Techior Solutions Pvt. Ltd.

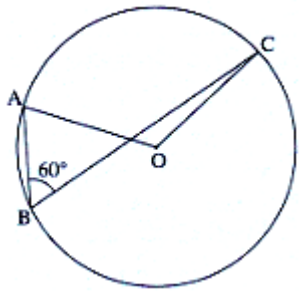
SSC X Mathematics - II

Total Time: 2 Hr | Total Marks: 40.0

Mathematics - II

MCQ Single Correct **8 x 1=8**

1) In the figure, if $\angle ABC=60°$, then $\angle AOC=$ = **1.0**



A) 120°
B) 60°
C) 30°
D) 90°

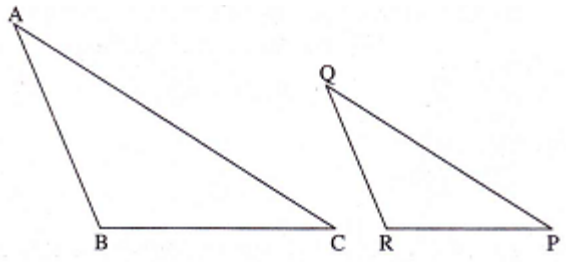
2) Out of the given triplets, which is not a Pythagoras triplet? **1.0**
(a) (104, 96, 40) (b) (52, 20, 48), (c) (32, 15, 30) (d) (61, 60 , 11)

A) B
B) A
C) D
D) C

3) The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is **1.0**

A) $160\ \pi\ cm^2$
B) $168\ \pi\ cm^2$
C) $120\pi\ cm^2$
D) $136\ \pi\ cm^2$

4) In ΔABC and ΔPQR in a one to one corresponding $\frac{AB}{QR}=\frac{BC}{PR}=\frac{CA}{PQ}$ then **1.0**



A) $\Delta PQR \sim \Delta ABC$

B) $\Delta PQR \sim \Delta CAB$

C) $\Delta CBA \sim \Delta PQR$

D) $\Delta BCA \sim \Delta PQR$

5) Length of a tangent segment drawn from a point which is at a distance 12.5 cm from the centre of a circle is 12 cm, find the diameter of the circle **1.0**

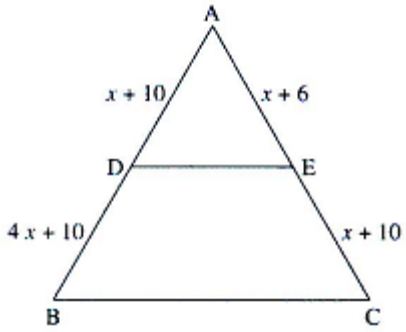
A) 25 cm

B) 24 cm

C) 7 cm

D) 14 cm

6) In the figure, for what value of x will seg DE be parallel to AB? **1.0**



A) 2

B) 3

C) 20

D) 2 and 20

7) When we see at a higher level, from the horizontal line, angle formed is ____ **1.0**

A) Angle of elevation

B) Angle of depression

C) 0

D) Straight angle

8) Out of the following which is the pythagorean triplet? **1.0**

A) (1, 5, 10)
B) (3,4, 5)
C) (2, 2, 2)
D) (5, 5, 2)

Short Description **6 x 2=12**

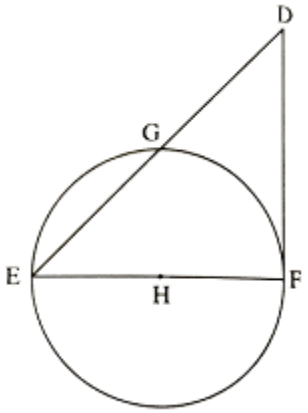
9) Find the volume of a cone if the radius of its base is 1.5 cm. and its perpendicular height is 5 cm. **2.0**

10) Find the distances between the following points: **2.0**

P (-6, -3), Q(-1, 9)

11) In figure, seg EF is a diameter and seg DF is a tangent segment. The radius of the circle is r. Prove that **2.0**

DE x GE = $4\ r^2$

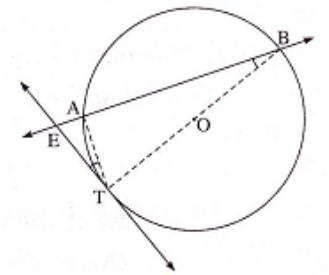


12) Prove the following: **2.0**

$$\frac{\tan^3\theta - 1}{\tan\theta - 1} = \sec^2\theta + \tan\theta$$

13) Draw a circle of radius 2.7 cm. Draw a tangent to the circle at any point on it. **2.0**

14) Statement : Point E is in the exterior of a circle. A secant through E intersects the circle at points A and B, and a tangent through E touches the circle at point T, then EA x EB = ET^2. **2.0**



Given : (1) A circle with centre O

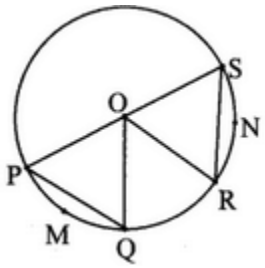
(2) Tangent ET touches the circle at point T

(3) Secant EAB intersects the circle at points A and B.

