

**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  $30^\circ$  with the ground. As it is covering a long distance, it was cut and tied to the pole at an angle of  $60^\circ$  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

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**MATHEMATICS, Paper - II**

(English version)

(Parts A and B)

Time : 2 hrs. 45 min.]

[Maximum Marks : 40

**Instructions :** Write the answers to the questions in this **Part-B** on the Question paper itself and attach it to the answer book of **Part-A**.

**Part - B**

Time : 30 minutes

Marks : 10

- (i) Each question has four options. Write the CAPITAL LETTERS (A, B, C, D) showing the correct answer for the following questions in the brackets provided against them.
- (ii) Marks will **not** be awarded for overwritten answers.
- (iii) All questions carry equal marks.

**SECTION - IV**

(Marks :  $20 \times \frac{1}{2} = 10$ )

**Note :**

- (i) Answer **all** questions.
- (ii) Each question carries  $\frac{1}{2}$  mark.

14. If origin is the centroid of a triangle, whose vertices are

(3, 2), (-6, y) and (3, -2), then  $y = \dots$

[     ]

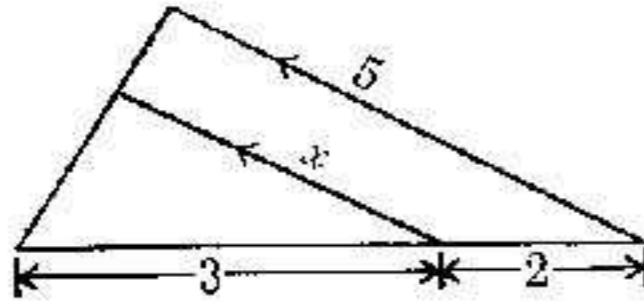
- (A) 0
- (B) 3
- (C) 2
- (D) 6

15. Areas of 2 similar triangles are  $100 \text{ cm}^2$  and  $64 \text{ cm}^2$ .  
If the median of bigger triangle is 10 cm,  
then the median of the smaller triangle is ..... [   ]
- (A) 10 cm (B) 6 cm  
(C) 4 cm (D) 8 cm
16. If  $\sin x = \frac{5}{7}$ , then  $\operatorname{cosec} x = \dots\dots\dots$  [   ]
- (A)  $\frac{5}{7}$  (B)  $\frac{7}{5}$   
(C)  $\frac{2}{5}$  (D)  $\frac{2}{7}$
17. Given  $\angle A = 75^\circ$ ,  $\angle B = 30^\circ$ , then  $\tan (A - B) = \dots\dots\dots$  [   ]
- (A)  $\sqrt{3}$  (B)  $\frac{1}{\sqrt{3}}$   
(C) 1 (D)  $\frac{1}{\sqrt{2}}$
18. If  $P(E) = 0.26$ , then  $P(\bar{E}) = \dots\dots\dots$  [   ]
- (A) 0.74 (B) 0  
(C) 0.26 (D) 1
19. Median of 2, 3, 4, 5, 6, 7 is ..... [   ]
- (A) 2 (B) 5.5  
(C) 5 (D) 4.5
20. Which of the following cannot be a point on X-axis? [   ]
- (A)  $(-2, 0)$  (B)  $(0, 2)$   
(C)  $(2, 0)$  (D)  $(4, 0)$
21. Radius of a circle with centre 'O' is 5 cm. P is a point at a distance of 3 cm from 'O'. Then the number of tangents that can be drawn to the circle is ..... [   ]
- (A) 1 (B) 2  
(C) 0 (D) 3

22. If  $\sec \theta + \tan \theta = \frac{1}{3}$ , then  $\sec \theta - \tan \theta = \dots\dots\dots$  [   ]
- (A) 3 (B)  $\frac{1}{3}$   
(C) 1 (D) 0
23. Probability of getting 7, when a dice is rolled, is ..... [   ]
- (A)  $\frac{1}{6}$  (B)  $\frac{1}{7}$   
(C)  $\frac{6}{7}$  (D) 0
24. To elect the leader of your class from 3 contestants, which of the following measures are to be considered? [   ]
- (A) Mean (B) Mode  
(C) Median (D) Range
25. In Heron's formula, area of triangle =  $\sqrt{s(s-a)(s-b)(s-c)}$ ,  
s is ..... of the triangle. [   ]
- (A) Perimeter. (B) Height.  
(C) Half of perimeter. (D) None.
26. Angle made by the minutes-hand in a clock during a period of 20 minutes is ..... [   ]
- (A)  $120^\circ$  (B)  $20^\circ$   
(C)  $360^\circ$  (D)  $90^\circ$
27. Which of the following situations have equally likely events? [   ]
- (1) Getting 1 or 2 or 3 or 4 or 5 or 6 when a dice is rolled.  
(2) Winning or losing a game.  
(3) Head or Tail, when a coin is tossed.
- (A) 1 and 2 (B) 2 and 3  
(C) 1 and 3 (D) All
28. The probability of picking a letter from the set of English alphabets is  $\frac{5}{26}$ . That alphabet can be ..... [   ]
- (A) consonant. (B) vowel.  
(C) any alphabet. (D) none.

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

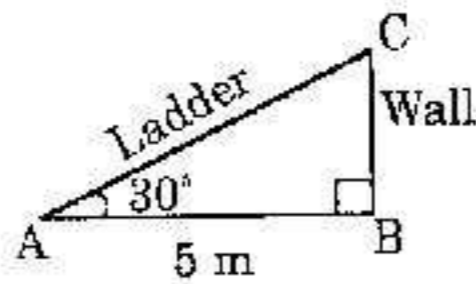
30. From the given figure,  $x = \dots\dots\dots$  [ ]



- (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 ..... [ ]

