

SUMMATIVE ASSESSMENT - II (2015-16)

CLASS - IX

SUBJECT - MATHEMATICS (SET I)

Time : 3½ Hrs.

Max. Marks : 90

General Instructions:

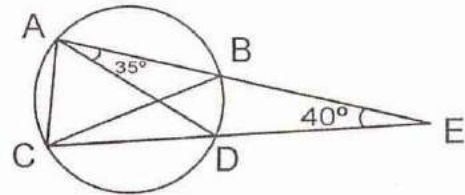
- All questions are compulsory.
- The question paper consists of 31 questions divided into five sections - A, B, C, D and E.
- Section A contains 4 questions of 1 mark, Section B contains 6 questions of 2 marks each, Section C contains 8 questions of 3 marks each, Section D contains 10 questions of 4 marks each and Section E contains three OTBA questions of 3 mark, 3 mark and 4 mark.
- Question number 25 contains a value based question.
- Use of calculator is not permitted.

Section A

Question 1 to question 4 carry 1 mark each.

Q1. The mid value of a class interval is 42. If the class size is 10, find the upper and lower limits of the class.

Q2. Chords AB and CD when produced meet outside the circle at point E. If $\angle EAD = 35^\circ$ and $\angle AED = 40^\circ$, find $\angle CBE$.



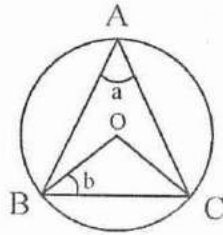
Q3. The perimeter of one face of a cube is 40 cm. Find the sum of the lengths of its edges.

Q4. There are 13 girls and 15 boys in a row. If one student is chosen at random, then find the probability that he will be a boy.

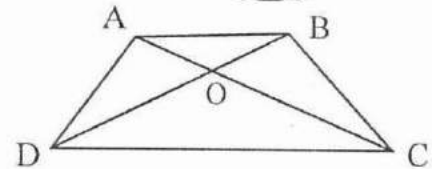
Question 5 to question 10 carry 2 marks each. Section B

Q5. Volume of two hemispheres are in the ratio 27:125. Find the ratio of their radii.

- Q6. O is the centre of a circle, BC is its chord and A is any point on the circle. If $\angle BAC = a$ and $\angle OBC = b$, find $a + b$.



- Q7. Diagonals AC and BD of a quadrilateral intersect in O in such a way that $\text{ar}(\text{AOD}) = \text{ar}(\text{BOC})$. Prove that ABCD is a trapezium.

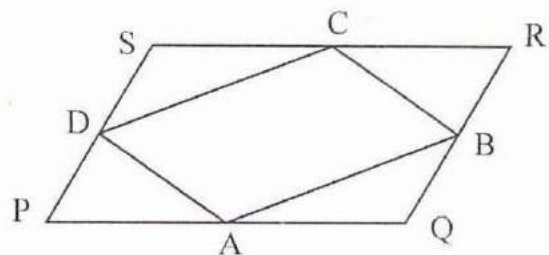


- Q8. Construct an angle of 22.5° using ruler and compass.
- Q9. If the diagonals of a parallelogram are equal, then prove that it is a rectangle.
- Q10. The total surface area of a cube is 96 cm^2 . Find the volume of the cube.

Section C

Question 11 to question 18 carry 3 marks each.

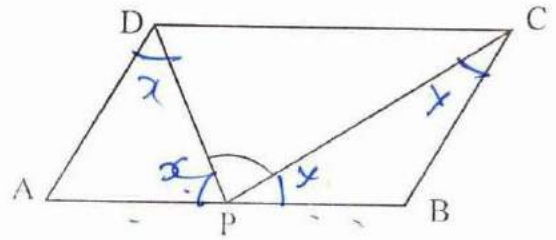
- Q11. A rectangular sheet of metal foil with dimensions $66 \text{ cm} \times 12 \text{ cm}$ is rolled to form a cylinder of height 12 cm . Find the volume of the cylinder.
- Q12. Find the height of the conical tent whose base area is 154 cm^2 and its curved surface area is 550 cm^2 .
- Q13. PQRS is a parallelogram. A, B, C, D are the mid points of the sides PQ, QR, RS, SP respectively.



