

Roll No.

DAV PUBLIC SCHOOLS, ODISHA ZONE
PERIODIC ASSESSMENT-III, 2023-24

- Please Check that this question paper contains 4 printed pages.
- Please Check that this question paper contains 19 questions
- Please write down the Serial Number of the question before attempting it.

CLASS - IX
MATHEMATICS (041)

Time Allowed: 1hour 30minutes

Maximum Marks: 40

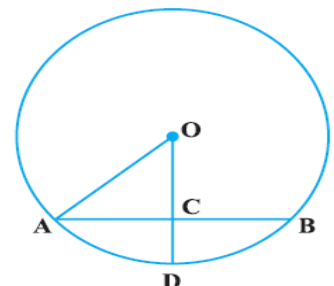
General Instructions:

1. This Question Paper has 5 Sections A-E.
2. Section A has 10 MCQs carrying 1 mark each
3. Section B has 2 questions carrying 02 marks each.
4. Section C has 4 questions carrying 03 marks each.
5. Section D has 2 questions carrying 05 marks each.
6. Section E has 1 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 1 Question of 5 marks, 1 Question of 3 marks and 1 Question of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E
8. Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.

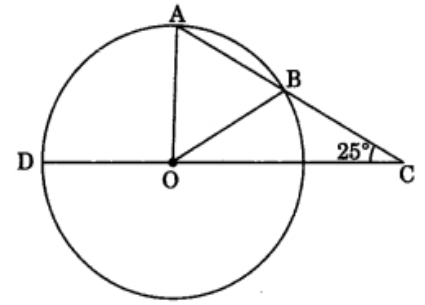
SECTION -A

(Section A consists of 10 questions of 1 mark each.)

1. If (2, 0) is a solution of the linear equation $2x + 3y = k$, then the value of k is :
(a) 4 (b) 6 (c) 5 (d) 2
2. In an exhibition, the cost of tickets for an adult is Rs.5 more than thrice the cost of a ticket for a child. Which equation relates the cost y of adult tickets in terms of the cost x of child tickets?
(a) $y = 5 + 3x$ (b) $y + 5 = 3x$ (c) $y = 3 + 5x$ (d) $y + 3 = 5x$
3. If a linear equation has solutions (-2, 2), (0, 0) and (2, -2), then it is of the form:
(a) $y - x = 0$ (b) $-2x + y = 0$ (c) $x + y = 0$ (d) $-x + 2y = 0$
4. A chord of a circle is equal to the radius of the circle. The measure of the angle subtended by the chord at a point on the minor arc containing the chord is:
(a) 150° (b) 60° (c) 30° (d) 120°
5. In Fig., If O is the centre of the circle, if $OA = 5$ cm, $AB = 8$ cm and OD is perpendicular to AB, then CD is equal to:
(a) 2 cm (b) 3 cm
(c) 4 cm (d) 5 cm



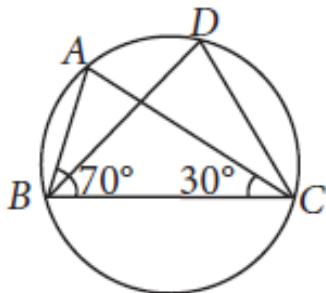
6. In the given figure, AB is a chord of a circle with center O and AB is produced to C such that $BC = OB$. Also, CO is joined and produced to meet the circle in D. If $\angle ACD = 25^\circ$, then find $\angle AOD$.



- (a) 35° (b) 45° (c) 65° (d) 75°
7. The radius of a sphere is $2r$, then its volume will be
 (a) $\frac{4}{3}\pi r^3$ (b) $4\pi r^3$ (c) $\frac{8}{3}\pi r^3$ (d) $\frac{32}{3}\pi r^3$
8. If the radius of a right circular cone is halved and height is doubled, the volume will be
 (a) doubled (b) halved (c) no change (d) three times
9. A cone and a hemisphere have equal bases and equal volumes. The ratio of the height of the cone to the radius of the hemisphere is:
 (a) 4:1 (b) 2:1 (c) 1:2 (d) 2:3
10. **DIRECTION:** In the question number 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option:

Statement A (Assertion): In the given figure, $\angle ABC = 70^\circ$ and $\angle ACB = 30^\circ$. Then, $\angle BDC = 80^\circ$.

