

Time: 3 hrs.

Max Marks: 80

General Instructions:

- (i) All Questions are Compulsory
- (ii) The Question Paper Consists of 30 Questions divided into four sections A, B, C and D.  
Section - A comprises of 6 questions of 1 mark each.  
Section - B comprises of 6 questions of 2 marks each.  
Section - C comprises of 10 questions of 3 marks each.  
Section - D comprises of 8 questions of 4 marks each.
- (iii) Use of Calculator is not permitted.

Section – A

Question number 1 to 6 carry one mark each.

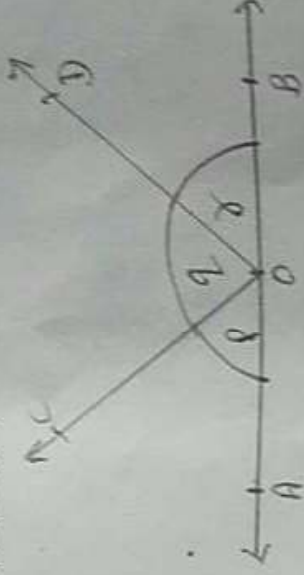
1. Simplify,  $\sqrt[3]{\frac{132}{143}}$
2. Factorise  $12x^2 - 7x + 1$
3. Simplify  $(\sqrt{5} + \sqrt{2})^2$
4. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 2:3 then, what is the smaller angle?
5. In an isosceles  $\triangle ABC$ ,  $AB = AC$  and  $\angle A = 80^\circ$  what is the measure of  $\angle B$ ?
6. Find the area of a triangle whose sides are 3cm, 4cm and 5 cm.

Section – B

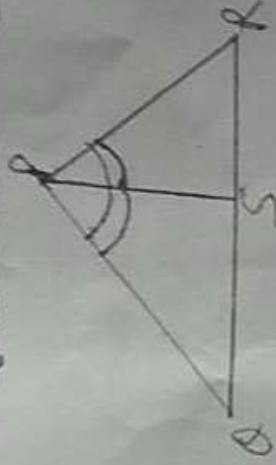
Question number 7 to 12 carry 2 marks each.

7. Express 35.73 in the form of  $\frac{p}{q}$

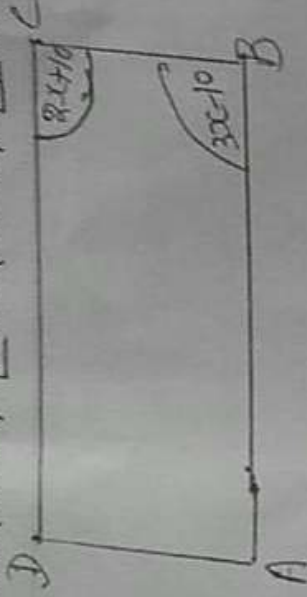
8. Find the value of  $k$ , if  $x-1$  is a factor of  $p(x)$   $p(x) = kx^2 - \sqrt{2}x + 1$
9. In the following figure  $p:q:r = 2:3:4$ . If  $AOB$  is a straight line, then find the value of  $p, q$  and  $r$



10. In the figure,  $PR \geq PQ$  and  $PS$  is bisector of  $\angle P$ . Prove that  $\angle PSR \geq \angle PSQ$ .



11. In a  $\square ABCD$ . If  $(3x-10)^\circ = \angle B$  and  $(2x+10)^\circ = \angle C$ , then find  $x$ .



12. The following observations have been arranged in ascending order. If the median of data is 63. Find the value of  $x$ . 29, 32, 48, 50,  $x$ ,  $x+2$ , 72, 78, 84, 95.

### Section C

Questions 13 to 22 carry 3 marks each.

13. The following table gives the distribution of students of two sections according to the marks obtained by them

Section A		Section B	
Marks	Frequency	Marks	Frequency
0-10	3	0-10	5

10-20	9	10-20	19
20-30	17	20-30	15
30-40	12	30-40	10
40-50	9	40-50	1

Represent the marks of the students of both the Sections on the same graph by two frequency polygons. Find the two polygons compare the performance of the two Sections.

14. To know the opinion of the students about the subject statistics, a survey of 200 students was conducted. The data is recorded in the following table

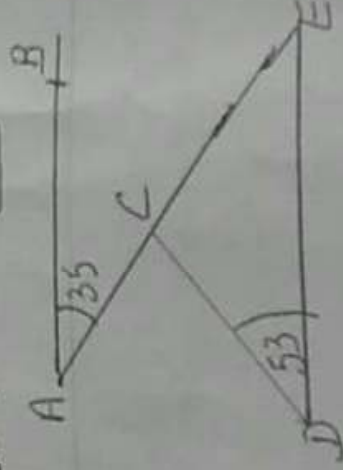
Opinion	Number of students
Like	135
Dislike	65

