MODEL QUESTION PAPER

Time: 3 Hours **MATHEMATICS (E)**

Subject Code

S	0	2	5

C.W.S.N.

Total No of Questions: 7 **Maximum Marks: - 65**

(Printed Pages: 8)

Instructions:

(i) Answer each main question on a new page.

(ii) All questions are compulsory.

(iii) The question paper consists of seven questions, each of 10 marks.

(iv) There is no overall choice. However, internal choice has been provided in two questions of three marks each and one question of four marks.

(v) In questions on constructions, the drawing should be neat and exactly as per the given measurement. The construction lines and arcs should also be maintained.

(vi) Chart of table from 2 till 9 will be supplied on request to Hearing Impaired.

(vii) Use of calculator and mathematical tables is not permitted.

(viii) The number on the right side, indicate marks.

1. A Select and write the most appropriate alternative from those provided in the bracket. (1)

1. If x + y = 12 and x - y = 6 then the value of x is _____.

(6, 7, 8, 9)

B The following is a given pair of linear equations:

$3x + 4y = 10$ and

$2x - y = 3$

Answer the following questions: (2)

i. Write the condition for unique solution of the given pair of linear equations.

ii. Verify whether the equations have a unique solution.

C By elimination method, find the solution of <u>any one</u> of the following: (3)

i. $5x - y = 8$
$2x + y = 6$

ii. $4x + 4y = 12$
$x + 2y = 4$

D Attempt **<u>any one</u>** of the following: (4)

(i) The cost of two erasers and 3 sharpeners is together Rs. 13, while the cost of 2 erasers and one sharpener is together Rs. 7. Find the cost of each eraser and sharpener.

(ii) The sum of two natural numbers is 10 and their difference is 6. Find the two numbers.

2. A Select and write the most appropriate alternative from those provided in the Bracket: (1)

In the quadratic polynomial $x^2 + 10x + 21$, then the value of b is _____.

(1, 2, 10, 21)

B Attempt the following: (2)

(i) Find the sum of zeroes of the polynomial:

$x^2 + 4x - 32$

(ii) Find the product of zeroes of the polynomial.

$x^2 - 8x + 15$

C Divide: (3)

$X^3 + 3x^2 + 6x + 14$

By x + 1 and find quotient and the remainder.

D A child has a die whose six faces showing the letters as given below: (3)

P	E	D	S	E	L

The die is thrown. Find the probability of getting

i. S

ii. E

iii. L

3. A Select and write the most appropriate alternative from those provided in the bracket: (1)

The roots of a quadratic equation (2x – 1) (x – 5) = 0 are _____.

(-5 and $\frac{-1}{2}$, 5 and $\frac{-1}{2}$, 5 and $\frac{1}{2}$, -5 and $\frac{1}{2}$)

B Attempt the following questions: (2)

i Find the root of a quadratic equation:

$$X^2 - 64 = 0$$

ii Write the quadratic equation $3x^2 = 4 + 4x$ in the form :

$$ax^2 + bx + c = 0$$

C Find the roots of <u>any one</u> of the following: (3)

i. $x^2 + 7x + 12 = 0$ [By factorization method]

ii. $x^2 - 5x + 6 = 0$ [By quadratic formula]

D The following frequency distribution table shows the marks obtained by the students of a class in a test. (4)

Marks Obtained (C.I)	No. Of students (f_i)	Class Marks (x_i)	$f_i \times x_i$
0 – 10	2		
10 – 20	4		
20 – 30	4		
30 – 40	3		
40 – 50	5		
50 – 60	3		
	$\sum f_i$ = ...	-	$\sum f_i x_i$ = ...

Rewrite and complete the table and also find the mean of the marks scored.

4. A Select and write the most appropriate alternative from those provided in the bracket: (1)

The decimal form of the rational number $\frac{25}{4}$ is _____ .

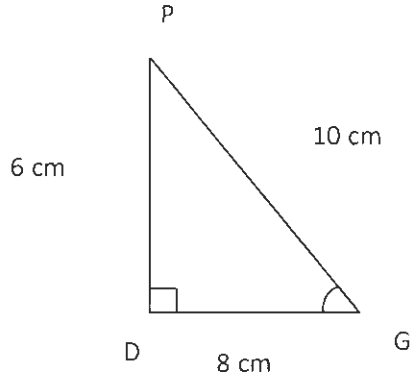
(2.6 , 6.2 , 4.2 , 5.4)

B If the product of two numbers is 150 and if their LCM is 30. Find the HCF of two numbers. (2)

C Using Euclid's division method, find the HCF of 175 and 20. (2)

D Find the sum of first 6 terms of A.P.: 6, 9, 12 ..... . (3)

5. A Select and write the most appropriate alternative from those provided in the bracket: (1)



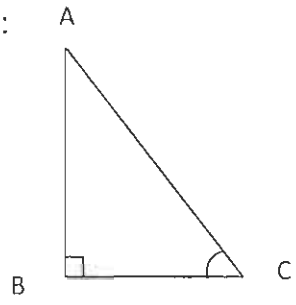
In the above figure of ΔPDG, $\angle D = 90^0$, DG =8 cm, PD =6cm and PG =10cm, then

Tan G =..... $(\frac{10}{8}, \frac{8}{10}, \frac{6}{8}, \frac{8}{6})$

B In $\triangle ABC$, $\angle B = 90^{O}$. If $\tan C = \frac{4}{3}$ then find: (2)

i. Length of AC

ii. The value of Sin C.



