AP Board Class 10 SSC Maths Question Paper II March 2015

16E(A)

MATHEMATICS, Paper - II

(English version)

Parts A and B

Time : 2½ Hours]   *[Maximum Marks : 50*

Instructions :
1. *Answer the questions under **Part-A** on a separate answer book.*
2. *Write the answers 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 Hours   Marks : 35
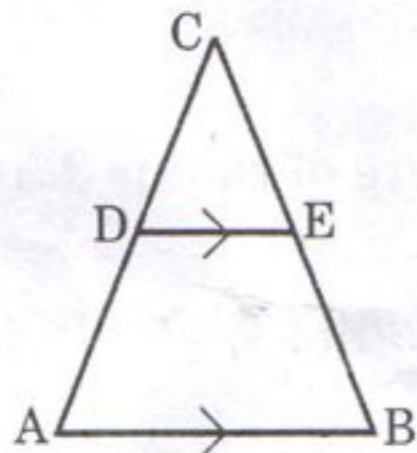
SECTION - I   *(Marks : 5×2=10)*

Note :
1. *Answer **ANY FIVE** questions, choosing atleast **two** from each of the following two Groups, i.e., **A** and **B**.*
2. *Each question carries **2** marks.*

GROUP - A
(Similar Triangles, Tangents and Secants to a Circle and Mensuration)

1. What value of x will make DE || AB, in the given figure ?
   AD = 8x + 9, CD = x + 3 , BE = 3x + 4, CE = x

2. Prove that "The lengths of tangents drawn from an external point to a Circle are equal."

3. The curved surface area of a Cone is 4070 cm^2 and its diameter is 70 cm. What is its slant height ?

4. Two cubes each of volume 64 cm^3 are joined end to end together. Find the surface area of the resulting cuboid.

GROUP - B

(Trigonometry, Applications of Trigonometry, Probability and Statistics)

5. Find the mean of the following data :

    5, 6, 9, 10, 6, 12, 3, 6, 11, 10.

6. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be ....

    (i) red, *(ii)* white, *(iii)* not green ?

7. If $\cos 7A = \sin (A - 6°)$, where 7A is an acute angle. Find the value of A.

8. Length of the shadow of a 15 meter high pole is $5\sqrt{3}$ meters at 7'o clock in the morning. Then what is the angle of elevation of the Sun rays with the ground at that time ?

SECTION - II   *(Marks : 4×1=4)*

Note :

    *1.   Answer **ANY FOUR** of the following **six** questions.*

    *2.   Each question carries **1** mark.*

9. Write the formula for median of a grouped data. Explain about the symbols with their usual meanings.

10. Find the total surface area of a hemisphere of radius 3.5 cm.

11. If $P(E) = 0.05$, what is the probability of "not E" ?

12. Calculate the length of tangent from a point 15 cm away from the centre of a Circle of radius 9 cm.

13. Can "mode" be calculated for grouped data with unequal Class sizes ?

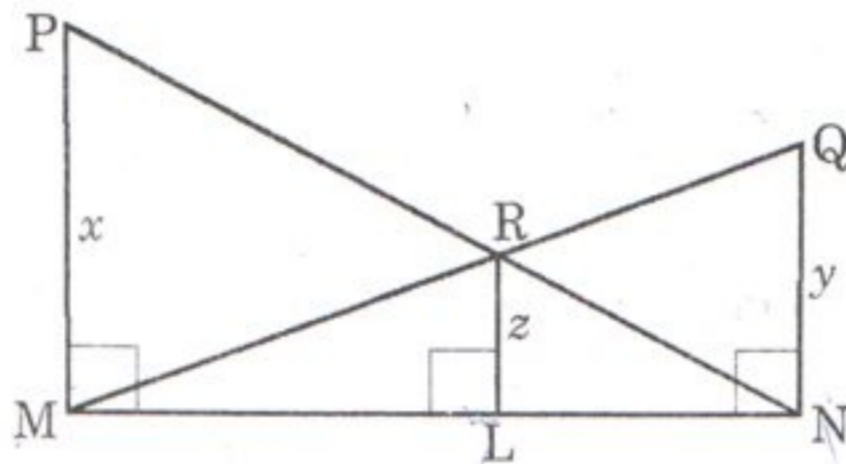14. If $\sin A = \cos A$, then find the value of 'A' in degrees .

Note :

1. Answer **ANY FOUR** of the following questions, choosing atleast **two** from each group, i.e., **A** and **B**.

2. Each question carries 4 marks.

GROUP - A

(Similar Triangles, Secants and Tangents to a Circle and Mensuration)

15. In the adjoining figure ; MP, LR and NQ are perpendiculars to the straight line MLN. If MP = x, LR = z and NQ = y, prove that $\dfrac{1}{x} + \dfrac{1}{y} = \dfrac{1}{z}$.

16. A hemi-spherical bowl of internal radius 15 cm contains a liquid. The liquid is to be filled into cylindrical bottles of diameter 5 cm and height 6 cm. How many bottles are necessary to empty the bowl ?

17. 'O' is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.

18. A heap of rice is in the form of a Cone of diameter 12 m and height 8 m. Find its volume. How much canvas cloth is required to cover the heap ? (use $\pi = 3.14$)

GROUP - B

(Trigonometry, Applications of Trigonometry, Probability and Statistics)

19. If $4\sin^2\theta - 1 = 0$ and θ is less than 90°, find the value of θ and the value of $\cos^2\theta + \tan^2\theta$.

20. Suppose you are shooting an arrow from the top of a building at a height of 6 m to a target on the ground at an angle of depression of 60°. What is the distance between you and the object ?

21. Archana wants to buy a TV that costs ₹ 19,000 but she has only ₹ 15,000. So she decides to invest her money at 8% simple interest per year. After how many years, will she be able to buy the TV ?

22. The following frequency distribution gives the monthly consumption of 68 consumers of a locality. Find the median.

Monthly Consumption	65-85	85-105	105-125	125-145	145-165	165-185	185-205
No. of Consumers	4	5	13	20	14	8	4

SECTION - IV   (Marks : 5×1 =5)

Note :

1. *Answer ANY ONE question from the following.*
2. *The question carries 5 marks.*

23. Construct a triangle of sides 4.2 cm, 5.1 cm and 6 cm. Then construct a triangle similar to it, whose sides are $\frac{2}{3}$ of corresponding sides of the first triangle.

24. Teja and Murali on either side of a temple of 30 meters height, observe its top at the angles of elevation 30° and 60° respectively. Find the distance between the two boys.

─────────────