

INTEGRATED

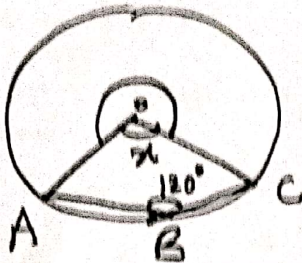
①

Class: IX, MATHEMATICS

3. CIRCLES

TEACHING TASK (JEE MAINS)

01.

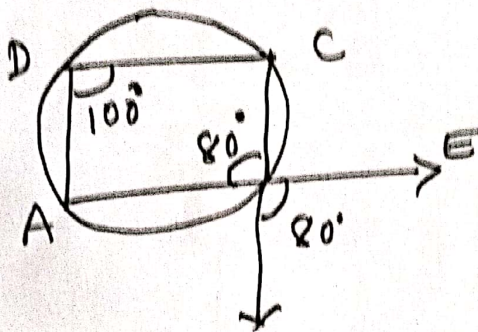


$$\text{ext } \angle AOC = 240^\circ$$

$$\therefore x = 360^\circ - 240^\circ = 120^\circ$$

Ans: A

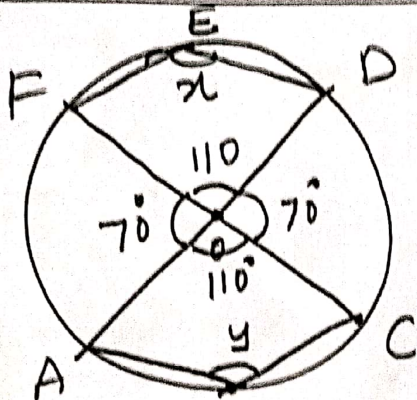
02.



$$\therefore x = 100^\circ$$

Ans: C

03.



$$\therefore \angle y = \frac{110^\circ + 70^\circ + 70^\circ}{2}$$

$$= 125^\circ$$

$$\begin{array}{r} 260 \\ 140 \\ \hline 220 \end{array}$$

$$\text{Similarly } \angle x = \frac{70^\circ + 110^\circ + 70^\circ}{2}$$

$$= 125^\circ$$

$$\begin{array}{r} 110 \\ 140 \\ \hline 250 \end{array}$$

$$\therefore \angle x + \angle y = 250^\circ$$

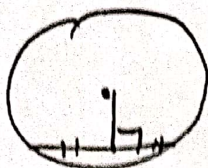
Ans: D

04 Conceptual



Ans: A

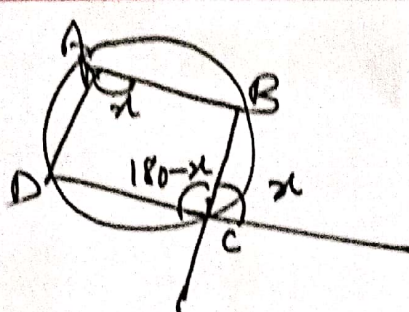
05.



Conceptual

Ans: A

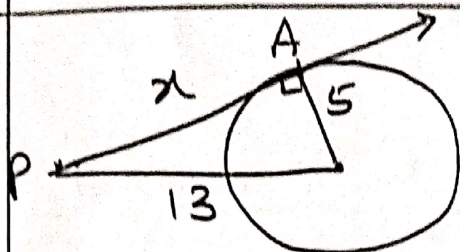
06.



