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UNIVERSAL EDUCATION CENTRE

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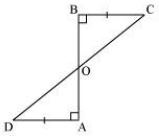
MATHS 9TH

Time: 3hours **Max. Marks 90**

General Instructions

1. All questions are compulsory.
2. Draw neat labeled diagram wherever necessary to explain your answer.
3. Q.No. 1 to 8 are of objective type questions, carrying 1 mark each.
4. Q.No.9 to 14 are of short answer type questions, carrying 2 marks each.
5. Q. No. 15 to 24 carry 3 marks each. Q. No. 25 to 34 carry 4 marks each.

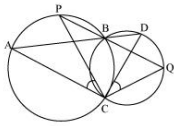
1. Point (–3, 5) lies in the (A) first quadrant (B) second quadrant (C) third quadrant (D) fourth quadrant
2. If $\Delta ABC \cong \Delta PQR$ and ΔABC is not congruent to ΔRPQ, then which of the following is not true:
   (A) BC = PQ (B) AC = PR (C) QR = BC (D) AB = PQ
3. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and $\angle ADC = 140^\circ$, then $\angle BAC$ is equal to: (A) 80° (B) 50° (C) 40° (D) 30°
4. The linear equation $3x - y = x - 1$ has :
   (A) A unique solution (B) Two solutions (C) Infinitely many solutions (D) No solution
5. The width of each of five continuous classes in a frequency distribution is 5 and the lower class-limit of the lowest class is 10. The upper class-limit of the highest class is:
   (A) 15 (B) 25 (C) 35 (D) 40
6. In a cylinder, if radius is halved and height is doubled, the volume will be
   (A) Same (B) doubled (C) halved (D) four times
7. In a sample study of 642 people, it was found that 514 people have a high school certificate. If a person is selected at random, the probability that the person has a high school certificate is :
   (A) 0.5 (B) 0.6 (C) 0.7 (D) 0.8
8. The total surface area of a cube is 96 cm^2. The volume of the cube is:
   (A) 8 cm^3 (B) 512 cm^3 (C) 64 cm^3 (D) 27 cm^3
9. AD and BC are equal perpendiculars to a line segment AB (See the given figure). Show that CD bisects AB.



10. Find the capacity in litres of a conical vessel with
    (i) radius 7 cm, slant height 25 cm (ii) height 12 cm, slant height 12 cm
11. The relative humidity (in %) of a certain city for a month of 30 days was as follows:

98.1	98.6	99.2	90.3	86.5	95.3	92.9	96.3	94.2	95.1
89.2	92.3	97.1	93.5	92.7	95.1	97.2	93.3	95.2	97.3
96.2	92.1	84.9	90.2	95.7	98.3	97.3	96.1	92.1	89

    (i) Construct a grouped frequency distribution table with classes 84 - 86, 86 - 88
    (ii) Which month or season do you think this data is about? (iii) What is the range of this data?
12. Eleven bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg):
    4.97 5.05 5.08 5.03 5.00 5.06 5.08 4.98 5.04 5.07 5.00
    Find the probability that any of these bags chosen at random contains more than 5 kg of flour.
13. Two circles intersect at two points B and C. Through B, two line segments ABD and PBQ are drawn to intersect the circles at A, D and P, Q respectively (see the given figure). Prove that $\angle ACP = \angle QCD$.



14. The value of π up to50 decimal places is given below:3.14159265358979323846264338327950288419716939937510

(i) Make a frequency distribution of the digits from 0 to 9 after the decimal point.
(ii) What are the most and the least frequently occurring digits?

15. Draw the graph of each of the following linear equations in two variables: (i) $x+y=4$ (ii) $x - y=2$
16. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.
17. Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and XY + YZ + ZX = 11 cm.
18. The volume of a right circular cone is 9856 cm^3. If the diameter of the base is 28 cm,
    Find (i) height of the cone (ii) slant height of the cone (iii) curved surface area of the cone
19. The following data on the number of girls (to the nearest ten) per thousand boys in different sections of Indian society is given below.

Section	Number of girls per thousand boys
Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

(i) Represent the information above by a bar graph.
(ii) In the classroom discuss what conclusions can be arrived at from the graph.

20. The taxi fare in a city is as follows: For the first kilometre, the fares is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as *x* km and total fare as Rs *y*, write a linear equation for this information, and draw its graph.
21. Find the volume of a sphere whose radius is (i) 7 cm (ii) 0.63 m
22. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ Show that:
    (i) $\Delta APD \cong \Delta CQB$ (ii) AP = CQ (iii) $\Delta AQB \cong \Delta CPD$ (iv) AQ = CP (v) APCQ is a parallelogram
23. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD . Show that
    (i) $\Delta APB \cong \Delta CQD$ (ii) AP = CQ
24. The following table gives the distribution of students of two sections according to the mark obtained by them:

Section A		Section B	
Marks	**Frequency**	**Marks**	**Frequency**
0 – 10	3	0 – 10	5
10 – 20	9	10 – 20	19
20 – 30	17	20 – 30	15
30 – 40	12	30 – 40	10
40 – 50	9	40 – 50	1

Represent the marks of the students of both the sections on the same graph by two frequency polygons. From the two polygons compare the performance of the two sections.

25. ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rectangle.
26. Construct the following angles and verify by measuring them by a protractor: (i) 75° (ii) 105° (iii) 135°
27. Give the geometric representation of $y = 3$ as an equation (I) in one variable (II) in two variables
28. How many litres of milk can a hemispherical bowl of diameter 10.5 cm hold?
29. Prove that the circle drawn with any side of a rhombus as diameter passes through the point of intersection of its diagonals.
30. Show that the line segments joining the mid-points of the opposite sides of a quadrilateral bisect each other.
31. The following number of goals was scored by a team in a series of 10 matches: 2, 3, 4, 5, 0, 1, 3, 3, 4, 3 Find the mean, median and mode of these scores.
32. Two congruent circles intersect each other at points A and B. Through A any line segment PAQ is drawn so that P, Q lie on the two circles. Prove that BP = BQ.
33. Twenty seven solid iron spheres, each of radius *r* and surface area S are melted to form a sphere with surface area S'.
    Find the (i) radius *r*' of the new sphere, (ii) ratio of S and S'.
34. Find the mean salary of 60 workers of a factory from the following table:

Salary (in Rs)	Number of workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
1000	1
Total	60

ALL THE BEST