2019 IV 08 **0930** **Seat No.** | | | | | |

Time : 3 Hours

MATHEMATICS (E)

(For Children with Special Needs)

Subject Code

S	0	2	5

Total No. of Questions : 7 **(Printed Pages : 11)** **Maximum Marks : 65**

***INSTRUCTIONS* :**

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

(*ii*) *All* questions are compulsory.

(*iii*) The question paper consists of *seven* questions.

(*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 construction, the drawing should be neat and exactly as per the given measurement. The construction lines and arcs should also be maintained.

(*vi*) Chart of tables 2 to 9 will be supplied on request.

(*vii*) Use of Calculator and Mathematical tables is not permitted.

(*viii*) The numbers on the right side indicate full marks.

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

If $x + y = 14$ and $x - y = 6$, then the value of x is .....

(*a*) 6

(*b*) 8

(*c*) 10

(*d*) 12

(B) A pair of linear equations in two variables is given below : 2

$$4x + 6y = 3$$

$$6x + 9y = 5$$

Answer the following questions :

(*i*) Write the condition for no solution.

(*ii*) Verify whether the equations have no solution.

(C) By elimination method, find the solution of any *one* of the following equations : 3

(*i*) $3x + y = 11$

$4x + 2y = 18$

(*ii*) $x + 2y = 17$

$3x - y = 2$

(D) Attempt any *one* of the following : 4

(*i*) The sum of two natural numbers is 11 and their difference is 5. Find the two natural numbers.

(*ii*) The cost of 1 note-book and 1 ruler is Rs. 25, while the cost of 1 note-book and 2 rulers together is Rs. 30. Find the cost of each note-book and each ruler.

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

If one of the zeroes of the quadratic polynomial $(x + 5)(3x - 4)$ is -5 then its other zero is .....

(*a*) $\frac{-3}{4}$

(*b*) $\frac{-4}{3}$

(*c*) $\frac{3}{4}$

(*d*) $\frac{4}{3}$

(B) Attempt the following : 2

(*i*) Find the sum of the zeroes of the polynomial $x^2 - 7x - 18$.

(*ii*) Find the product of the zeroes of the polynomial $3x^2 + 8x + 5$.

(C) Divide $x^3 + 2x^2 - 5x + 8$ by $x - 1$ and write the quotient and the remainder. 3

(D) A child has a box which contains cards with the letters as shown below : 3

D	E	F	E	N	D

If one card is picked up at random from the box, then find the probability of getting the letter :

(*i*) E

(*ii*) N

(*iii*) Z

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

The value of $b^2 - 4ac$ in the quadratic equation $x^2 - 3x + 2 = 0$ is .....

(*a*) –1

(*b*) 0

(*c*) 1

(*d*) 2

(B) Attempt the following : 2

(*i*) Write the quadratic equation $2x^2 + 10 = -9x$ in the form $ax^2 + bx + c = 0$.

(*ii*) Find the roots of the quadratic equation $y^2 - 4 = 0$.

(C) Find the roots of any *one* of the following : 3

(*i*) $x^2 + 12x + 35 = 0$ (by factorisation method)

(*ii*) $x^2 - 9x + 14 = 0$ (by using the quadratic formula)

(D) The following frequency distribution table shows the points obtained by a group of students in a fancy dress competition. 4

Points Obtained C.I.	**No. of Students (f_i)**	**Class Marks (x_i)**	$f_i x_i$
0—10	3	—	—
10—20	2	—	—
20—30	4	—	—
30—40	5	—	—
40—50	4	—	—
50—60	2	—	—
	Σf_i = ...		$\Sigma f_i x_i$ = ...

Rewrite and complete the table. Also find the mean of the points scored by the direct method.

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

The decimal form of the rational number $\frac{58}{5}$ is .....