Conceptual: B

Ans: B

07

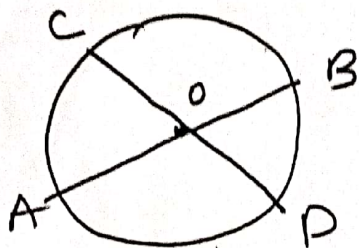


$$13^2 = x^2 + 5^2$$

$$\Rightarrow x = 12$$

Ans: A

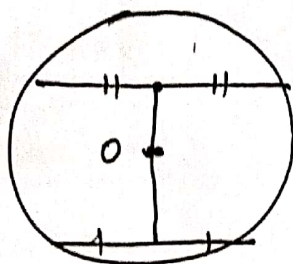
08



$$AO \times OB = CO \times OD$$

Ans: A

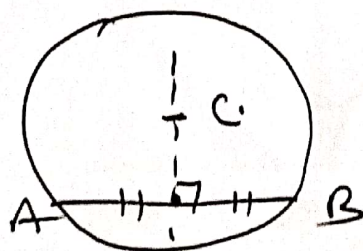
09.



passes through the centre of the circle

Ans: B

10

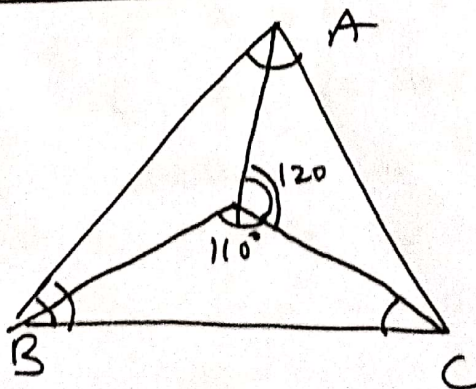
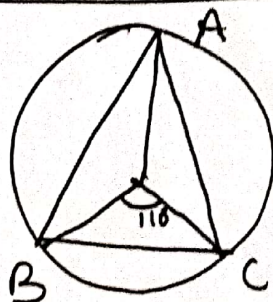


passes through the centre of the circle

Ans: B

JEE ADVANCED

11.



$$\therefore \angle A = 55^\circ$$

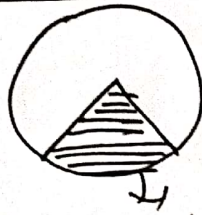
$$\angle B = 60^\circ$$

$$\therefore \angle C = 65^\circ$$

Ans: A, B, C

12. Conceptual, all ~~are~~ the statements are true (3)
 Ans: A, B, C, D

13. Statement I:

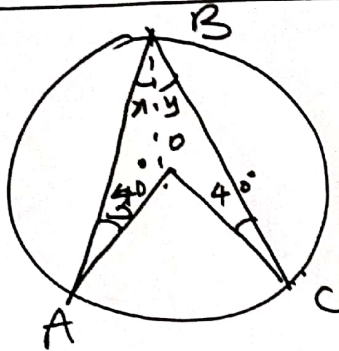


(True)

Statement II: Conceptual (True)

Ans: A

14. Statement I:



$$x = 40^\circ$$

$$y = 40^\circ$$

$$\therefore \angle ABC = 70^\circ$$

$$\therefore \angle AOC = 140^\circ$$

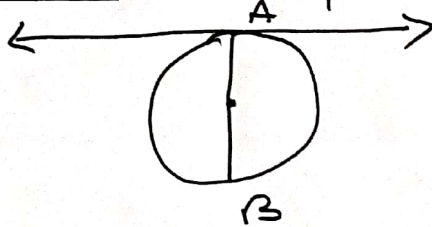
(False)

Statement II: Conceptual (True)

Ans: D

15. Assertion: Conceptual (True)

Reason: Conceptual (False)



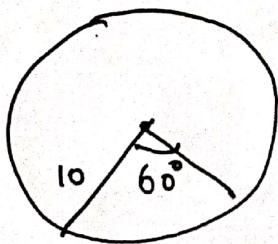
Ans: C

16. Assertion: Conceptual (True)

Reason: Conceptual (False)

