

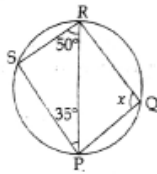
General Instructions:

1. All questions are compulsory.
2. The question paper consists of 32 questions divided into five sections A, B, C, D and E. Section – A comprises of 4 questions of 1 mark each, Section – B comprises of 6 questions of 2 marks each, Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 11 questions of 4 marks each. Section – E comprises of one question from Open Text Theme of 10 marks.
3. There is no overall choice.
4. Use of calculator is not permitted.

SECTION – A

Question numbers 1 to 4 carry one mark each.

1. Express $\frac{x}{4} - 3y = 7$ in the form of $ax + by + c = 0$.
2. Is $(0, 2)$ a solution of the linear equation, $x - 2y = 4$? Justify.
3. In the figure, PQRS is a cyclic quadrilateral. Find the value of x .



4. If the radius of new sphere is half of the radius of given sphere, find the ratio of volume of new sphere to that of the given sphere.

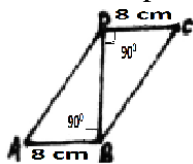
SECTION – B

Question numbers 5 to 10 carry two marks each.

5. If diagonals of a cyclic quadrilateral are diameters of the circle through the opposite vertices of the quadrilateral, prove that the quadrilateral is a rectangle.
6. For the given figure, check whether the following statement is true or false. Also justify the answer.
PQRS is a trapezium with $PQ \parallel SR$, $PS \parallel RU$, and $ST \parallel RQ$, then $\text{ar}(\text{PURS}) = \text{ar}(\text{QTSR})$.



7. ABCD is a quadrilateral and BD is one of the diagonals as shown in the figure. Show that ABCD is a parallelogram.



8. How many litres of milk can a milk can a hemispherical bowl of diameter 10.5 cm can hold?
9. For the given data: 11, 15, 17, $y+1$, 19, $y-2$, 3; if the mean is 14, find the value of y .
10. Given below are the seats won by different political parties in a polling outcome of a state assembly elections.

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

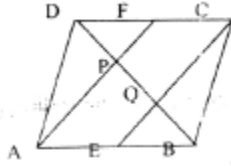
What is the probability that the party selected have:

- More than 30 seats.
- Less than 20 seats.

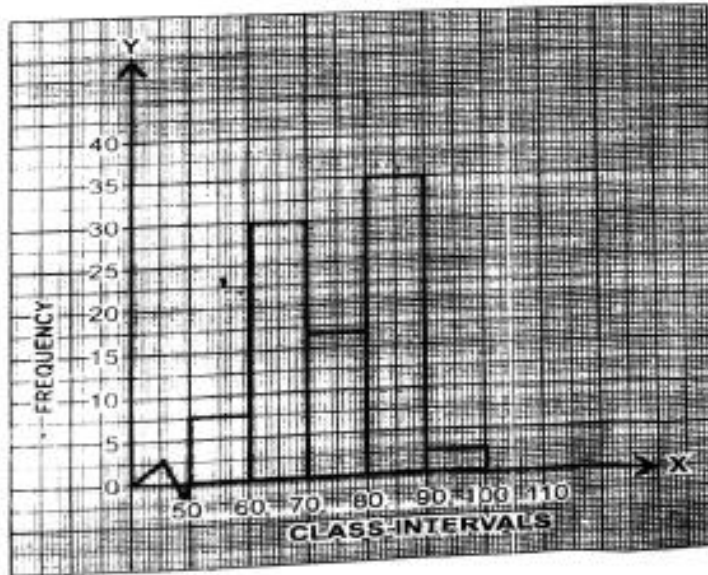
SECTION – C

Question numbers 11 to 20 carry three marks each.

