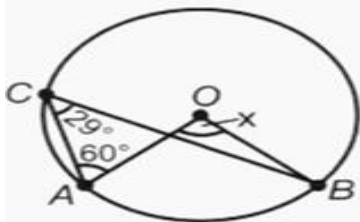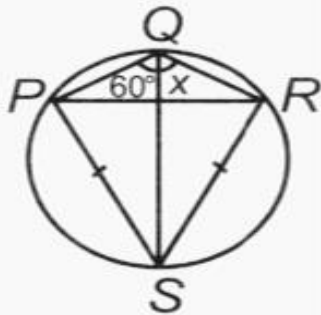ATOMIC ENERGY CENTRAL SCHOOL NO. 2, MUMBAI
## PERIODIC TEST III - 2023 - 24
## CLASS IX - MATHEMATICS

**Time Allowed :** 1 ½ hours                    **Maximum Marks :** 40
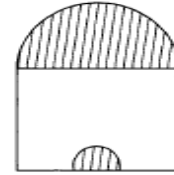
**General Instructions:**

 1. This Question Paper has 5 Sections A, B, C, D and E.

 2. Section A has 10 MCQs carrying 1 mark each

 3. Section B has 3 questions carrying 02 marks each.

 4. Section C has 2 questions carrying 03 marks each.

 5. Section D has 2 questions carrying 05 marks each.

 6. Section E has 2 case study based questions carrying 04 marks each

| | **Section A** | |
|---|---|---|
| 1 | The diagonals AC and BD of a rectangle ABCD intersect each other at P. If∠ ABD = 50 $^o$ , then ∠ DPC = <br> a) 70$^o$        b) 80$^o$          c) 90$^o$          d) 100$^o$ | **[1]** |
| 2 | The Quadrilateral formed by joining the mid - points of the sides of a Quadrilateral PQRS, taken in order, is a rectangle if <br> a) PQRS is a Rectangle <br> b) Diagonals of PQRS are at right angles <br> c) PQRS is a Parallelogram                    d) None of these | **[1]** |
| 3 | In the given figure, if O is the centre of the circle, then x = ___ <br>  <br> a) 40°          b) 38°          c) 29°          d) 58° | **[1]** |
| 4 | In the given figure, PQRS is a cyclic quadrilateral in which PS = RS,∠ SQR = x and ∠ PQS = 60°. The value of x is_____. <br>  | **[1]** |

| | a) 80°       b) 60°       c) 75°       d) 30° | |
|---|---|---|
| 5 | The angle in a semicircle measures<br>a) $60^o$      b) $36^o$      c) 45°      d) $90^o$ | **[1]** |
| 6 | The sides of a triangle are 4 cm, 8 cm and 6 cm. The length of the perpendicular from the opposite vertex to the longest side is<br>a) $\frac{4}{3}\sqrt{15}\ cm$    b) $3\sqrt{15}$ cm    c) $\frac{3}{4}\sqrt{15}\ cm$    d) $4\sqrt{15}\ cm$ | **[1]** |
| 7 | The area of the the triangle having sides 1 m, 2 m and 2 m is:<br>a) $4\sqrt{15}$ m $^2$    b) $\frac{15}{4}$ m $^2$    c) $\frac{\sqrt{15}}{4}$ m $^2$    d) $\frac{\sqrt{15}}{2}$ m $^2$ | **[1]** |
| 8 | If a cone is cut into two parts by a horizontal plane passing through the mid - point of its axis, the ratio of the volumes of upper and lower part is<br>a) 1 : 8      b) 2 : 1      c) 1 : 7      d) 1 : 2 | **[1]** |
| 9 | If the surface area of a sphere is $36\pi$ sq. cm, then its volume is<br>a) $36\pi$ cu. cm    b) $48\pi$ cu. cm   c) $72\pi$ cu. cm   d) $12\pi$ cu. cm | **[1]** |
| 10 | In a bar graph, 0.25 cm length of a bar represents 100 people. Then, the length of bar which represents 2000 people is<br>a) 4.5 cm      b) 4 cm      c) 5 cm      d) 3.5 cm | **[1]** |
| | **Section B** | |
| 11 | In Fig., ABCD and AEFG are two parallelograms. If∠ C = 58 $^o$<br><br>, find ∠ F. | **[2]** |
| 12 | Prove the exterior angle formed by producing a side of a cyclic quadrilateral is equal to the interior opposite angle. | **[2]** |
| 13 | In the given figure, ABCD is a quadrilateral in which diagonal BD=64 cm, AL⊥ BD and CM ⊥ BD such that AL=16.8 cm and CM =13.2 cm.Calculate the area of the quadrilateral ABCD.<br> | **[2]** |