Ans: C

17



Total angle at the centre = 360°

Given sector angle = 60°

Clearly, $6 \times 60^\circ = 360^\circ$

$\therefore$ The sector occupies $\frac{1}{6}$ th of the area of the circle

Ans: B

18

Length of the arc = ~~20π~~

(4)

$$= \frac{\theta}{360} \times 2\pi r$$

$$= \frac{60}{360} \times 2\pi \times 10 = \frac{10\pi}{3} \text{ cm}$$

Ans: A

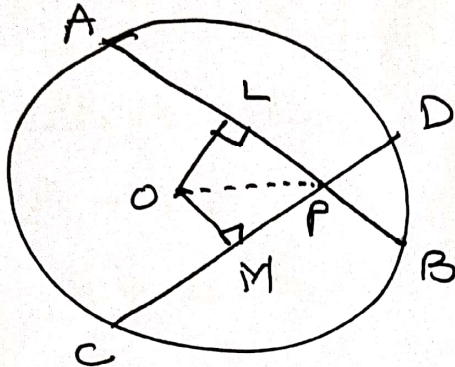
19.

From diagram $AP = CP$

Ans: C

20

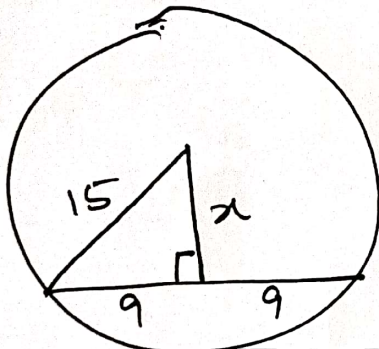
From diagram

clearly $\triangle OPL \cong \triangle OPM$
(RHS)

$$\therefore \angle OPL = \angle OPM$$

Ans: D

21.



$$x^2 + 9^2 = 15^2$$

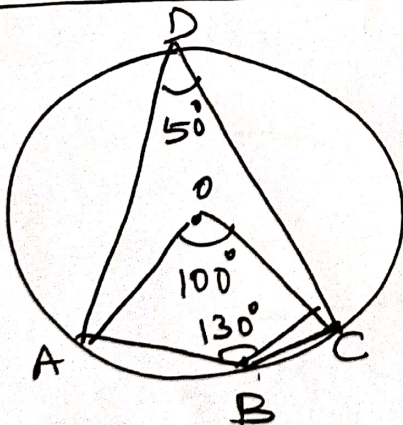
$$x^2 = 144$$

$$x = 12$$

$$\begin{array}{r} 225 \\ 81 \\ \hline 144 \end{array}$$

Ans: 12

22



$$i) \angle ADC = \frac{100^\circ}{2} = 50^\circ$$

$$ii) \angle ADC + \angle ABC = 180^\circ$$

$$50^\circ + \angle ABC = 180^\circ$$

$$\Rightarrow \angle ABC = 130^\circ$$

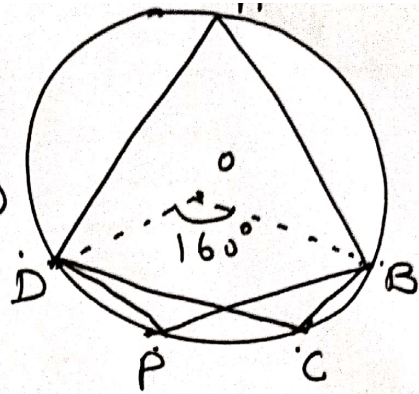
$$\therefore \frac{\angle ABC - \angle ADC}{80^\circ} = \frac{130^\circ - 50^\circ}{80^\circ} = \frac{80^\circ}{80^\circ} = 1$$

