

MOUNT CARMEL SCHOOL, CHANDIGARH  
Final Examination (19.02.2018)  
Class IX, Subject- Maths

Time : 3 hours

M.M : 80

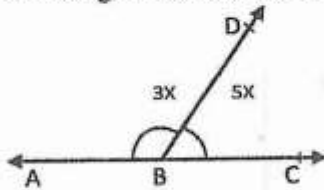
**General Instructions:**

- All the questions are compulsory.
- Attempt all the questions in proper serial order.

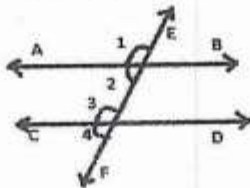
**SECTION - A**

(1x6=6)

- Q1. Evaluate:  $(\sqrt{5} + \sqrt{2})^2 + (\sqrt{8} - \sqrt{5})^2$ .
- Q2. In the figure  $\angle ABD$  and  $\angle DBC$  form a linear pair. find the value of x.



- Q3. Find two rational numbers between  $\frac{3}{5}$  and  $\frac{4}{3}$ .
- Q4. Evaluate  $103 \times 109$ , without multiplying directly.
- Q5. If the coordinates of two points are P (-5, 3) and Q (8, -9), then find the value of (abscissa of Q) - (abscissa of P)
- Q6. In the given figure,  $AB \parallel CD$ , find the value of  $\angle 1 + \angle 4$



**SECTION - B**

(2x6=12)

- Q7. In the given figure, if  $AB = CD$ , then prove that  $AC = BD$ . Also, write the Euclid axiom used for proving it.



- Q8. The sides of a triangle are 8 cm, 15 cm and 17 cm. Find its area.

- Q9. Plot the points (-1, 1), (-3, 3) and (-5, 5) and check whether they are collinear or not.

- Q10. If  $p(y) = y^2 - y + 1$  then find the value of  $p(0)$  and  $p(1)$ .

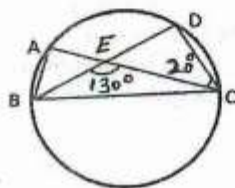
- Q11. Express  $1.3\bar{2} + 0.3\bar{5}$  as a fraction in its simplest form.

- Q12. Mean of 20 observations is 17. If one observation 40 is replaced by 12, find the new mean.

**SECTION - C**

(3x10=30)

- Q13. A, B, C and D are four points on a circle. AC and BD intersect at a point E such that  $\angle BEC = 130^\circ$  and  $\angle ECD = 20^\circ$ . Find  $\angle BAC$ .

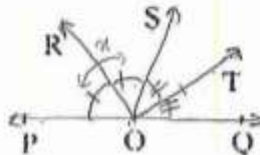


Q14. Draw the graph of the equation  $2x + 3y - 6 = 0$  on the graph and using graph determine

- (i) Whether  $x = 3$  and  $y = 0$  is a solution.
- (ii) The value of  $y$ , if  $x = -3$
- (iii) The value of  $x$ , if  $y = -2$

Q15. Curved surface area of a cone is  $308 \text{ cm}^2$  and its slant height is  $14 \text{ cm}$ . Find the (i) radius of the base (ii) total surface area of the cone.

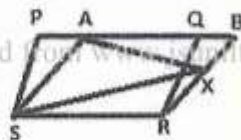
Q16. Ray OS stands on a line POQ. Ray OR and OT are angle bisectors of  $\angle POS$  and  $\angle SOQ$  respectively. If  $\angle POS = x$ , find  $\angle ROT$ .



Q17. Factorise  $(a + b)^3 - 8$

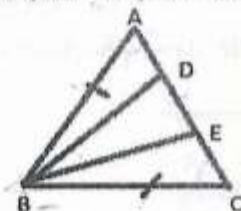
Q18. PQRS and ABRS are parallelograms and X is any point on side BR. Show that

- a)  $\text{ar}(PQRS) = \text{ar}(ABRS)$
- b)  $\text{ar}(AXS) = \frac{1}{2} \text{ar}(PQRS)$



Q19. If  $x^2 + \frac{1}{x^2} = 7$ ,  $x > 0$ , then find the value of  $x^3 + \frac{1}{x^3}$  and  $x + \frac{1}{x}$

Q20. In the figure,  $AB = BC$ ,  $AD = EC$ . Prove that  $\triangle ABE \cong \triangle CBD$ .



Q21. Anita has  $x$  apples and  $y$  mangoes. If number of apples is two more than the number of mangoes, then write this information as a linear equation in two variables and find any two solutions of this equation.

Q22. Determine  $a$  and  $b$ , if  $\frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}} - \frac{\sqrt{7} - \sqrt{5}}{\sqrt{7} + \sqrt{5}} = a + \sqrt{35} b$

### SECTION-D

(4x8=32)

Q23. A person donates cylindrical bowls of diameter  $7 \text{ cm}$  to a charitable hospital in which soup is served to patients. If the bowl is filled with soup to a height of  $4 \text{ cm}$ , how much soup needs to be prepared daily to serve  $250$  patients? Which values of the person are depicted here?

Q24. Construct a triangle ABC in which  $BC = 7$  cm,  $\angle B = 75^\circ$  and  $AB + AC = 13$  cm.

Q25. The length, breadth and height of a room are 5 m, 4 m, and 3 m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of Rs. 7.50 per  $m^2$ .  $2(l+b)h + lb$

Q26. A recent survey found that the ages of workers in a factory are distributed as follows:

Age in years	20 – 29	30 – 39	40 – 49	50 – 59	60 and above
No. of workers	38	27	86	46	3

If a person is selected at random, find the probability that the person is:

- 40 years or more
- under 40 years.
- under 60 but over 39 years.

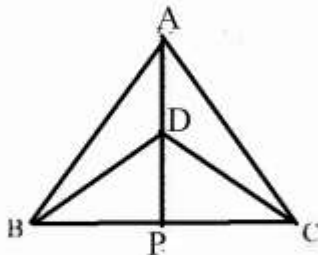
Q.27. The table given below shows the frequency distribution of the scores obtained by 200 candidates in a BCA entrance examination:

Scores	No. of candidates
200 - 250	30
250 - 300	15
300 - 350	45
350 - 400	20
400 - 450	25
450 - 500	40
500 - 550	10
550 - 600	15

- Draw a histogram to depict the given information.
- Write the interval (s) in which maximum and minimum candidates lie.

Q28.  $\triangle ABC$  and  $\triangle DBC$  are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at P, show that

- $\triangle ABD \cong \triangle ACD$
- $\triangle ABP \cong \triangle ACP$
- AP bisects  $\angle A$  as well as  $\angle D$
- AP is the perpendicular bisector of BC.



Q29. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If  $\angle DBC = 70^\circ$ ,  $\angle BAC$  is  $30^\circ$ , find  $\angle BCD$ . Further, if  $AB = BC$ , find  $\angle ECD$ .

Q30. Nidhi and Ridhi, two students of class IX of a school, together contributed Rs100 towards the Prime Minister's relief fund to help the tsunami victims. Write a linear equation which satisfies the data and draw the graph of the same.