MS CREATIVE SCHOOL Telangana

Class: X   **PAPER – II**   **Sub: MATHEMATICS**

Part A and B

Time: 2 hours 45 min.]   **[Maximum Marks: 40**

Instructions:

1. In the time duration of 2 hours 45 minutes, 15 minutes of time is allotted to read and understand the Question paper.
2. Answer the Questions under Part-A on a separate answer book.

3. Write the answer to the Questions under Part-B on the Question paper itself and attach it to the answer book of Part-A

Part-A

Time: 2.00 Hours   **Marks: 35**
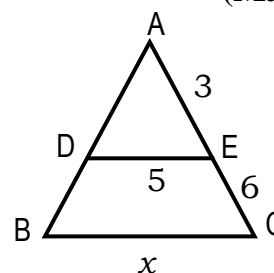
Note:

1. Answer all the questions from the given three sections I, II and III of Part-A.
2. In section-III, every question has internal choice. Answer any one alternative.

Section-I   (Marks: 7 × 1 = 7)

1) In the given figure, ΔABC ~ ΔADE

then find the value of 'x'.

2) A die is thrown once. Calculate the probability of getting a number less than 3.

3) If sin (A + B) = 1, cos (A – B) = 1, then find the value of A and B.

4) A cone and a hemisphere stand on equal bases having same height. Find the ratio of their volumes.

5) Does the mode changes, if another observation is added to the previous data. Comment?

6) Calculate the height of a tree, if it casts a shadow 17 m long on the level of ground, when the angle of elevation of the sun is 45^0.

7) The length of the tangent to a circle from a point 17 cm from its centre is 8 cm. Find the radius of the circle.

Section – II   (Marks: 6 × 2 = 12)

8) Write the formula to find the mode of a grouped data and explain the terms in it.

9) Evaluate $\dfrac{\tan^2 60^° + 4\cos^2 45^° + 3\sec^2 30^° + 5\cos^2 90^°}{\operatorname{cosec} 30^° + \sec^2 60^° - \cot^2 30^°}$

10) The king, queen and Jack of clubs are removed from a pack of 52 playing cards and then the remaining pack is well shuffled. One card is selected from the remaining cards. Find the probability of getting (i) a heart   (ii) a king   (iii) a club

11) A girl of height 90 cm is walking away from the base of a lamp post at a speed of 1.2 m/ sec. if the lamp post is 3.6 m above the ground, find the length of her shadow after 4 seconds.

12) A person 25 mts away from a cell tower observes the top of cell tower at an angle of elevation 30°. Draw the suitable diagram for this situation.

13) A square ODEF is inscribed in a quadrilateral OPEQ of circle and OD = $14\sqrt{2}$ cm. Aarthi said that "the area of shaded region is 224 cm^2." Do you agree? Give reasons.

Section – III   (Marks: 4 × 4 = 16)

14) (a) A metallic sphere of diameter 30 cm is melted and recast into a cylinder of radius 10 cm. Find the height of the cylinder.

(Or)

(b) The angle of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same straight line with it, are complementary. Prove that the height of the tower is 6m.

15) (a) Construct a equilateral ΔXYZ of side 5 cm and construct another triangle similar to ΔXYZ, such that each of its sides is 4/5 of the sides of ΔXYZ.

(Or)

(b) The following data give the information on the observed life span (in hours) of 90 electrical components.

Life Span (in hrs.)	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100	100 – 120
Frequency	8	12	15	23	18	14

16)(a) If secθ + tanθ = p, then show that $\dfrac{p^2 - 1}{p^2 + 1} = \sin\theta$

(Or)

(b) Prove that $(1+ \tan^2 q)+\left(1+ \dfrac{1}{\tan^2 q}\right)= \dfrac{1}{\sin^2 q- \sin^4 q}.$

17) (a) Find the mean of the following data:

C.I.	0 – 50	50 – 100	100 – 150	150 – 200	200 – 250	250 – 300	300 – 350
Frequency	2	3	5	6	5	3	1

(Or)

(b) Draw a circle of radius 6 cm. From a point 10 cm away from its centre, construct the pair of tangents to the circle and measure their length.

Part-B

Write the CAPITAL LETTER (A, B, C, D) showing the correct answer for the following questions in the brackets provided against each question. **(Marks: 10 × ½ = 5)**

1) $\sin^2 105° + \cos^2 105° =$ _____.

  (A) 0   (B) 3   (C) -1   (D) 1

2) Histogram consists of _____.

  (A) circles   (B) rectangles   (C) triangles   (D) squares

3) If a month is selected at random in a year, then the probability that the month is either march or September _____.

  (A) $\dfrac{3}{2}$ (B) $\dfrac{8}{9}$ (C) $\dfrac{1}{6}$ (D) $\dfrac{1}{5}$

4) Two spheres are in the ratio 3: 5, what is the ratio of their surface areas_____.

  (A) 9 : 16   (B) 9 : 25   (C) 25 : 9   (D) 16 : 1

5) The number of tangents that van be drawn to a circle from an external point is _____.

  (A) 0   (B) 3   (C) 2   (D) 1

6) If the angle of elevation of sun increase from 0° to 90°, then the length of shadow of the tower _____.

  (A) no change   (B) increase   (C) decrease   (D) can't be decided

7) $\Delta ABC \sim \Delta DEF, \angle A = 80^0, \angle B = 70^0$, then $\angle E =$ _____.

  (A) 50^0 (B) 80^0 (C) 60^0 (D) 90^0

8) Which of the following is not a measure of central tendency?

  (A) Mean   (B) Median   (C) mode   (D) Range

9) The value of $\tan\theta$ in terms of $\csc\theta$ is _____.

  (A) $\dfrac{1}{\sqrt{\csc^2 q - 1}}$ (B) $\dfrac{\csc q}{\sqrt{\csc^2 q - 1}}$ (C) $\dfrac{2\csc q}{\sqrt{\csc^2 q - 1}}$ (D) $\dfrac{2}{\sqrt{\csc^2 q - 1}}$

10) The mean of 6, 5, 4, x, 2 is 4 then x = _____.

  (A) 2   (B) 1   (C) ¼   (D) ½

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