Ans: 1

24 i) Ext $\angle BOD = 360^\circ - 160^\circ = 200^\circ$

$\therefore \angle BPD = \frac{1}{2} \times 200^\circ = 100^\circ (s)$

$\angle BPD = \angle BCD = 100^\circ$



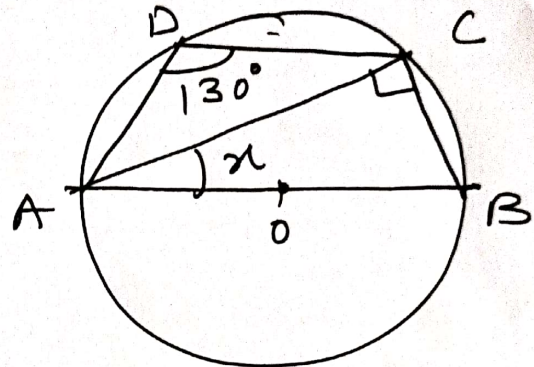
ii) ABCD is a cyclic quadrilateral

$\therefore \angle B + \angle D = 180^\circ$

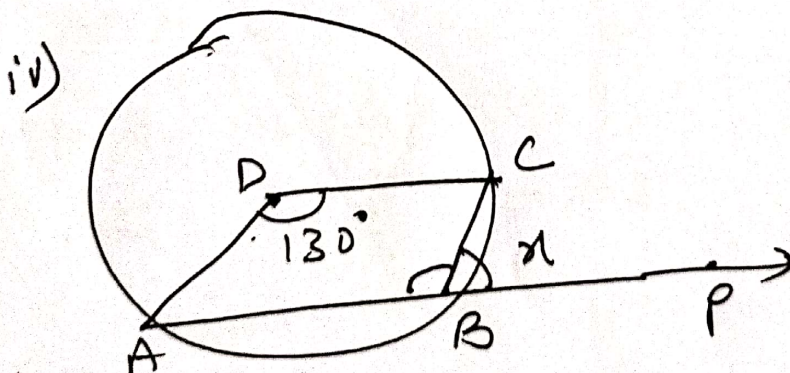
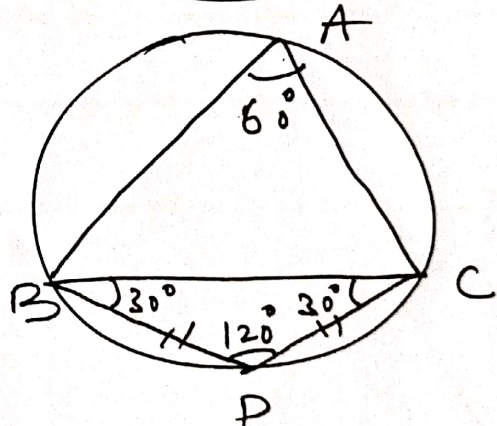
$\Rightarrow \angle B + 130^\circ = 180^\circ$

$\Rightarrow \angle B = 50^\circ$

$\therefore \angle x = 40^\circ (r)$



iii) $\therefore \angle BAC = 60^\circ (p)$



Ext $\angle ADC = 360^\circ - 130^\circ = 230^\circ$

$\therefore \angle ABC = \frac{1}{2} \times 230^\circ = 115^\circ$

$x + 115^\circ = 180^\circ$
 $\Rightarrow x = 65^\circ (q)$

Ans: s, r, p, q

LEARNERS TASK (CUE-5)