To prove: EA x EB = ET^2

15) Theorem: Corresponding arcs of congruent chords of a circle (or congruent circles) are congruent **2.0**

Given: O is the centre of circle, chord PQ = chord RS
To prove: arc PMQ = arc RNS

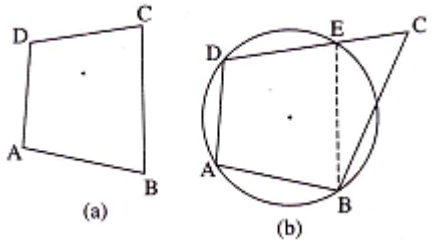


16) Find the centroids of the triangles whose vertices are given below **2.0**

(- 7, 6), (2, -2) , (8, 5)

Medium Description **4 x 3=12**

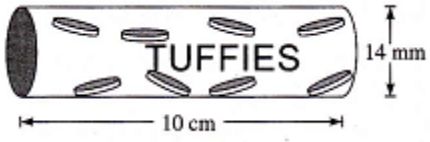
17) Statement : If a pair of opposite angles of a quadrilateral is supplementary, the quadrilateral is cyclic. **3.0**



Given : In $\square ABCD$, $\angle DAB + \angle BCD = 180^\circ$

To prove : $\square ABCD$, is cyclic.

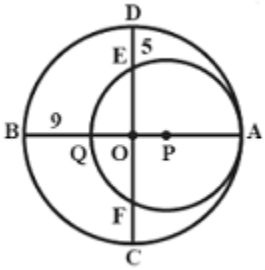
18) In the figure, a cylindrical wrapper of flat tablets is shown. The radius of a tablet is 7 mm and its thickness is 5 mm. How many such tablets are wrapped in the wrapper? **3.0**



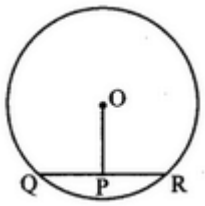
19) $\Delta ABC \sim \Delta LMN$ in ΔABC , AB = 5.5 cm, BC = 6 cm, CA = 4.5 cm. Construct ΔABC and ΔLMN such that $\frac{BC}{MN}=\frac{5}{4}$. **3.0**

20) The diameter and thickness of a hollow metal sphere are 12 cm and 0.01 m respectively. The density of the metal is 8.88 gm per cm^3. Find the outer surface area and mass of the sphere. **3.0**

21) In the figure, two circles with centres O and P are touching internally at point A. If BQ = 9, DE = 5, complete the following activity to find the radii of the circles. **3.0**



22) In the adjoining figure, seg QR is a chord of the circle with centre O. P is the midpoint of the chord QR. If QR = 24, OP = 10, find radius of the circle. To find solution of the problem, write the theorems that are useful. Using them, solve the problem. **3.0**



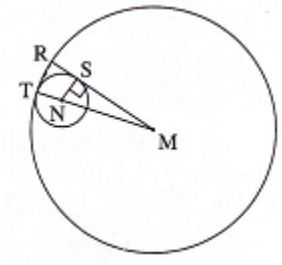
23) The radii of ends of a frustum are 14 cm and 6 cm respectively and its height is 6 cm. Find its (i) curved surfaces area (ii) total surface area (iii) volume. $(\pi=3.14)$ **3.0**

24) In figure, circle with centre M touches the circle with centre N at point T. Radius RM touches the smaller circle at S. Radii of circles are 9 cm and 2.5 cm. Find the answers to the following questions hence find the ratio MS : SR. **3.0**

(1) Find the length of segment MT

(2) Find the length of seg MN

(3) Find the measure of $\angle NSM$.



25) $\square MRPN$ is cyclic $\angle R = (5x - 13)°$, $\angle N = (4x + 4)°$. Find measures of $\angle R$ and $\angle N$. **3.0**

2 x 4=8

Long Description

26) Theorem : If a pair of opposite angles of a quadrilateral is supplementary, then the quadrilateral is cyclic. **4.0**

Given: In □ABCD, ∠ A + ∠C = 180°
To prove: □ABCD is a cyclic quadrilateral.

27) A storm broke a tree and tree top rested 20 m from the base of the tree, making an angle of 60° with the horizontal. Find the height of the tree. **4.0**

28) In figure, P is the point of contact. **4.0**

(1) If m (arc PR) = 140°, $\angle POR = 36°$, find m (arc PQ)

(2) If OP = 7.2, OQ = 3.2, find OR and QR

(3) If OP = 7.2, OR = 16.2, find QR