- Find the value of a , if the line $3y = ax + 7$, will pass through:
 - (3, 4)
 - (1, 2)
 - (2, -3)
- Give the geometric interpretation of equation $3y + 15 = 0$ as an equation in (a) one variable, (b) two variables.
- State and prove mid – point theorem.
- If non – parallel sides of a trapezium are equal, then show that it is cyclic.
- Draw an angle of 90° using protractor. Now using compass obtain angles of 45° and $22\frac{1}{2}^\circ$.
- ABCD is a parallelogram in which diagonal AC bisects $\angle A$ as well as $\angle C$. Show that ABCD is a rhombus.
- The diameter of a garden roller is 1.4 m and it is 2 m long. How much area will it cover in 15 revolutions.
- ABCD is a parallelogram. E and F are mid points of AB and CD respectively. Show that AF and EC trisect the diagonal BD.



19. Using the given histogram, prepare a grouped frequency distribution table:



20. A batsman's runs in 80 one day matches are as follows:

Runs	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89	90 – 99
No. of matches	1	1	8	13	20	22	12	3

What is the probability that in the next match the batsman will score:

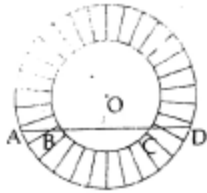
- At least 70 runs.
- At most 59 runs.

SECTION – D

Question numbers 21 to 31 carry four marks each.

- Sum of two numbers is 8. Write this in the form of a linear equation in two variables. Also, draw the line given by this equation
- Represent $3x + y = 2$ by a graph. Write the coordinates of the point where it meets:
 - x – axis
 - y – axis
- Prove that the angle subtended by an arc at the centre of a circle is double the angle subtended by it at any point on the remaining part of the circle.
- Prove that the figure formed by joining the mid – points of the consecutive sides of a rhombus is a rectangle.
- Construct a ΔXYZ , if perimeter is 12 cm and $\angle X = 90^\circ$ and $\angle Y = 60^\circ$.

26. A friendly cricket match is being organized between two teams. The proceeds of this match will be given for the aid to the 'Charitable Hospital' for handicapped children. The field is circular with a ring of uniform width as shown in the figure for spectators. If O is the centre of the field and four poles are fixed at points A, B, C and D lying in a straight line. Prove that $AB = CD = \frac{1}{2}(AD - BC)$. Which value is promoted through this question?



27. A hemispherical bowl of internal radius 9 cm is full of rose water. This rose water is to be filled in cylindrical bottles of diameter 9 cm and height 4 cm. Find the number of bottles needed to empty the rose water of the bowl. (use $\pi = \frac{22}{7}$)
28. Obtain the mean of the following distribution and also find the mode.

Marks obtained (out of 60)	No. of students
5	7
15	10
20	6
35	8
40	12
45	3
50	5
60	4

29. A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 5 cm. Find the volume of the solid so obtained. If it is now revolved about the side 12 cm, then what would be the ratio of the volumes of the two solids obtained in two cases?
30. The height and the base diameter of conical tomb are 24 m and 14 m respectively. Find the cost of white washing its curved surface at the rate of Rs. 210 per 100 sq. m. Also find volume of air inside the tomb.
31. A survey of 2000 people of different age groups was conducted to find out their preference in watching different types of movies:
- Type I – Family
 - Type II – comedy and family
 - Type III – romantic, comedy and family
 - Type IV – action, romantic, comedy and family

Age group	Type I	Type II	Type III	Type IV	All
18 – 29	440	160	110	61	35
30 – 50	505	125	60	22	18
Above 50	360	45	35	15	9

Find the probability that a person chosen at random is:

- In 18 – 29 years of age and likes type II movies.
- Above 50 years of age and likes all types of movies.
- In 30 – 50 years and likes type I movies.

SECTION – E

(Open Text)

Theme – II (Adventure Camp)

(2 + 2 + 3 + 3)

- How were days passed by the students in adventure camp?
 - From the adventure group of the students one student is selected at random. Find the probability that the
 - Selected student's name has appeared in the open text.
 - Student is of class IX B.
 - On reaching the camp, welcome drink was served in cylindrical glasses which were filled two – third. Given quantity of welcome drink required in litres for serving all the students and teachers.
 - For making all the tents, find the length of the canvas required if its width is 1.5 m.