6

01. Conceptual

Ans: B

02. Conceptual

Ans: B

03. Conceptual

Ans: B

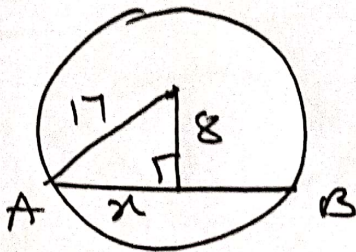
04. Conceptual

Ans: B

05. Conceptual

Ans: A

06



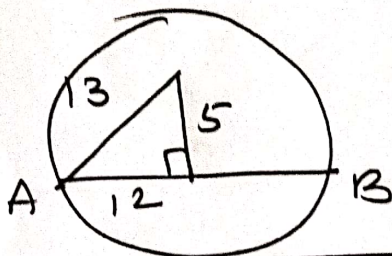
$$x^2 + 8^2 = 17^2$$

$$\Rightarrow x = 15$$

$$AB = 2 \times 15 = 30 \text{ cm}$$

Ans: A

07



$$\therefore AB = 2 \times 12 = 24 \text{ cm}$$

Ans: D

08. Conceptual

Ans: C

09. Conceptual

Ans: B

10

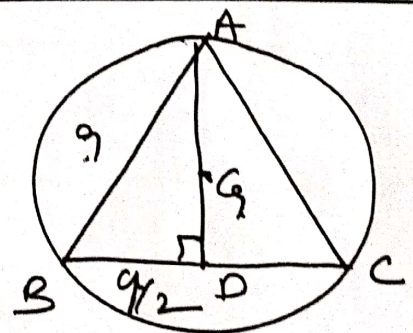
$$AD^2 = (9)^2 - \left(\frac{9}{2}\right)^2$$

$$\therefore AD = \frac{9}{2} \sqrt{3}$$

$$\text{We know, } AG : GD = 2 : 1$$

$$AG = \frac{2}{3} \times \frac{9}{2} \sqrt{3} = 3\sqrt{3}$$

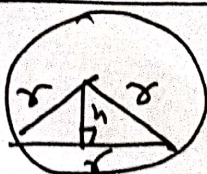
$$\therefore \text{Radius} = 3\sqrt{3}$$



Ans: C

JEE MAINS LEVEL

01.



$$h^2 = r^2 - \left(\frac{x}{2}\right)^2 \Rightarrow h = \frac{\sqrt{3}}{2} x$$

Ans: C

02 sum of the interior angles of a regular ⑦ pentagon = $(n-2) \times 180^\circ$

$$= (5-2) \times 180^\circ = 540^\circ$$

$$\text{Each interior angle} = \frac{540^\circ}{5} = 108^\circ$$

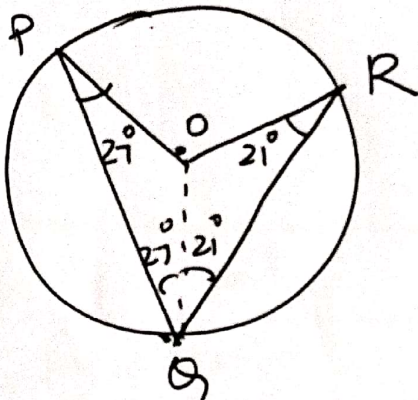
$$\text{From figure } x = \frac{108^\circ}{2} = 54^\circ$$

Ans. B

03 concyclic

Ans. B

04.

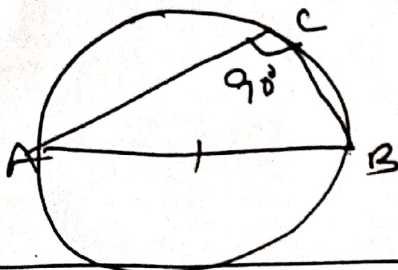


$$\angle PQR = 27^\circ + 21^\circ = 48^\circ$$

$$\angle POR = 2 \times 48^\circ = 96^\circ$$

Ans. B

05



$$\therefore \angle ACB = 90^\circ$$

Ans. B

06.

From figure

$$\angle PRS = \angle PQS = 60^\circ$$

(Since angles in the same segment)

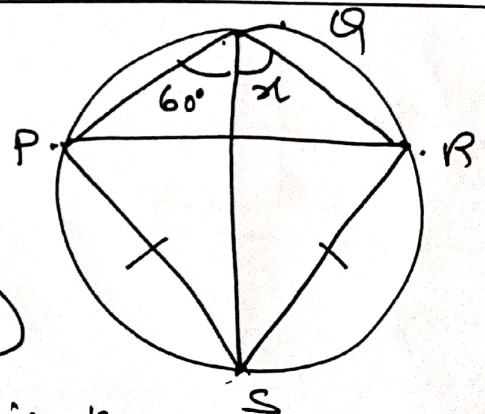
$$\therefore \angle SPR = 60^\circ \text{ (since } SP = SR)$$

