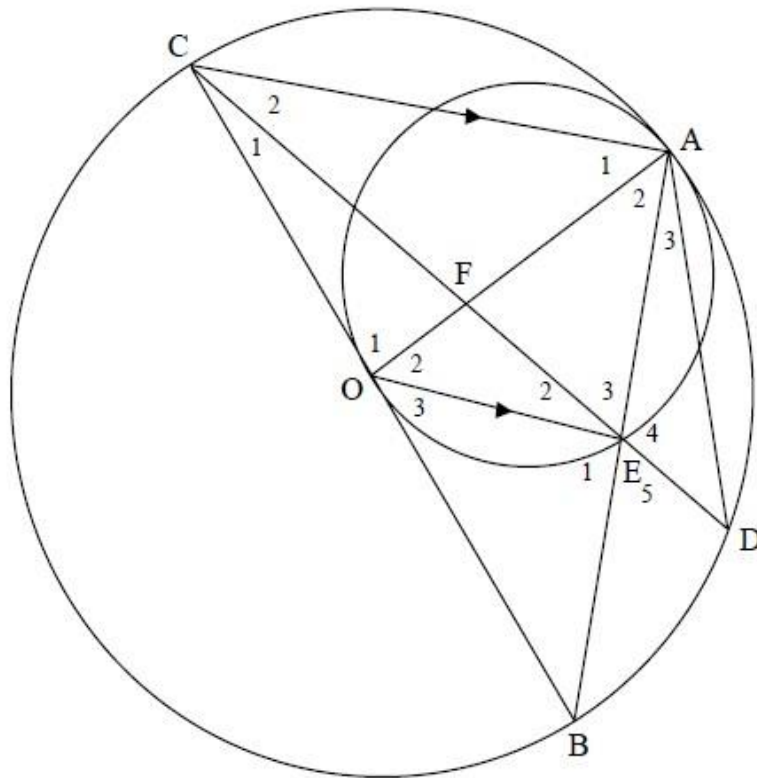


QUESTION 10

Two circles touch each other at point A. The smaller circle passes through O, the centre of the larger circle. Point E is on the circumference of the smaller circle. A, D, B and C are points on the circumference of the larger circle.

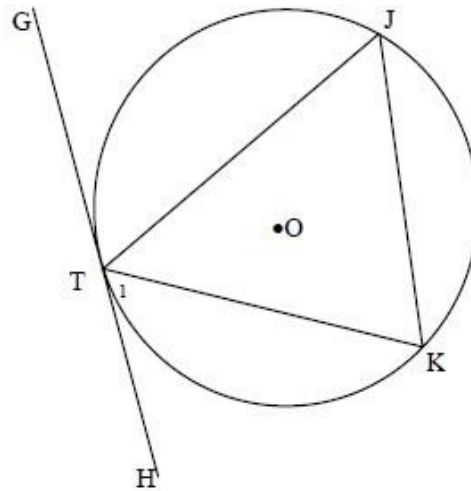
$OE \parallel CA$.



- 10.1 Prove, with reasons, that $AE = BE$. (2)
 - 10.2 Prove that $\triangle AED \parallel \triangle CEB$. (3)
 - 10.3 Hence, or otherwise, show that $AE^2 = DE \cdot CE$. (2)
 - 10.4 If $AE \cdot EB = EF \cdot EC$, show that E is the midpoint of DF. (3)
- [10]**

QUESTION 8

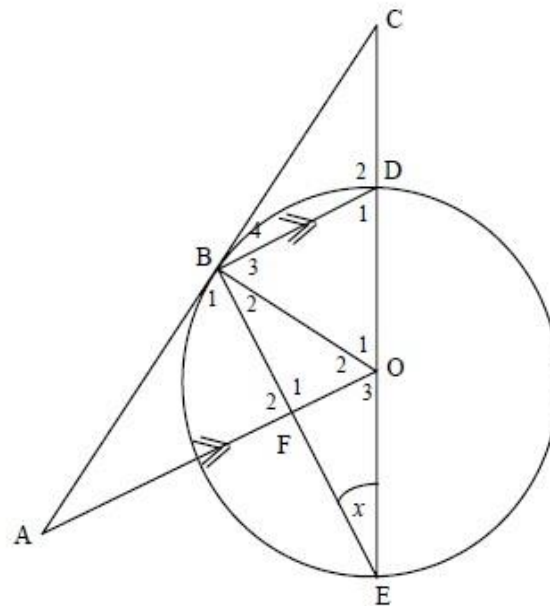
- 8.1 In the diagram below O is the centre of the circle. GH is a tangent to the circle at T. J and K are points on the circumference of the circle. TJ, TK and JK are joined.



Prove the theorem that states $\hat{T}_1 = \hat{TJK}$.

(5)

- 8.2 ED is a diameter of the circle, with centre O. ED is extended to C. CA is a tangent to the circle at B. AO intersects BE at F. $BD \parallel AO$. $\hat{E} = x$.



- 8.2.1 Write down, with reasons, THREE other angles equal to x . (4)
- 8.2.2 Determine, with reasons, $\hat{CBE}$ in terms of x . (3)
- 8.2.3 Prove that F is the midpoint of BE. (4)
- 8.2.4 Prove that $\triangle CBD \parallel \triangle CEB$. (2)
- 8.2.5 Prove that $2EF \cdot CB = CE \cdot BD$. (3)

[21]

QUESTION 9

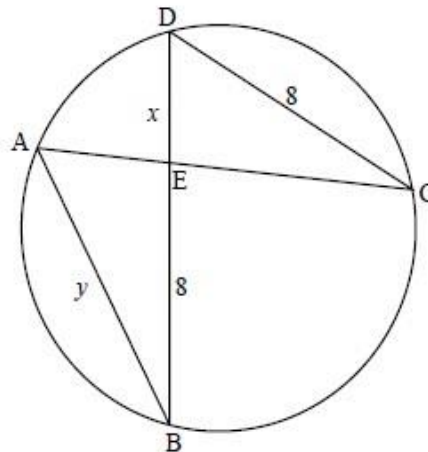
In the diagram below A, B, C and D are points on the circumference of the circle.

