

MATHEMATICS, Paper - II

(English version)

(Parts A and B)

Time : 2 hrs. 45 min.]

[Maximum Marks : 40

Instructions :

1. 15 minutes of time is allotted exclusively for reading the Question Paper and 2.30 hours for writing the answers.
2. **Part - A** answers should be written in separate answer book.
3. There are three sections in **Part-A**.
4. Answer **all** questions.
5. Every answer should be written visibly and clearly.
6. There is internal choice in section - III.

Part - A

Time : 2 Hours

Marks : 30

SECTION - I

(Marks : 4×1=4)

Note :

- (i) Answer **all** the questions.
- (ii) Each question carries **1** mark.

1. Find the co-ordinates of the point, which divides the line segment joining (2, 0) and (0, 2) in the ratio 1 : 1.
2. 'O' is the centre of a circle. PQ is a tangent to the circle at Q from the external point P. If radius of the circle is 9 cm and $PQ = 12$ cm, find the distance of P from O.

3. Find the value of x , if $2 \sin x = \sqrt{3}$.
4. You are writing a test of 40 objective type questions. Each question carries 1 mark. What is the probability of marks you may get to be in multiple of 5?

SECTION - II

(Marks : $5 \times 2 = 10$)

Note :

- (i) Answer **all** questions.
- (ii) Each question carries **2** marks.
5. Find the value of k , for which the points $(7, 2)$, $(5, 1)$ and $(3, k)$ are collinear.
6. Find $\angle B$, if $\tan(A - B) = \frac{1}{\sqrt{3}}$ and $\sin A = \frac{\sqrt{3}}{2}$. Also find $\cos B$. ($A, B < 90^\circ$)
7. Give two different examples of pair of
- (i) Similar figures.
- (ii) Non-similar figures.
8. There are 5 cards in a box with numbers 1 to 5 written on them. If 2 cards are picked out from the box, write all the possible outcomes and find the probability of getting both even numbers.
9. A tower is $100\sqrt{3}$ m high. Find the angle of elevation of its top when observed from a point 100 m away from the foot of the tower.

SECTION - III

(Marks : $4 \times 4 = 16$)

Note :

- (i) Answer **all** questions.
- (ii) Each question carries **4** marks.
10. (a) A wire of length 18 m had been tied to an electric pole at angle of elevation 30° with the ground. As it is covering a long distance, it was cut and tied to the pole at an angle of 60° with the ground. Now, find how much length of the wire was cut?

OR

OR

- (b) Consider the following distribution of daily wages of 50 workers of a factory.

Daily Wages (in Rs)	200-250	250-300	300-350	350-400	400-450
No. of Workers	12	14	8	6	10

Find the mean daily wage of the workers by choosing an appropriate method.

11. (a) Prove that

$$(\sin \theta - \operatorname{cosec} \theta)^2 + (\cos \theta - \sec \theta)^2 = \cot^2 \theta + \tan^2 \theta - 1$$

OR

- (b) Check whether the points (3, 0), (6, 4) and (-1, 3) are the vertices of a right-angled isosceles triangle or not. Also find the area of the triangle.

12. (a) A chord of circle of radius 10 cm subtends a right angle at the centre.

Find the area of the corresponding :

(i) Minor segment.

(ii) Major segment.

(use $\pi = 3.14$)

OR

- (b) From a deck of 52 playing cards, King, Ace and 10 of Clubs were removed and remaining cards were well shuffled. If a card is drawn at random from the remaining, find the probability of getting a card of

(i) Club

(ii) Ace

(iii) Diamond king

(iv) Club 5.

13. (a) Draw a circle of radius 3 cm. Take a point 'P' at a distance of 5 cm from the centre of the circle. From P, draw 2 tangents to the circle.

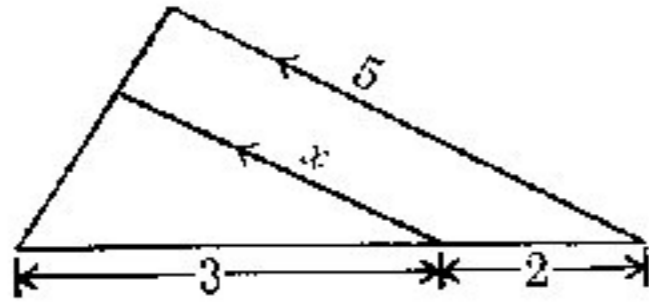
OR

- (b) Draw "greater than Ogive curve" for the following data.

Classes	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	4	4	8	10	12	8	4

29. If $\Delta PQR \sim \Delta XYZ$ and $\angle X = 30^\circ$, $\angle Q = 50^\circ$, then $\angle Z = \dots\dots$ []
 (A) 100° (B) $\angle R$
 (C) both A and B. (D) not known.

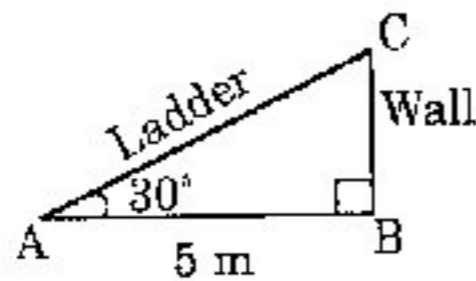
30. From the given figure, $x = \dots\dots\dots$ []



- (A) 3 (B) 2
 (C) 5 (D) 1

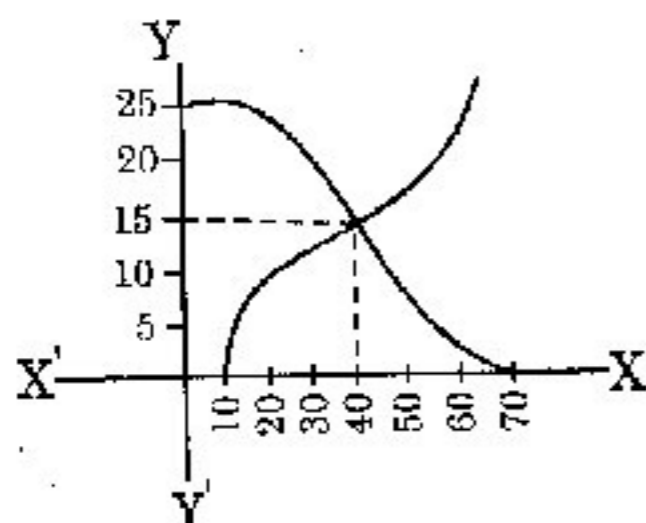
31. Which of the following is the point of intersection of X - axis and the line $y = x + 5$? []
 (A) (0, 5) (B) (5, 0)
 (C) (0, -5) (D) (-5, 0)

32. Observe the figure. Length of the ladder = []



- (A) 5 m (B) 10 m
 (C) 20 m (D) 2.5 m

33. From the given graph of Ogives, median is []



- (A) 15
 (B) 10
 (C) 40
 (D) 20