(*a*) 1.06

(*b*) 1.16

(*c*) 10.6

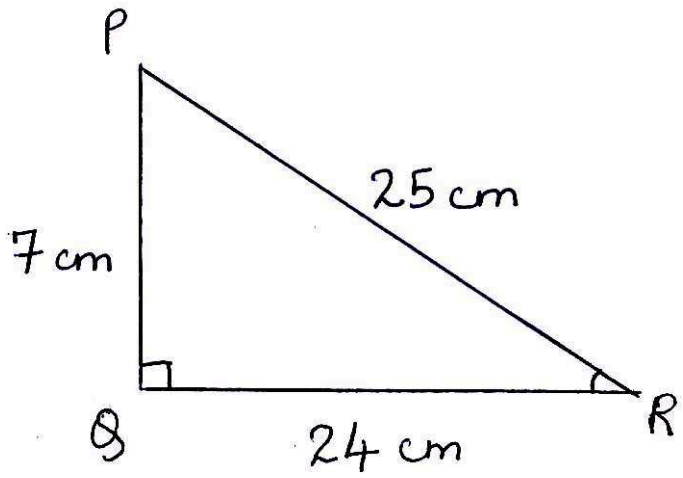
(*d*) 11.6

(B) If the L.C.M. and H.C.F. of two numbers are 420 and 3 respectively, then find the product of the two numbers. 2

(C) Using Euclid's division algorithm, find the H.C.F. of 20 and 75. 2

(D) Find the sum of the first 16 terms of the A.P. 3, 6, 9, 12, ... 3

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



If in Δ PQR, $\angle Q = 90°$, QR = 24 cm, PQ = 7 cm and PR = 25 cm, then sin R = ...

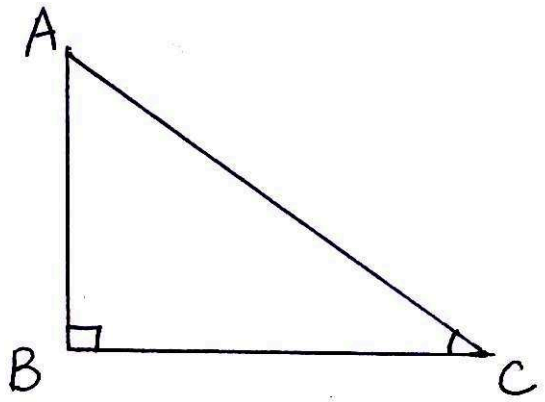
(*a*) $\frac{7}{25}$

(*b*) $\frac{7}{24}$

(*c*) $\frac{24}{25}$

(*d*) $\frac{25}{24}$

(B) If in Δ ABC, $\angle B = 90°$ and $\tan C = \frac{6}{8}$, then find : 2



(*i*) Length of AC.

(*ii*) The value of cos C.

(C) Find the distance between the points A(5, 3) and B(7, 6) by using the distance formula. 3

(D) Substitute the known numerical values of trigonometric ratios and find the value of : 3

$$4\cos^2 60^\circ + 2\tan 45^\circ - 2\sin 30^\circ .$$

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

If Δ CAR ~ Δ HUT, then $\frac{CA}{HU}$ = ...