Prove that $\text{ar}(\text{ABCD}) = \frac{1}{2} \text{ar}(\text{PQRS})$

- Q14. Two diameters of a circle intersect each other at right angles. Prove that the quadrilateral formed by joining their end points is a square.
- Q15. A town has a population of 50,000. They require 120 litres of water per head per day. The storage tank measures $30 \text{ m} \times 20 \text{ m} \times 20 \text{ m}$. For how many days will the water of this tank last?

- Q16. ABCD is a parallelogram. If $AB = 2AD$ and P is the mid-point of AB, then find angle $\angle CPD$.



- Q17. A die is rolled 200 times and its outcomes are recorded as below:

Outcome	1	2	3	4	5	6
Frequency	25	35	40	28	42	30

Find the probability of getting (i) an odd number (ii) a multiple of 2
(iii) greater than and equal to 5

- Q18. Find the missing frequency 'f' in the following distribution if it is known that the mean of the distribution is 1.46

x	0	1	2	3	4	5
f	46	76	f	25	10	5

Question 19 to question 28 carry 4 marks each.

Section D

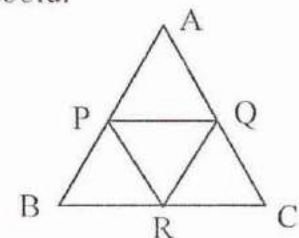
- Q19. Construct a ΔABC in which $BC = 8\text{cm}$, $\angle B = 45^\circ$ and $AB - AC = 3.5\text{cm}$. Justify.

- Q20. If the non - parallel sides of a trapezium are equal, prove that it is cyclic.

- Q21. A solid cone of radius 5cm and height 14 cm is melted and recast into a pipe. The outer radius and thickness of the pipe are 4cm and 1 cm respectively. Find the length of the

- Q22. The area of three adjacent faces of a cuboid are 180 cm^2 , 108 cm^2 , 135 cm^2 respectively. Find the volume of cuboid. Also, find the dimensions of the cuboid.

- Q23. In ΔABC , P, Q, R are the mid - points of sides AB, AC and BC respectively. Show that PAQR is a parallelogram.



If $\text{ar}(\Delta PBR) = 4\text{cm}^2$, find the area of PAQR.

- Q24. Prove that the angle subtended by an arc at the centre is double the angle subtended by the same arc at any point on the remaining part of the circle.

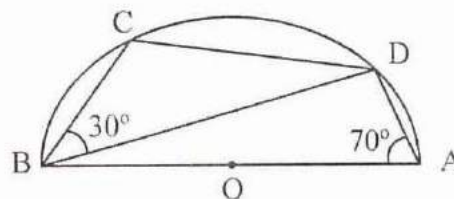
- Q25. 800 families having three children were surveyed in a town and following data were collected:

No. of girls	0	1	2	3
No. of families	150	320	275	55

- What is the probability of having
- (i) All the boys in the family?
 (ii) At least one boy in the family?
 (iii) At least one girl in the family?

Number of families with 3 girls and 3 boys should be almost equal but we find great disparity. What should be done to remove undue preference for male child in the family? Give your views.

- Q26. C and D are points on the semi-circle described on BA as diameter. Given $\angle BAD = 70^\circ$ and $\angle DBC = 30^\circ$.



Calculate $\angle ABD$ and $\angle BDC$.

- Q28. Draw a histogram and frequency polygon for the following distribution table:

Class-Interval	Frequency
150-153	7
154-157	5
158-161	15
162-165	10
166-169	5
170-173	8

OTBA Section E

- Q29. Children from age one onwards grows taller and heavier till they reach adolescence at a rate of about 2kg every year for weight and 3 inches for height. (3)
 Assuming weight as variable 'w' and height as 'h' and age in years as 'a'. If weight at age of 3 is 11 kg and height is 32 inches, establish a linear relationship between (i) a and w (ii) a and h
- Q30. Form a linear equation in two variables. For Body Mass Index (BMI) and weight of the person. Let the height of person be 180cm, BMI as x and weight as y kg. Using the linear equation if weight is 80kg, then find the BMI. IS the person Obese? (3)
- Q31. Nakul wants to burn 200 kilo calories by doing jogging and running up stairs. He plans to spend 'p' minutes in jogging and 'q' minutes in running up stairs. Write a linear equation and draw its graph. (4)