B) In which quadrant $(-1, 1)$ lies ?   1

    (i) 1st quadrant   **(ii)** 2nd quadrant

    (iii) 3rd quadrant   **(iv)** 4th quadrant

(C) Write the ordinate of the point $(1, 0)$.   1

    (i) 1   **(ii)** 0

    (iii) 2   **(iv)** -1

(D) Write the abscissa of the point $(0, 2)$.   1

    (i) 0   **(ii)** 2

    (iii) -2 **(iv)** 1

(E) Which point from the following lies on y-axis ?   1

    (i) $(1, 1)$ **(ii)** $(1, 0)$

    (iii) $(0, 2)$ **(iv)** $(-1, 1)$

PART - B

All questions are compulsory. In case of internal choice attempt any one.

U **21.** Read the bar graph. Find the percentage of excess expenditure on wheat than pulses and ghee taken together.   2
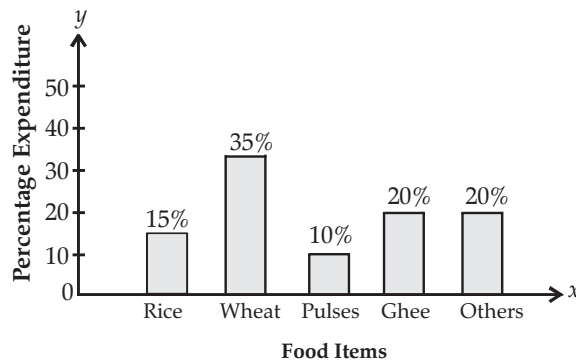
AI **22.** If the point $(2k - 3, k + 2)$ lies on the graph of the equation $2x + 3y + 15 = 0$, find value of k.   2

23. Expand : $\left(\dfrac{1}{3}x - \dfrac{2}{3}y\right)^3$ 2

24. Find the point at which the equation $3x - 2y = 6$ meets the x-axis.   2

25. Prove that "equal chords of a circle subtend equal angles at the centres."   2

OR

If diagonals of a cyclic quadrilateral are diameters of the circle through the opposite vertices of the quadrilateral, prove that the quadrilateral is a rectangle.   2

26. Find the volume of a sphere whose surface area is 154 cm^2.   2

OR

The total surface area of a solid hemisphere is 5940 cm^2. Find the diameter of the hemisphere.   2

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Ⓤ 27. Find the value of $\dfrac{4}{(216)^{-\frac{2}{3}}} - \dfrac{1}{(256)^{-\frac{3}{4}}}$. · 3

OR

Simplify : $\left(\dfrac{5^{-1} \times 7^2}{5^2 \times 7^{-4}}\right)^{\frac{7}{2}} \times \left(\dfrac{5^{-2} \times 7^3}{5^3 \times 7^{-5}}\right)^{-\frac{5}{2}}$ · 3

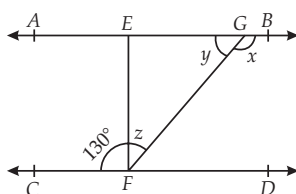**28.** Find the percentage increase in the area of a triangle, if its each side is doubled. · 3

29. If $x^2 + \dfrac{1}{x^2} = 98,$ then find value of $x^3 + \dfrac{1}{x^3}.$ · 3

30. In the figure, $AB \parallel CD$, $EF \perp CD$ and $\angle GFC = 130°$. Find x, y and z. · 3

31. Metallic spheres of radii 6 m, 8 m and 10 m, respectively are melted to form a single solid sphere. Find the radius of the resulting sphere. · 3

OR

A dome of a building is in the form of a hemisphere. From inside, it was white washed at the cost of ₹ 997.92. If the cost of white washing is 400 paisa per square meter, find the volume of air inside the dome. $\left(\text{Take } \pi = \dfrac{22}{7}\right)$ · 3

32. Construct an angle of $52\dfrac{1}{2}^{\circ}$, using compass and ruler. · 3

33. A joker's cap is in the form of right circular cone of base radius 7 cm and slant height 25 cm. Find the area of sheet required for 10 such caps. · 3

ＡＩ 34. Construct a ΔPQR in which $QR = 6$ cm, $\angle Q = 60°$ and $PR - PQ = 2$ cm. · 5

35. A school organised an adventure camp for students to Kanatal. The following table shows the participation of students in different types of adventure activities :

Type I → trekking

Type II → trekking and mountain climbing

Type III → trekking, mountain climbing and rappelling

Type IV → trekking, rappelling and rafting.

Type of activities	Number of students
Type I	75
Type II	62
Type III	55
Type IV	36
All	22

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Find the probability that the student chosen at random participated in :

(i) Type III activities.

(ii) All the activities.

(iii) Type I activity.

(iv) Type II and Type IV activities   **5**

36. Prove that the diagonals of a square are equal and perpendicular to each other.   **5**

OR

AI   *ABCD* is a quadrilateral in which the bisectors of $\angle A$ and $\angle C$ meet *DC* produced at *Y* and *BA* produced at *X* respectively.

Prove that, $\angle X + \angle Y = \dfrac{1}{2}(\angle A + \angle C)$ **5**

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