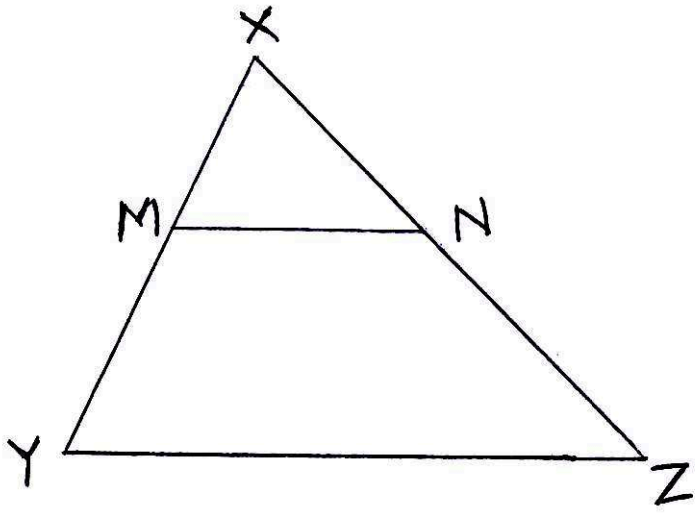
(*a*) $\frac{HT}{CR}$

(*b*) $\frac{AR}{HU}$

(*c*) $\frac{CR}{HT}$

(*d*) $\frac{RC}{UH}$

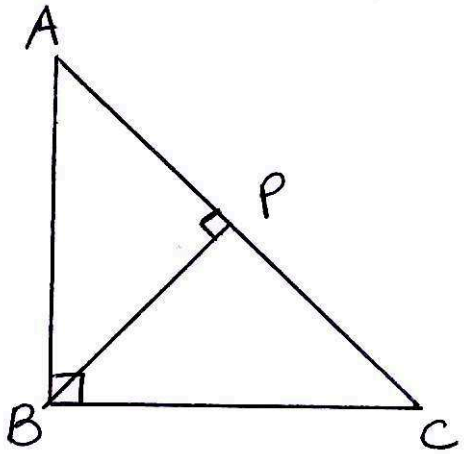
(B) In Δ XYZ, MN || YZ. If XM = 5 cm, MY = 15 cm, NZ = 21 cm, then find : 2



(*i*) The length of XN.

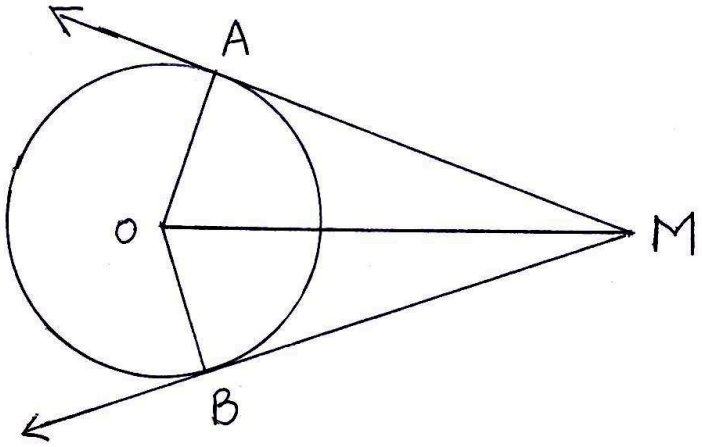
(*ii*) The length of XZ.

(C) In Δ ABC, $\angle B = 90°$ and BP $\perp$ AC. With reference to the figure given below, fill in the blanks and complete the proof : 3



	Statement	**Reason**
	In Δ ABC and Δ APB,	
(*i*)	$\angle$ ABC = ...	Each is a right angle
(*ii*)	$\angle$ A = $\angle$ A	.....
(*iii*)	Δ ABC ~ Δ APB	.....

(D) In the figure given below, O is the centre of a circle. MA and MB are two tangent segments drawn from the point M to a circle at A and B respectively. With reference to the figure, answer the following questions to complete the proof : 4



(*i*) Name the side equal to OB.

(*ii*) Name the common side of Δ OAM and Δ OBM.

(*iii*) Name the right angles of Δ OAM and Δ OBM.

(*iv*) By which criterion/theorem are Δ OAM and Δ OBM congruent ?

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

If the diameter of a circle is 15 cm, then its radius is ..... cm.

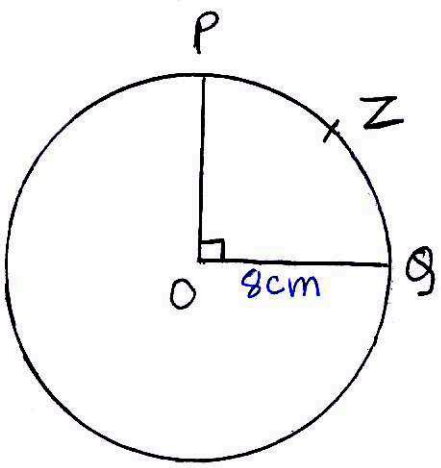
(*a*) 7

(*b*) 7.5

(*c*) 15

(*d*) 30

(B) In the following figure, O is the centre of the circle with radius 8 cm O – PZQ is a sector and ∠ POQ = 90°. 2



Find :

(*i*) Area of sector O – PZQ (Do not substitute the value of π)

(*ii*) Length of arc PZQ (Do not substitute the value of π)

(C) Draw a line segment AB of length 8.5 cm and divide it into 5 equal parts. (Use only a pair of compasses and ruler). 3

(D) Draw a line segment PQ = 7.5 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 point Q to the circle. Measure and state the length of each tangent segment. 3