$\therefore \triangle PRS$ is an equilateral triangle

$$\therefore \angle S + \angle Q = 180^\circ \text{ (cyclic quadrilateral)}$$

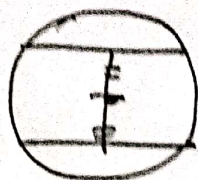
$$60^\circ + (60^\circ + x) = 180^\circ$$

$$\Rightarrow x = 60^\circ$$



Ans. B

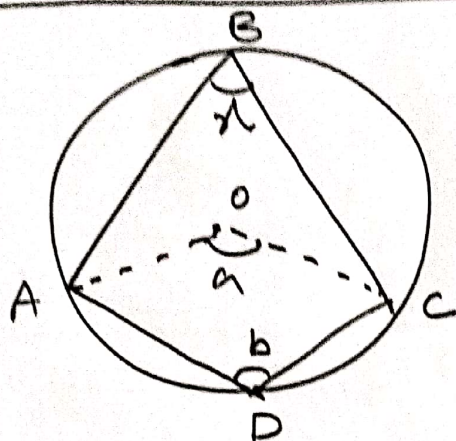
07.



Conceptual

Am: B

08

From figure $\angle A = 2x$

$$\therefore \angle b = \frac{360^\circ - a}{2}$$

$$= \frac{360^\circ - 2x}{2} = 180^\circ - x$$

Given $a:b = 2:5$

$$\Rightarrow 2x : 180^\circ - x = 2:5$$

$$\Rightarrow x = 30^\circ$$

Am: C

09. Conceptual

Am: B

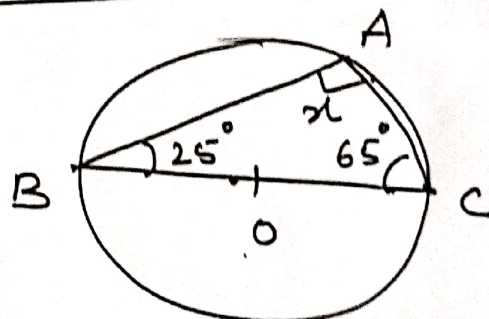
10. Conceptual

Am: A

JEE ADVANCED

11.

$$\therefore \angle A = 65^\circ, \angle x = 90^\circ$$



Ans: A, D

12.

Conceptual

Ans: A, C, D

13

Statement I: Conceptual (False)Statement II: Conceptual (True)

Ans: D

14.

Statement I: Conceptual (True)Statement II: Conceptual (True)

Ans: A

15

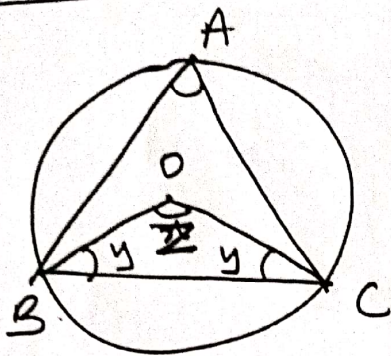
Assertion: Conceptual (True)Reason: Conceptual (True)

Ans: A

16. Assertion: Conceptual (True)
Reason: Conceptual (True)

Ans: A

17.



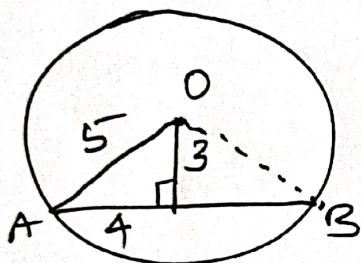
clearly $\angle BOC = 2\angle BAC$

Ans: C

18. $\angle BOC = 2 \cdot \angle BAC$
 $\therefore 120^\circ = 2 \cdot \angle BAC$ $\Rightarrow \angle BAC = 60^\circ$

Ans: C

19.