BD and AC intersect at E. Also,

$EB = 8 \text{ cm}$,

$DC = 8 \text{ cm}$ and

$AE : EC = 4 : 7$.

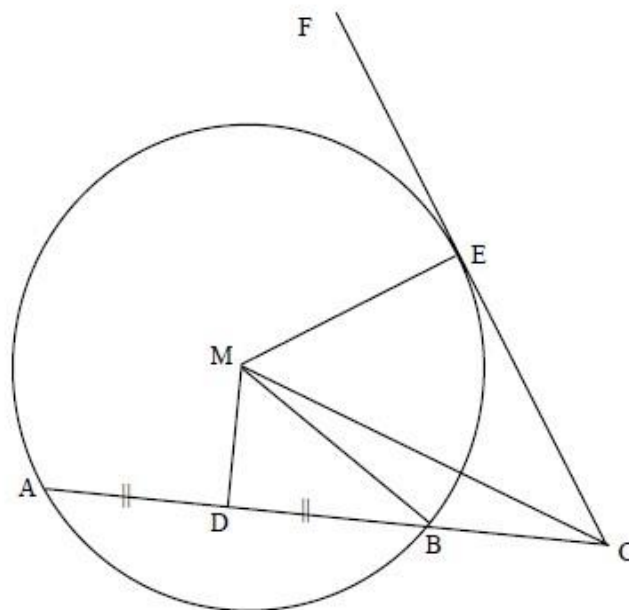


If $DE = x$ units and $AB = y$ units, calculate x and y .

[6]

QUESTION 10

In the diagram below M is the centre of the circle. FEC is a tangent to the circle at E. D is the midpoint of AB.



10.1 Prove MDCE is a cyclic quadrilateral.

(3)

10.2 Prove that $MC^2 = MB^2 + DC^2 - DB^2$.

(3)

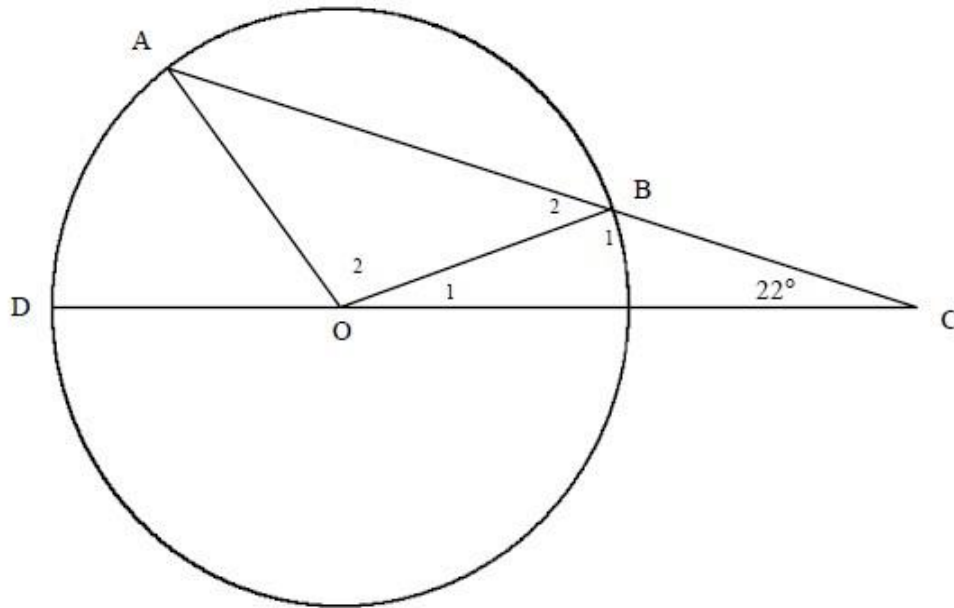
10.3 Calculate CE if $AB = 60 \text{ mm}$, $ME = 40 \text{ mm}$ and $BC = 20 \text{ mm}$.

(4)

[10]

QUESTION 8

O is the centre of the circle. AB produced and DO produced meet at C.
 $BC = OA$ and $\hat{ACO} = 22^\circ$.



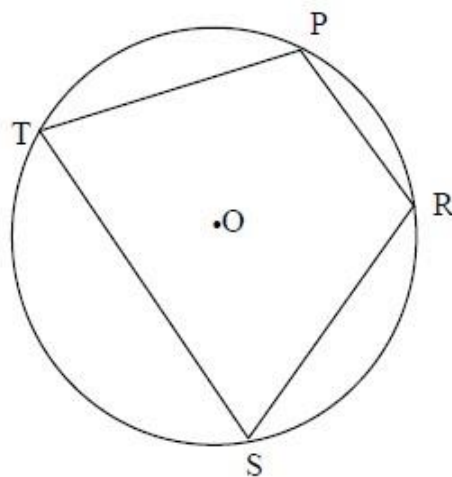
Calculate, with reasons, $\hat{AOD}$.

[5]

QUESTION 9

9.1 In the figure below O is the centre of the circle and PRST is a cyclic quadrilateral.

Prove the theorem that states $\hat{PRS} + \hat{PTS} = 180^\circ$.



(5)