Statement R(Reason): Equal chords are equidistant from the centre.



- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion(A).
 (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
 (c) Assertion (A) is true but reason (R) is false.
 (d) Assertion (A) is false but reason (R) is true.

SECTION-B

(Section B consists of 2 questions of 2 marks each.)

11. Find the solution of the equation $3x - 2y + 12 = 0$, if its y- coordinate is $\frac{3}{4}$ times the x- coordinate.

OR

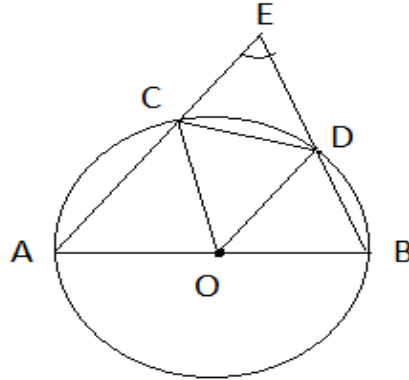
Express the given equation $2x + y = 7$, y in terms of x and also find three solutions for the equation.

12. A right triangle with sides 6 cm, 8 cm and 10 cm is revolved about the side 8 cm. Find the volume of the solid so formed.

SECTION-C

(Section C consists of 4 questions of 3 marks each.)

13. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If $\angle DBC = 70^\circ$, $\angle BAC$ is 30° , find $\angle BCD$. Further, if $AB = BC$, find $\angle ECD$.
14. In the given figure, AB is a diameter of the circle, CD is a chord equal to the radius of the circle. AC and BD when extended, intersect at a point E. Prove that $\angle AEB = 60^\circ$.



15. Find the length of the canvas 3m wide will be required to make a conical tent of height 8m and base radius 6m, assume that the extra length of the material that will be required for stitching margins and wastage in cutting is approximately 20 cm. (Use $\pi = 3.14$)

OR

A hemispherical tank is made up of an iron sheet of 1 cm thick. If the inner radius is 1m, then find the volume of the iron used to make the tank.

16. The surface area of a sphere of radius 5 cm is five times the area of the curved surface of a cone of radius 4 cm. Find the height and the volume of the cone (use $\pi = 22/7$).

SECTION-D

(Section D consists of 2 questions of 5 marks each.)

17. If the temperature of a liquid can be measured in Kelvin units as $x^\circ\text{K}$ or in Fahrenheit units as $y^\circ\text{F}$, the relation between the two systems of measurement of temperature is given by the linear equation
- $$y = \frac{9}{5}(x - 273) + 32$$
- (i) Find the temperature of the liquid in Fahrenheit if the temperature of the liquid is 313K .
- (ii) If the temperature is 158°F , then find the temperature in Kelvin.
- (iii) Is there a temperature which is numerically the same in both Fahrenheit and Kelvin? If yes find it.
18. If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

OR

Prove that the quadrilateral formed (if possible) by the internal angle bisectors of any quadrilateral is cyclic.

SECTION E

(Case study-based questions is compulsory.)

19. A school organized an educational trip to Taj Mahal. Mathematics teacher of the school took his 9th standard students to it. The teacher had interest in history as well. He narrated the facts to Taj Mahal to students. Then the teacher said in this monument one can find combination of solid figures. There are four pillars which are cylindrical in shape. The Taj Mahal has a larger white dome surrounded by four smaller domes.



- i) Find the volume of a hemisphere if the radius of the base is 3.5 m? [1]
ii) Find the curved surface area of a hemisphere if the radius is 4.2 m? [1]
iii) Find the amount of cloth material will be required to cover 4 small domes, each of radius 2 m? [2]

OR

- Find the volume of a spherical stone kept there whose surface area is 154 cm^2 . [2]