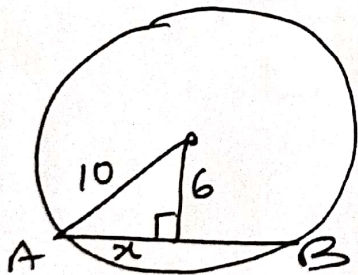
$\therefore AB = 2 \times 4 = 8 \text{ cm}$

Ans: A

20. $\angle OBA \rightarrow$ Can not be determined

Ans: D

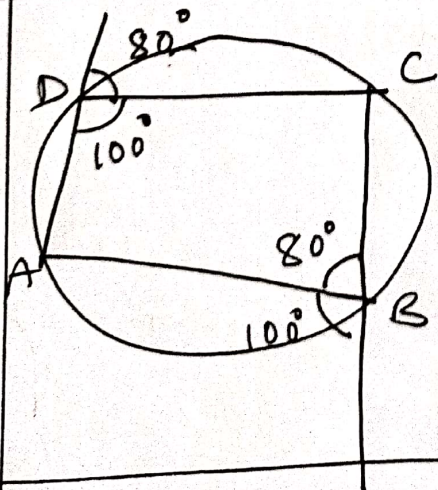
21.



$x^2 + 6^2 = 10^2$
 $\Rightarrow x = 8$
 $\therefore AB = 16$

Ans: 16

22.



$\therefore x = 100^\circ$
 $\frac{x}{50^\circ} = \frac{100^\circ}{50^\circ} = 2$

Ans: 2

23) (i) Conceptual (q) (iii) Conceptual (r)
 (ii) Conceptual (p) (iv) Conceptual (s)

(10)

Ans. q, p, r, s

24) i) Sum of the interior angle of a

$$\begin{aligned} \text{Septagon} &= (n-2) \times 180^\circ \\ &= (7-2) \times 180^\circ \\ &= 900^\circ \end{aligned}$$

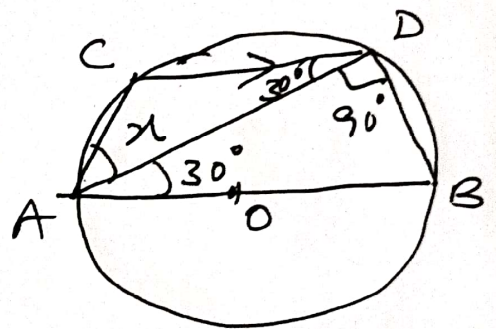
$$\therefore \text{Each angle} = \frac{900^\circ}{7}$$

$$\text{From figure} = x^\circ = \frac{1}{2} \left(\frac{900^\circ}{7} \right) = \frac{900^\circ}{14} = 128 \frac{4}{7} (q)$$

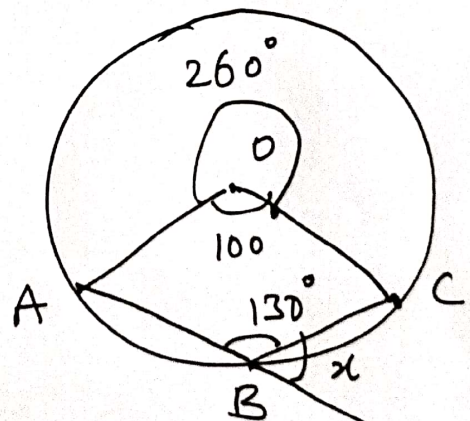
$$\begin{aligned} \text{ii) Ext } \angle AOC &= 360^\circ - 130^\circ = 230^\circ \\ \therefore \angle ABC &= \frac{230^\circ}{2} = 115^\circ (p) \end{aligned}$$

iii) From figure

$$\begin{aligned} \angle A + \angle D &= 180^\circ \\ (\angle x + 30^\circ) + (30^\circ + 90^\circ) &= 180^\circ \\ \therefore \angle x &= 30^\circ (s) \end{aligned}$$



$$\begin{aligned} \text{iv) } 130^\circ + x^\circ &= 180^\circ \\ \therefore x &= 50^\circ (t) \end{aligned}$$



Ans. q, p, s, t

$\Rightarrow$ THE END $\Leftarrow$