

MT

2017 ____ 1100

Seat No.

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MT- GENERAL MATHEMATICS (71) GEOMETRY- SEMI PRELIM II- PAPER- I (E)

Time : 2½ Hours

(Pages 4)

Max. Marks : 40

Note :

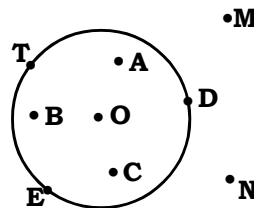
- (i) All questions are compulsory.
- (ii) Use of calculator is not allowed.

Q.1. Attempt ANY FIVE of the following :

5

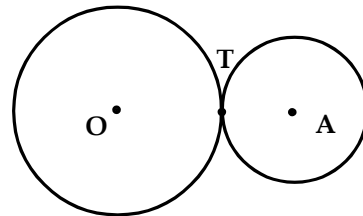
- (i) Radius of the circle is 18 cm. Find its diameter.
- (ii) Find the class mark for the class 30 -34.

- (iii) In the adjoining figure write the points which are in the interior part, exterior part and on the circle.



- (iv) Find the value of $\sin 60^\circ \times \cos 30^\circ$.

- (v) Circles with centres P and Q are touching externally at point T, Radii of the circles are 8 cm and 5 cm respectively. Find the distance PQ.

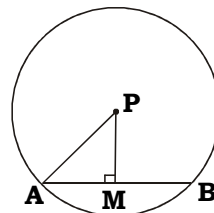


- (vi) Convert the following classes into exclusive form :
11 - 15, 16 - 20, 21 - 25, 26 - 30

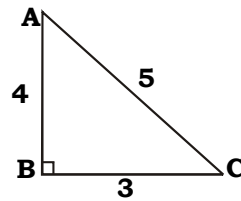
Q.2. Solve ANY FOUR of the following :

8

- (i) The Radius of a circle is 13 cm and the length of a chord is 10 cm. Find the distance of the chord from the centre of the circle.

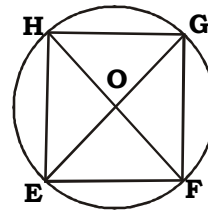


- (ii) In the adjoining figure, $\triangle ABC$ is a right angled triangle and $AB = 4$, $BC = 3$ and $AC = 5$, then find all trigonometric ratio of $\angle A$



- (iii) A coin is tossed. Find the probability that neither Head nor Tail turns up.

- (iv) In the adjoining figure, where O is the centre of a circle. Name the following :
(a) Radii (b) Diameters (c) Chords

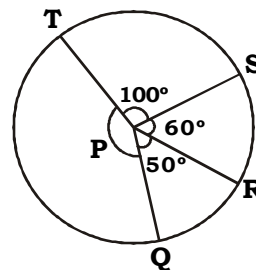


- (v) If $\angle A = 30^\circ$, verify that, $\sin 2A = 2\sin A \times \cos A$.
- (vi) The class marks (mid-points) of frequency distribution are 152, 154, 156, 158. Determine the class size and classes.

Q.3. Solve ANY THREE of the following :

9

- (i) Centre of the circle is 'P' joined with the points Q, R, S, T on the same circle. If $\angle QPR = 50^\circ$, $\angle RPS = 60^\circ$, $\angle SPT = 100^\circ$. Find (a) m (arc QRS) (b) m (arc QST) (c) m (arc RTS).



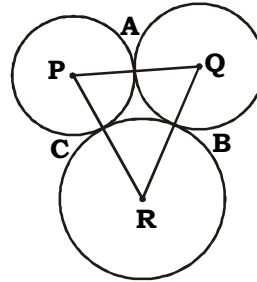
- (ii) If $\operatorname{cosec} A = \frac{3}{\sqrt{2}}$, find $\sin A$.

- (iii) The distribution of money (in ₹) collected by students for flood relief fund is given below :

Money (in ₹)	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
No. of students	5	7	5	2	6

Find the mean of money (in ₹) collected by a student by using 'Direct method'.

- (iv) Three circles having centres P, Q, R are touching externally to each other at the point A, B, C. If PQ = 3, QR = 5, PR = 4, then find the radius of each circle.



- (v) Two digit number is formed using the digits 1, 2 and 3 without repetition.
 (a) Write any two events of your choice
 (b) Find the probability of the events you have written.

Q.4. Solve ANY TWO of the following :

8

- (i) The opposite angles of a cyclic quadrilateral are supplementary.
 (ii) If $16 \cot A = 12$, find the value of $\frac{\sin A + \cos A}{\sin A - \cos A}$.
 (iii) Following is the distribution of the size of certain farms from a taluka (tehasil).

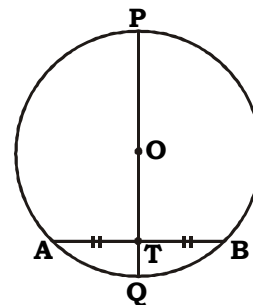
Size of farm (in acres)	5-15	15-25	25-35	35-45	45-55	55-65	65-75
No. of farms	7	14	15	25	31	5	3

Find the median size of the farms.

Q.5. Solve ANY TWO of the following :

10

- (i) In the adjoining figure, centre of the circle is point 'O', diameter PQ bisects the chord AB at point T.
 If PQ = 30, OT = 9, find (a) AB (b) PB (c) BQ.



- (ii) Two dice are thrown. Find the probability that,
- (a) A = the sum of numbers on the dice is at least 11.
 - (b) B = the sum of numbers on the dice is divisible by 9.
 - (c) C = the number on the upper face of the first die is greater than the number on the upper face of the second die.
 - (d) D = the sum of the numbers on their upper faces is a perfect square.
- (iii) A straight highway leads to the foot of a tower of height 50 m. From the top of the tower, the angle of depression an observer makes with the car is 45° . What is the distance of that car from the tower?

Best Of Luck 🍀