Find the probability that a student chosen at random

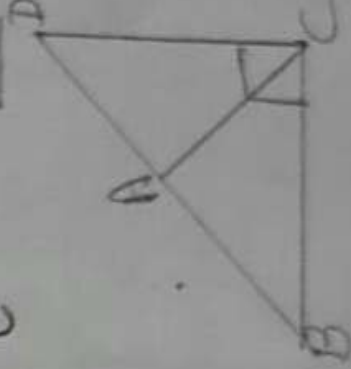
(i) Likes Statistics (ii) does not like it

15. Prove that sum of the angles of triangle is  $180^\circ$

16. In the given figure, if  $AB \parallel DE$ ,  $\angle BAC = 35^\circ$  and  $\angle CDE = 53^\circ$ . Find  $\angle DCE$



17. ABC is an isosceles triangle in which  $AB = AC$ . Side BA is produced to D such that  $AD = AB$ . Show that  $\angle BCD = 90^\circ$



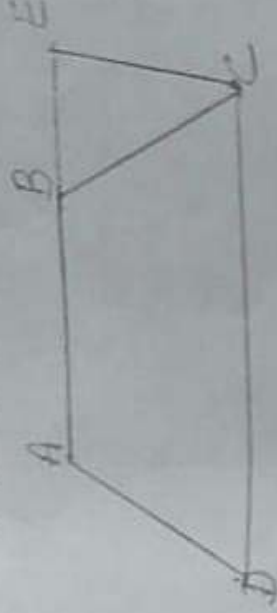
18. Factorise  $x^6 - y^6$

19. If  $x = 2 + \sqrt{5}$ , find the value of  $x^2 + \frac{1}{x^2}$

20. Find the value of  $x^3 + y^3 - 12xy + 64$  when  $x + y = -4$

21. ABCD is trapezium in which  $AB \parallel CD$  and  $AD = BC$ . Show that (i)  $\angle A = \angle B$

(ii)  $\angle C = \angle D$  (iii)  $\angle ABC = \angle BAD$  (iv) diagonal  $AC =$  diagonal  $BD$ .



22. (i) If the mean of 8, 5, 2, x, 6, 5 is 6, then find the value of x.

(ii) Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18

### Section D

Questions 23 to 30 carry 4 marks each.

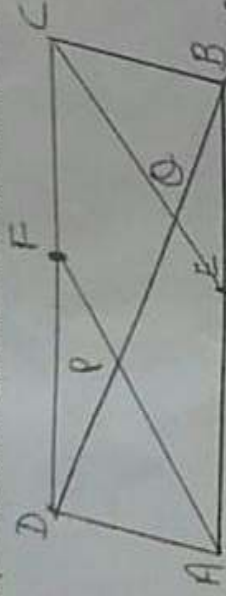
23. Find the values of p and q so that  $(x-1)$  and  $(x+2)$  are factors of

$$x^3 + 10x^2 + px + q$$

24. Draw the graph of  $2y - 3x = 4$

25. In a  $\square ABCD$ , E and F are mid points of sides AB and CD

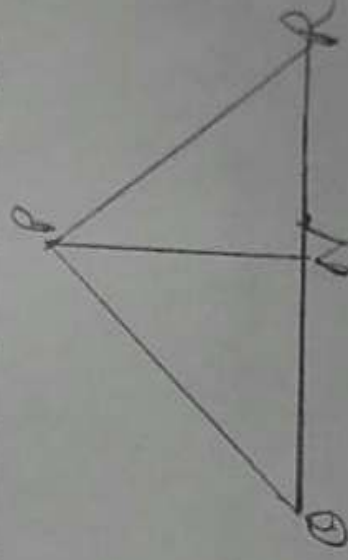
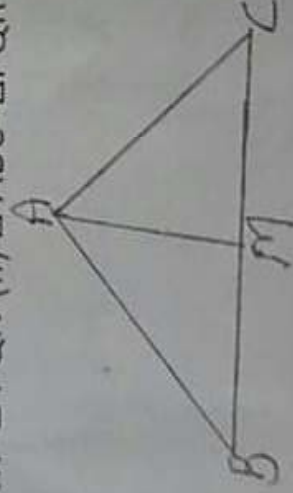
respectively. Show that the line AF and EC trisect the diagonal BD.



26. In which quadrant and in which axis do the following points lie?

(I) (5, -3) (II) (-8, 4) (III) (-3, 0) (IV) (-3, -6)

27. Two sides AB and BC and median AM of one  $\triangle ABC$  are respectively equal to sides PQ and QR and median PN of  $\triangle PQR$ . Show that (i)  $\triangle ABM \cong \triangle PQN$  (ii)  $\triangle ABC \cong \triangle PQR$



28. In a triangle, the bisectors of  $\angle B$  and  $\angle C$  intersect each other at a point

O. Prove that  $\angle BOC = 90^\circ + \frac{1}{2} \angle A$ .

29. Represent  $\sqrt{5}$  on number line.