# SECOND TERM EXAM MATHEMATICS 2022-23

**Class = 9 Class**
**Total Time = 2H**
**Date = 29-01-2023** **MM=40**

***All Questions are mandatory**

**Section A (2 Marks Each)**

**Q1. In a cricket match, a batsman hits a boundary 6 times out of 30 balls he plays. Find the probability that on a ball played: (i) He hits boundary (ii) He does not hit a boundary.**

**Q2. Show that the angles of an equilateral triangle are 60° each.**

**Q3. A right circular cylinder just encloses a sphere of radius r (see fig. 13.22). Find**

**(i) surface area of the sphere,**

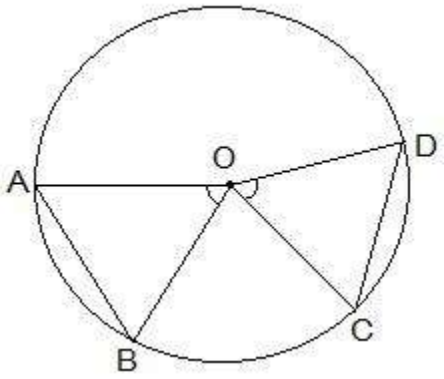
**(ii) curved surface area of the cylinder,**

**(iii) ratio of the areas obtained in(i) and (ii).**

Fig. 13.22

**Q4. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540cm. Find its area.**

**Q5. Prove that if chords of congruent circles subtend equal angles at their centres, then the chords are equal.**



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## Section B (3 Marks Each)

**Q6. Find the mean salary of 60 workers in 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 |
| 10000 | 1 |
| Total | 60 |

**Q7. In a mathematics test given to 15 students, the following marks (out of 100) are recorded. 41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60**

**Find the mean, median and mode of this data.**

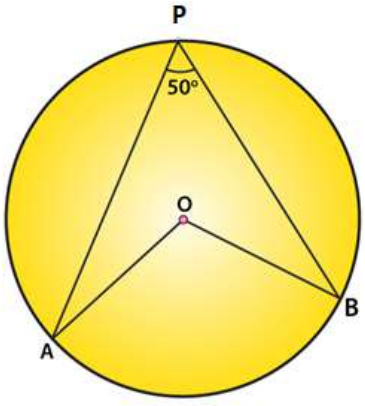
**Q8. The relative humidity (in %) of a certain city for a month of 30 days was as follows: 98.1 98.6 99.2 90.3 86.5 95.3 92.9 96.3 94.2 95.1 89.2 92.3 97.1 93.5 92.7 95.1 97.2 93.3 95.2 97.3 96.2 92.1 84.9 90.2 95.7 98.3 97.3 96.1 92.1 89**

**(i) Construct a grouped frequency distribution table with classes 84 – 86, 86 – 88, etc.**

**(ii) Which month or season do you think this data is about?**

**(iii) What is the range of this data?**

**Q9. In figure, O is the centre of the circle. If ∠APB = 50°, find ∠AOB and ∠OAB.**



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**Q10. The distribution of heights (in cm) of 96 children is given below. Construct a histogram and a frequency polygon on the same axes.**

| Height (in cm) | 124 to 128 | 128 to 132 | 132 to 136 | 136 to 140 | 140 to 144 | 144 to 148 | 148 to 152 | 152 to 156 | 156 to 160 | 160 to 164 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. Of Children | 5 | 8 | 17 | 24 | 16 | 12 | 6 | 4 | 3 | 1 |

**Section C (5 Marks Each) [Solve any three questions)**

**Q11. Three girls, Reshma, Salma and Mandip, are playing a game by standing on a circle of radius 5m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, and Mandip to Reshma. If the distance between Reshma and Salma and between Salma and Mandip is 6m each, what is the distance between Reshma and Mandip?**

**Q12. What length of tarpaulin 3 m wide will be required to make a conical tent of height 8 m and base radius 6m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm. [Use π=3.14]**

**Q13. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (see Fig. 7.23). Show that:**

**(i) ΔAMC ≅ ΔBMD**

**(ii) ∠DBC is a right angle.**

**(iii) ΔDBC ≅ ΔACB**

**(iv) CM = ½ AB**

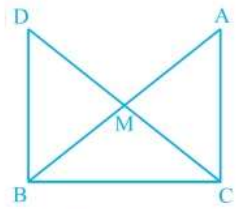


Fig. 7.23

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**Q14. If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.**