

MT

2017 ____ 1100

Seat No.

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

Time : 2½ Hours

(Pages 3)

Max. Marks : 40

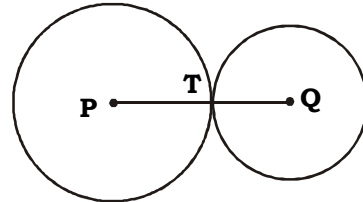
Note :

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

Q.1. Attempt ANY FIVE of the following :

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- (i) Find the radius of the circle with diameter 10 cm.
- (ii) Find the class mark for the class 60 -65.
- (iii) 'O' is the centre of the circle having radius 7 cm. Point P is in the plane of a circle. If $OP = 4.5$ cm, then state whether 'P' is in interior or exterior of the circle ? Justify.
- (iv) Find the value of the following :
 $\sin^2 90^\circ - \tan^2 45^\circ$
- (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.

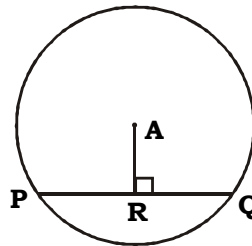


- (vi) Convert the following classes into exclusive form :
200 - 249, 250 - 299, 300 - 349, 350 - 399

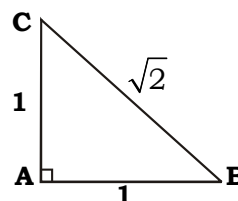
Q.2. Solve ANY FOUR of the following :

8

- (i) In the adjoining figure, 'A' is the centre of a circle. seg $AR \perp$ chord PQ. If $AP = 25$ cm, $AR = 7$ cm, find the length of the chord PQ.

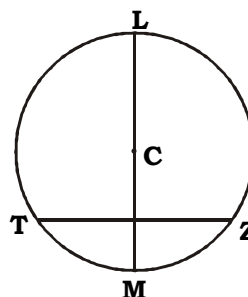


- (ii) ΔABC is a right angled at A,
 if $BC = \sqrt{2}$. $AB = AC = 1$.
 Write all trigonometric ratios of $\angle B$.



- (iii) Two coins are tossed. Find the probability that,
 (a) A = at least one head turns up
 (b) B = no head turns up.

- (iv) In the adjoining figure,
 Point 'C' is the centre of the circle.
 Classify the following segments into radius,
 diameter and chord.



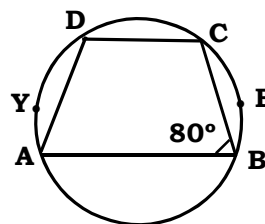
- (a) seg TZ (b) seg LM
 (c) seg CL (d) seg CM

- (v) Show that $\sin^2 45^\circ + \cos^2 45^\circ = 1$.
- (vi) The classes are given as 11 – 15, 16 – 20, 21 – 25, 26 – 30.
 Answer the following :
 (a) Find the mid point of the class 21 – 25
 (b) Mark the classes continuous (Exclusive form)

Q.3. Solve ANY THREE of the following :

9

- (i) In the adjoining figure,
 $\square ABCD$ is the cyclic quadrilateral
 and seg $AB \parallel$ seg DC , $m\angle ABC = 80^\circ$,
 Find the value of following :
 (a) m (arc ADC) (b) m (arc ABC) (c) $\angle BCD$



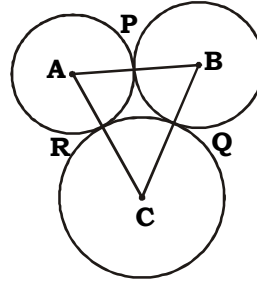
- (ii) Evaluate the following :
 $4\sin^2 60^\circ + 3\tan^2 30^\circ - 8\sin 45^\circ \times \cos 45^\circ$

- (iii) Following table gives the age groupwise distribution of people
 suffering from 'Asthama' due to air pollution in a certain city :

Age (in years)	7-11	11-15	15-19	19-23	23-27	27-31	31-35	35-39
No. of People	5	9	13	21	16	15	12	9

Find the mean age of person suffering from 'Asthama' by using 'Direct Method'.

- (iv) Three circles with centres A, B, C are touching externally to each other in points P, Q and R shown in the figure. If AB = 5 cm, BC = 7 cm, AC = 6 cm, then find the radii of the circles.



- (v) Ms. Kurkure had a box of marbles that contained 3 blue, 2 white and 4 red marbles. If she drew a marble from her box at random, what is the probability that it will be (a) white (b) blue (c) red ?

Q.4. Solve ANY TWO of the following :

8

- (i) The opposite angles of a cyclic quadrilateral are supplementary.
- (ii) $\triangle ABC$ is a right angled triangle, $\angle ABC = 90^\circ$, $\sin A = \frac{12}{13}$. Find $\cos A$ and $\tan A$.
- (iii) The weight of coffee (in gms) in 70 packets is given below :

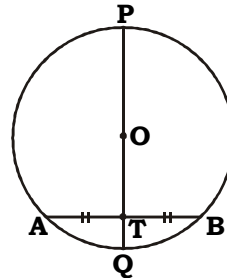
Weight (in gms)	200-201	201-202	202-203	203-204	204-205	205-206
No. of packets	12	26	20	9	2	1

Determine the modal weight of coffee in the packets.

Q.5. Solve ANY TWO of the following :

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- (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 simultaneously. Find the probability of getting.
 (a) a doublet (same number appearing on the upper faces of the two dice)
 (b) an even number as the sum
 (c) a prime number as the sum
 (d) a 'multiple of 3' as the sum.
- (iii) From the top of a lighthouse, an observer looks at a ship and finds the angle of depression to be 60° . If the height of light house is 90 meters then how far is that ship from the light house ?

Best Of Luck 🍀