Time: 1 hrs. 30min **F.M.-40**

- This question paper contains 3 sections.
- Section –A and Section –B is consists of 20 questions each out of which any 16 questions are to be answered from each sections.
- Section –C consists of 2 case based questions.
  Students needs to answer 4 questions out of the 5 questions given in each case studies questions.

(Section –A)

1. Decimal representation or a rational number cannot be

   (a) terminating (b) non-terminating

   (b) Non-terminating repeating (d) non-terminating non-repeating

2. The difference of a rational number and an irrational number is

   (a) an integer

   (b) may be a rational number

   (c) always a rational number

   (d) always an irrational number

3. The number obtained on rationalizing the donominator of $\frac{1}{\sqrt{7}-2}$ is

   (a) $\frac{\sqrt{7}+2}{3}$ (b) $\frac{\sqrt{7}-2}{3}$ (c) $\frac{\sqrt{7}+2}{5}$ (d) $\frac{\sqrt{7}+2}{45}$

4. The value of $0.1\overline{34}$ is

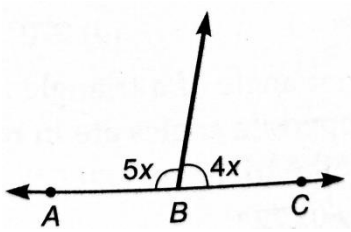
   (a) $\frac{33}{90}$ (b) $\frac{13}{99}$ (c) $\frac{133}{990}$ (d) $\frac{233}{990}$

5. The value of $0.6 + 0.\overline{7} + 0.4\overline{7}$ in the form $\frac{p}{q}$, where p and q are integers and q ≠ 0, is

   (a) $\frac{167}{90}$ (b) $\frac{90}{167}$ (c) $\frac{67}{90}$ (d) $\frac{67}{190}$

6. In the given figure, the value of x is

   (a) 80^0 (b) 20^0 (c) 40^0 (d) 60^0



7. If the interior angles on the same side of a

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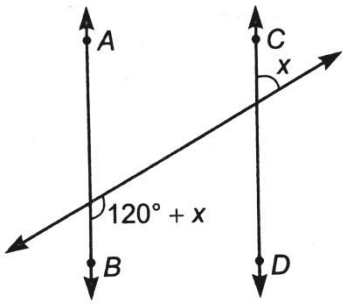
transversal intersecting two parallel lines are in the ratio 2 : 3, then the greater of the two angles is

(a) 54^0 (b) 108^0 (c) 120^0 (d) 136^0

8. In the given figure, if AB||CD, then the value of x is



(a) 20^0 (b) 30^0 (c) 45^0 (d) 60^0

9. Angle of a triangle are in the ratio 2 : 4 : 3. The smallest angle of the triangle is

(a) 60^0 (b) 40^0 (c) 80^0 (d) 20^0

10. One angle of a triangle is 65^0. The remaining two angles, if their difference is 25^0, are

(a) $70^0, 45^0$ (b) $60^0, 35^0$

(c) $75^0, 50^0$ (d) $65^0, 40^0$

11. An exterior angle of a triangle is 108^0 and its interior opposite angles are in ratio 4 : 5. The angles of the triangle are

(a) $48^0, 60^0, 72^0$ (b) $50^0, 60^0, 70^0$ (c) $52^0, 60^0, 70^0$ (d) $42^0, 60^0, 76^0$

12. In a Δ ABC, the internal bisector of $\angle B$ and $\angle C$ meet at P and the external bisectors of $\angle B$ and $\angle C$ meet at Q, then the value of $\angle BPC + \angle BQC$ is

(a) 90^0 (b) 180^0 (c) 270^0 (d) 360^0

13. In Δ ABC$\cong \Delta$PQR and ΔABC is not congruent to ΔRPQ, then which of the following is not true:

(a) BC=PQ (b) AC= PR (c) QR= BC (d) AB= PQ

14. In a triangles ABC and PQR, if $\angle A = \angle R$, $\angle B = \angle P$ and AB= RP, then which one of the following congruency criteria can be used?

(a) SAS (b) ASA (c) SSS (d) RHS

15. In triangles ABC and PQR, AB = QP, $\angle B = \angle P$ and BC= QR. The two triangles will be congruent by axiom

(a) SAS (b) ASA (c) SSS (d) RHS

16. In Δ ABC, the altitude AD, BE and CF are equal. Then Δ ABC is

(a) an acute angled triangle

(b) a right angled triangle

(c) a right angled isosceles triangle

(d) an equilateral triangle

17. If Δ ABC is an isosceles triangle, then which is the following is not true.

(a) bisector of $\angle$BAC $\perp$ BC (b)altitude AD bisects $\angle$BAC

(c) altitude BE = altitude CF (d) all the three altitudes are equal

18. In Δ ABC, BC= AB and $\angle B = 80^0$. Then $\angle A$ is equal to

(a) 80^0 (b) 40^0 (c) 50^0 (d) 100^0

19. Ordinate of all points on the x-axis is

(a) 0 (b) 1 (c) -1 (d) any number

20. The points in which abscissa and ordinate have different signs will lie in

(a) I and II quadrants (b) II and III quadrants

(c) I and III quadrant (d) II and IV quadrants

(Section –B)

21. Point (–3,5) lies in the

(a) first quadrant (b) second quadrant

(c) third quadrant (d) fourth quadrant

22. Point (–10,0) lies

(a) on the negative direction of the x-axis

(b) on the negative direction of the y-axis

(c) in the third quadrant

(d) in the fourth quadrant

23. The point whose ordinate is 4 and which lies on y-axis is

(a) (4, 0) (b) (0,4) (c) (1, 4) (d) (4, 2)

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24. If the perpendicular distance of a point P from the x-axis is 15 units and the foot of the perpendicular lies on the negative direction of x-axis, then the point P has

(a) x-coordinate = –5

(b) y-coordinate = 5 only

(c) y-coordinate = –5 only

(d) y-coordinate = 5 or –5

25. If two sides of a right angle triangle are 5 cm and 12 cm, then the third side is

(a) 17 cm. (b) 13 cm. (c) 4 cm. (d) 7 cm.