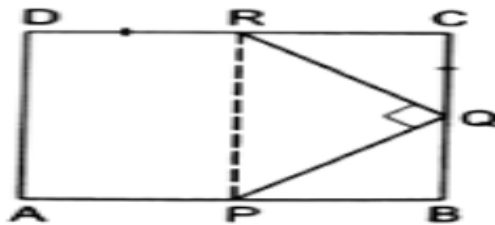| | **Section C** | |
|---|---|---|
| 14 | Two hemispherical domes are to be painted as shown in the given figure. If the circumferences of the bases of the domes are 17.6 cm and 70.4 cm respectively, then find the cost of painting  at the rate of Rs.10 per cm$^2$ . | **[3]** |
| 15 | Draw a histogram for the daily earnings of 30 drug stores in the following table: | **[3]** |

| Daily earnings (in ₹ ): | 450 - 500 | 500 - 550 | 550 - 600 | 600 - 650 | 650 - 700 |
|---|---|---|---|---|---|
| Number of Stores: | 16 | 10 | 7 | 3 | 1 |

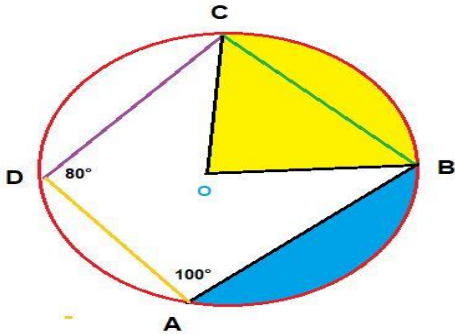| | **Section D** | |
|---|---|---|
| 16 | In the given figure, ABCD is a square and $\angle PQR = 90^o$ ,If PB = QC = DR, prove that<br><br>(i)QB = RC (ii)PQ = QR (iii)$\angle QPR = 45^o$  | **[5]** |
| 17 | In a city, the weekly observations made in a study on the cost of living index are given in the following table: | **[5]** |

| Cost of living index | Number of weeks |
|---|---|
| 140 - 150 | 5 |
| 150 - 160 | 10 |
| 160 - 170 | 20 |
| 170 - 180 | 9 |
| 180 - 190 | 6 |
| 190 - 200 | 2 |
| Total | 52 |

Draw a histogram for the data above and hence make a frequency polygon .

| | **Section E** | |
|---|---|---|
| 18 | **Read the text carefully and answer the questions:** There was a circular park in Defence colony at Delhi. For fencing purpose poles A, B, C and D were installed at the circumference of the park. Ram tied wires From A to B, B to C and C to D, and he managed to measure ∠ A = 100° and ∠ D = 80°. Point O in the middle of the park is the center of the circle.<br><br><br><br>1. Name the quadrilateral ABCD.<br>2. What are the values of∠ C and ∠B<br>3. Write any three properties of cyclic quadrilateral? | **[4]** |
| 19 | **Read the text carefully and answer the questions:** Vinod and Basant have an adventure tourism business in Rishikesh. They have a resort in Rishikesh but now they are planning to build some tent houses too.The newly built tent house will have all the basic amenities and it will attract the young tourists coming for adventure. Their conical tent is 9 m high and the radius of its base is 12 m.<br><br>1. What is the cost of the canvas required to make it, if 1 m² canvas costs ₹ 10?<br>2. How many persons can be accommodated in the tent, if each person requires 2 m² on the ground?<br>3. If each person requires 20 m³ of space to breathe in and 100 person can be accommodated then what should be height of tent? | **[4]** |