

2019 VI 17

0230

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 question 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 marks.

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

If  $x + y = 10$  and  $x - y = 4$ , then the value of  $y$  is .....

(a) 2

(b) 3

(c) 4

(d) 7

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

$$x + 4y = 6$$

$$3x + 12y = 18$$

Answer the following questions :

(i) Write the condition for infinitely many solutions.

(ii) Verify whether the equations have infinitely many solutions.

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

(i)  $2x + 3y = 14$

$$4x - y = 14$$

(ii)  $x + 3y = 9$

$$2x + y = 8$$

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

(i) The cost of 2 pens and 1 eraser together is Rs. 26, while the cost of 1 pen and 2 erasers together is Rs. 22. Find the cost of each pen and each eraser.

(ii) The sum of two natural numbers is 20 and their difference is 8. Find the two natural numbers.

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

When the quadratic polynomial  $x^2 - 3x - 4$  is compared with its general form  $ax^2 + bx + c$ , then value of  $a$  is .....

(a) -4

(b) -3

(c) 1

(d) 2

(B) Attempt the following : 2

(i) Find the sum of the zeroes of the polynomial  $2x^2 + 7x + 5$ .

(ii) Find the product of the zeroes of the polynomial  $x^2 + 2x - 15$ .

(C) Divide  $x^3 + 6x^2 + 14x + 18$  by  $x + 2$  and write the quotient and the remainder. 3

(D) A bag contains 6 green balls, 5 red balls and 4 blue balls. If a ball is drawn at random from the bag. What is the probability that it will be : 3

(i) a red ball ?

(ii) a blue ball ?

(iii) a white ball ?

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

The roots of the quadratic equation  $(x + 6)(x + 7) = 0$  are .....

(a) +6 and +7

(b) -6 and -7

(c) +6 and -7

(d) -6 and +7

(B) Attempt the following : 2

(i) Write the quadratic equation  $x^2 - 18 = -3x$  in the form  $ax^2 + bx + c = 0$ .

(ii) Find the roots of the quadratic equation  $x^2 - 36 = 0$ .

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

(i)  $x^2 + 7x + 12 = 0$  (by factorisation method)

(ii)  $x^2 + 4x - 21 = 0$  (by quadratic formula method)

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

Marks Obtained	No. of Students	Class Marks	$f_i \times x_i$
C.I.	$(f_i)$	$(x_i)$	
0—10	2	—	—
10—20	3	—	—
20—30	6	—	—
30—40	10	—	—
40—50	7	—	—
50—60	2	—	—
	$\Sigma f_i = \dots$		$\Sigma f_i x_i = \dots$

Rewrite and complete the table. Also find the mean of the marks obtained by the direct method. (Write your answer correct upto two places of decimal)

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

The decimal form of the rational number  $\frac{45}{4}$  is .....

(a) 0.11

(b) 1.12

(c) 11.25

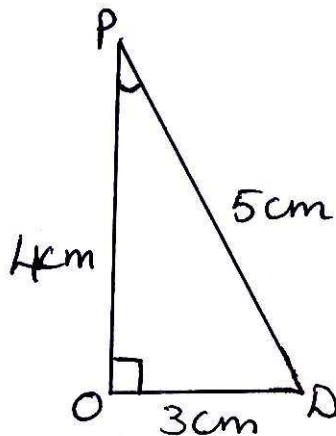
(d) 112.5

(B) The product of two numbers is 1000. If their HCF is 5, then find their L.C.M. 2

(C) Using Euclids division algorithm, find the H.C.F. of 145 and 30. 2

(D) Find the sum of the first 10 terms of the A.P. 5, 10, 15, 20, ..... 3

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



In  $\Delta POD$ ,  $\angle O = 90^\circ$ ,  $OD = 3$  cm,  $PO = 4$  cm and  $PD = 5$  cm, then  $\tan P = \dots\dots\dots$

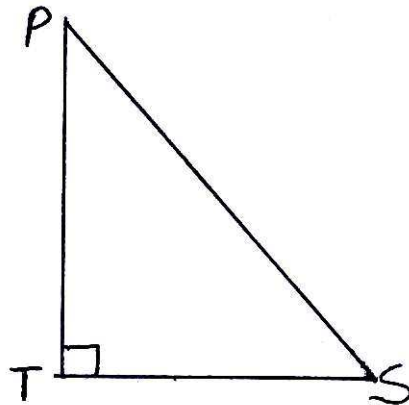
(a)  $\frac{3}{5}$

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

(c)  $\frac{5}{4}$

(d)  $\frac{5}{3}$

(B) In  $\Delta PTS$ ,  $\angle T = 90^\circ$ , If  $\cos P = \frac{5}{13}$ , then find : 2



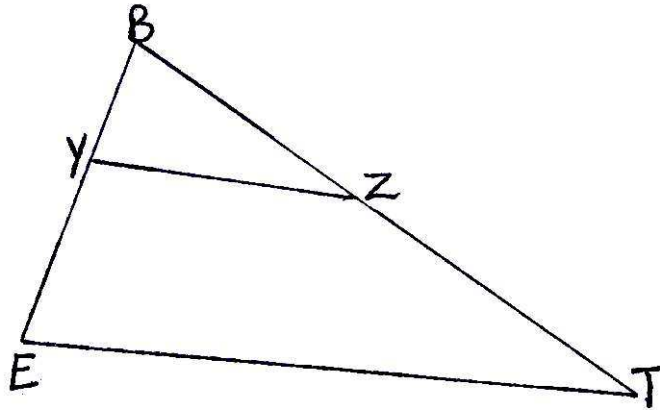
(i) The length of TS.