26. An isosceles right triangle has area 8 cm^2. The length of its hypotenuse is

(a) $\sqrt{32}$ cm (b) $\sqrt{16}$ cm (c) $\sqrt{48}$ cm (d) $\sqrt{24}$ cm

27. The adjacent sides of a parallelogram are 20 cm and 15 cm in length. Then the ratio of the corresponding altitudes is

(a) 1 : 2 (b) 2 : 3 (c) 3 : 4 (d) 4 : 3

28. The sides of a triangles are 56 cm., 60cm and 52 cm long. Then the area of the triangle is

(a) 1322 cm^2 (b) 1311 cm^2

(c) 1344 cm^2 (d) 1392 cm^2

29. The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting at the rate of 9 paise per cm^2 is

(a) Rs. 2.00 (b) Rs. 2.16 (c) Rs. 2.48 (d) Rs. 3.00

30. The sides of a triangle are 35 cm, 54 cm and 61 cm, respectively. The length of its longest altitude is

(a) $16\sqrt{5}$ (b) $10\sqrt{5}$ (c) $24\sqrt{5}$ (d) 28 cm.

31. A linear equation in two variable is of the form ax + by + c = 0, where

(a) $a \neq 0, b \neq 0$ (b) $a = 0, b \neq 0$

(c) $a \neq 0, b = 0$ (d) $a=0, b =0$

32. The linear equation $2x - 5y = 7$ has

(a) a unique solution (b) two solutions

(c) infinitely many solutions (d) no solution

33. The equation $2x + 5y =7$ has a unique solution, if x, y are

(a) natural numbers (b) positive real numbers

(c) real numbers (d) rational numbers

34. if (2, 0) is a solution of the linear equation $2x + 3y =k$, then the value of k is

(a) 4 (b) 6 (c) 5 (d) 2

35. The graph of the linear equation $2x + 3y =6$ cuts the y-axis at the point

(a) (2, 0) (b) (0, 3) (c) (3, 0) (d) (0, 2)

36. The equation of x-axis is of the form

(a) $x = 0$ (b) $y =0$ (c) $x +y =0$ (d) $x =y$

37. In the class intervals 10 – 20, 20 – 30, the number 20 is included in

(a) 10 – 20 (b) 20 – 30

(c) both the intervals (d) none of these

38. Given the class intervals 1-10, 11-20, 21-30,..... then 20 is considered in the class

(a) 11-20 (b) 11-30 (c) 21-30 (d) 15-25

39. The class mark of a particular class is 6.5 and class size is 3. Then the corresponding class is

(a) 3.5 - 6.5 (b) 6.5 -9.5 (c) 5·8 (d) 4·7

40. A person is asked to collect information about the percentage of students passed during the last 5 years in class 10th examination of CBSE, the data so collected is known as

(a) primary data (b) secondary data

(c) frequency data (d) raw data

Case Study based-1:

Any equation of the form ax + by + c =0, where a, b and c are real numbers and a ≠ 0, b ≠ 0 is known as a linear equation in two variables.

One day Ram and Ankur go to a stationary shop to purchase some stationary. The shopkeeper tells them that cost of a notebook is 3 times of the cost of a pen.

Using the information given above, answer the following questions:

41. If cost of a notebook is ₹x and that of a pen is ₹ y, then the linear equation in two variables to represent the given statement is

(i) 3x =y (ii) x – 3y =0

(iii) x + 3y =0 (iv) 3x + y =0

42. One solution of equation 2x – 3y = 5 is

(i) (4, 1) (ii) (1, 4)

(iii) (3, 2) (iv) (2, 3)

43. If the cost of 1 note book is ₹ 15, then cost of 1 pen is

(i) ₹ 6 (ii) ₹10 (iii) ₹5 (iv) ₹15

44. The linear equation y = 2x + 3 has

(i) a unique solution (ii) only three solutions

(iii) no solution (iv) infinitely many solutions

45. If x = –1 and y = 3 is a solution of the equation 4x + 2y – k=0, then the value of k is

(i) 1 (ii) 0 (iii) 2 (iv) 3

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Case Study based-2:

Given below is the data found on a group of school going students. Study the data and answer the questions that follow:

Height Intervals (in cms)	No. of students (F)
131–140	1
141–150	7
151–160	5
161–170	9
171–180	9
181–190	10
Total	41

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46. Class size of the 3rd class interval is
(a) 8 (b) 9 (c) 9.5 (d) 10

47. Upper limit of the 5th class interval is
(a) 180 (b) 170.5 (c) 180.5 (d) 179.5

48. Class mark of the 6th class interval is
(a) 184.5 (b) 185 (c) 185.5 (d) 186

49. How many students have their height more than 160 cm?
(a) 19 (b) 18 (c) 27 (d) 28

50. How many students have their height less than or equal to 180 cm?
(a) 22 (b) 19 (c) 29 (d) 31