C Substitute the known numerical values of trignometrical ratios and find the value of: (3)

$$8\sin^2 60^{O} + 6\tan^2 30^{O} + \tan^2 45^{O}$$

D P (1, 2) and B (5, 6) are two points. Find the distance between point P and point B. (3)

6. A Select and write the most appropriate alternative from those provided in the Bracket: (1)

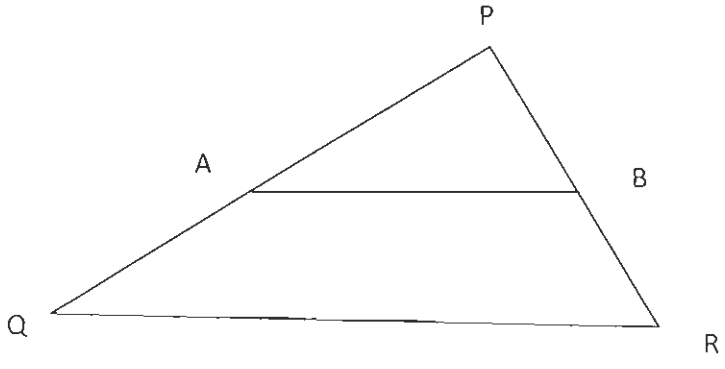
If $\Delta XYZ \sim \Delta ABC$ and XY = 2cm, YZ= 3cm, AB = 4cm then BC = _____ cm.

(2, 3, 4, 6)

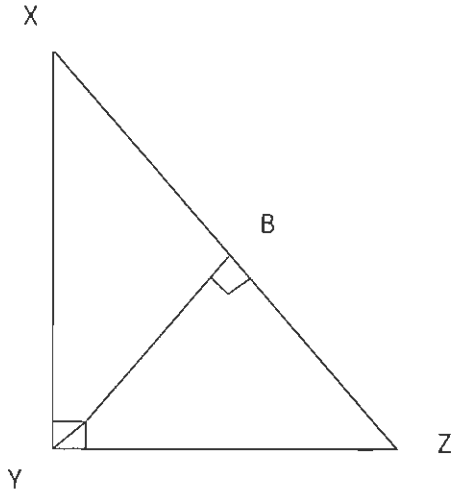
B In ΔPQR, AB // QR. If PA = 3cm, AQ = 5 cm and PB = 6cm then find: (2)

i. Length of BR

ii. Length of PR



C In ΔXYZ, $\angle Y = 90^{O}$ YB $\perp$ XZ with reference to the given figure, fill in the blanks And complete the proof. (3)



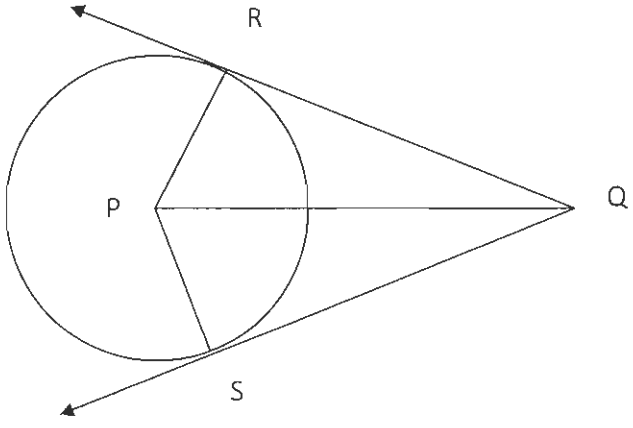
Proof: In ΔXYZ and ΔYBZ,

i. $\angle$ XYZ = _____ Right angles

ii. $\angle$ Z = _____ Same angle

iii. $\Delta XYZ \sim \Delta YBZ$ _____

D In the figure QR and QS are two tangent segments from point Q to the circle with centre P. With reference to the figure given below answer the following questions. (4)



i. Name the common side of ΔPQR and ΔPSQ.

ii. Name the right angles of ΔPQR and ΔPSQ

iii. Name the criteria/theorem by which ΔPQR is congruent to ΔPQS

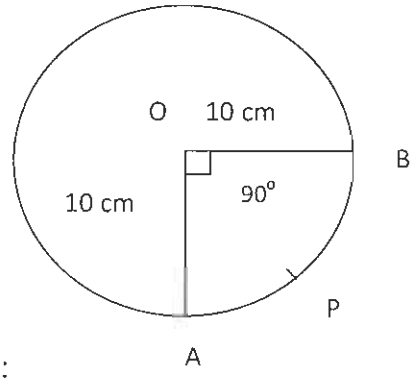
iv. If QR = 6cm, then what is the length of QS?

7. A Select and write the most appropriate alternative from those provided in the brackets: (1)

If the radius of a circle is 6 cm then its diameter is _____cm

(2.5, 6, 12, 18)

B In the following figure, O is the centre of the circle, O – A P B is a sector. If $\angle O = 90^\circ$ and the radius of circle is 10 cm. (Do not subsitute the value of π). (2)



Find :

(i) Area of sector O-APB

(ii) The length of arc APB

C Draw a line segment AB = 8.4 cm and divide it into 4 equal parts.
(Use compass and ruler only) (3)

D Draw a line segment PQ = 8 cm. Taking 'P' as the centre and radius 3 cm, Draw a circle. Then using a pair of compasses and ruler, construct two tangents from 'Q' to the circle. Measure and state the length of a tangent segment. (3)

☺BEST OF LUCK☺