(ii) The length of  $\sin P$ .

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

$$3 \tan^2 45 + 4 \sin^2 30 + 8 \cos^2 60$$

- (D) Find the distance between the points  $N(4, 0)$  and  $A(10, 8)$  using the distance formula. 3
6. (A) Select and write the most appropriate alternative from those provided below : 1

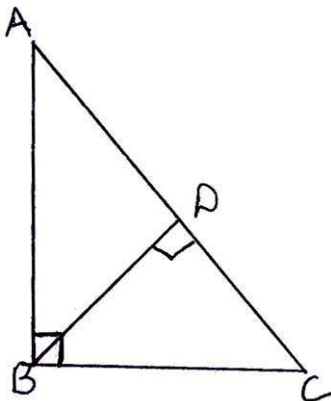


In  $\triangle BET$ ,  $YZ \parallel ET$ . If  $BY = 2$  cm,  $YE = 5$  cm,  $BZ = 6$  cm, then  $ZT = \dots\dots\dots$

- (a) 5 cm
- (b) 8 cm
- (c) 15 cm
- (d) 21 cm
- (B) If  $\triangle DEF \sim \triangle MPT$ ,  $DE = 4$  cm,  $EF = 5$  cm,  $MP = 8$  cm and  $MT = 6$  cm. Find : 2
- (a) length  $PT$
- (b) length  $DF$ .



- (C) In  $\triangle ABC$ ,  $\angle B = 90^\circ$  and  $BD \perp AC$ . With reference to the figure given below, fill in the blanks to complete the proof : 3



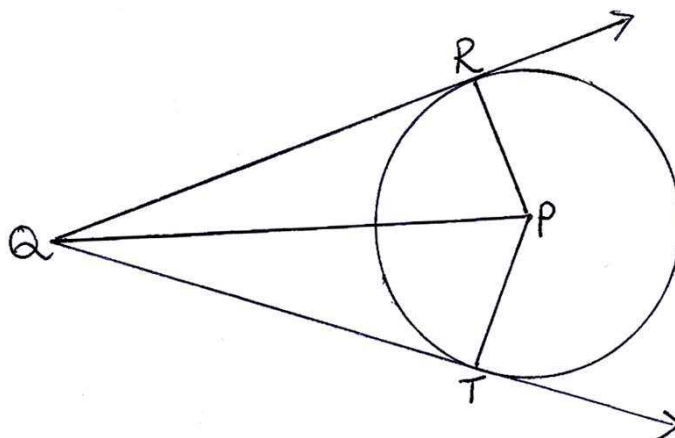
**Statements**

**Reasons**

In  $\triangle BDC$  and  $\triangle ABC$

- |       |                                    |                       |
|-------|------------------------------------|-----------------------|
| (i)   | $\angle BDC = \dots\dots\dots$     | Each is a right angle |
| (ii)  | $\angle C = \angle C$              | $\dots\dots\dots$     |
| (iii) | $\triangle BDC \sim \triangle ABC$ | $\dots\dots\dots$     |

- (D) In the figure given below, P is the centre of a circle. QR and QT are two tangents drawn from point Q to a circle at R and T respectively. With reference to the figure answer the following questions to complete the proof : 4



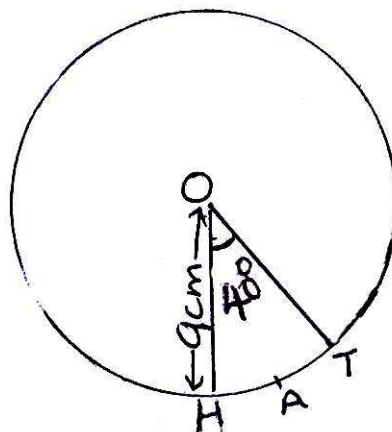
- (i) Name the side equal to side PR.
- (ii) Name the common side of  $\Delta PRQ$  and  $\Delta PTQ$  ?
- (iii) Name the right angles of  $\Delta PRQ$  and  $\Delta PTQ$  ?
- (iv) By which criterion/theorem are  $\Delta PRQ$  and  $\Delta PTQ$  congruent ?

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

If diameter of a circle is 8.2 cm, then its radius is ..... cm.

- (a) 4.01
- (b) 4.1
- (c) 8.2
- (d) 16.4

(B) In the following figure, O is the centre of the circle with radius 9 cm. O – HAT is the sector and  $\angle HOT = 40^\circ$ . 2



Find :

- (i) Area of sector O – HAT (Do not substitute the value of  $\pi$ )
  - (ii) Length of arc HAT (Do not substitute the value of  $\pi$ )
- (C) Draw a line segment JK of length 6 cm and divide it into 4 equal parts.  
(Use only a pair of compasses and ruler). 3
- (D) Draw a circle with centre 'O' and radius 3.5 cm. Take a point A at a distance of 8.7 cm from the centre O. Using a pair of compasses and ruler, construct two tangents AM and AN to the circle. Measure and state the length of each tangent segment. 3