General Instructions:-

1. *The question paper contains 3 Sections A, B, C.*
2. *Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.*
3. *Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.*
4. *Section C Consists of 10 questions based on 2 case studies. Attempt any 4 questions from each case study i.e. 8 questions from 2 case studies.*
5. *There will be no negative marking*

SECTION A

Q1. If √3 = 1.732 and √2 = 1.414, find the value of $1/(\sqrt3-\sqrt2)$
　　(a) 0.318　　　　(b) 3.146　　　　(c) 13.146　　(d) √1.732- √1.414

Q2. On simplifying $\left(\sqrt5+\sqrt7\right)^2$, we get
　　(a) 12　　　　(b) $\sqrt{35}$　　　(c) $\sqrt5+\sqrt7$　　(d) $12+2\sqrt{35}$

Q3. If E and F are the midpoints of equal sides AB and AC of a triangle ABC. Then:

　　(a) BF=AC　　　(b) BF=AF　　　(c) CE=AB　　　(d) BF = CE

Q4. The angles of a triangle are in the ratio 5 : 3: 7. The triangle is
　　(a) a right triangle　　　　　　　　(b) an acute-angled triangle
　　(c) an obtuse-angled triangle　　　　(d) an isosceles triangle

Q5. In the class intervals 40 – 50, 50 – 60, the number 50 is included in which of the following?
　　(a) 40 – 50　　　　(b) 30 – 40　　　(c) 50 – 60　　　(d) 60 – 70

Q6. 0 123333333………. . can be expressed in rational form as
　　(a) $900/111$　　　(b) $111/900$　　(c) $123/10$　　(d) $121/900$

Q7. Through which of the following points, the graph of y = –x passes?
　　(a) (1, 1)　　　　(b) (0, 1)　　　　(c) (–1, 1)　　　(d) (1, 0)

Q8. If ABC and DBC are two isosceles triangles on the same base BC. Then:

　　(a) ∠ABD = ∠ACD　　　　　　　(b) ∠ABD > ∠ACD

　　(c) ∠ABD < ∠ACD　　　　　　　(d) None of the above

Q9. Given two right angles triangles ABC and PRQ, such that ∠A = 20°, ∠Q = 20° and AC = QP. Write the correspondence if triangles are congruent.
　　(a) ΔABC≅ ΔPQR　　　　　　　(b) ∠ABC ≅ ΔPRQ
　　(c) ∠ABC ≅ ΔRQP　　　　　　　(d) ΔABC ≅ ΔQRP

Q10. On adding $2\sqrt{3}$ and $3\sqrt{2}$, we get

    (a) $5\sqrt{5}$ (b) $5(\sqrt{3}+\sqrt{2})$ (c) $2\sqrt{3}+3\sqrt{2}$ (d) none of these

Q11. On which of the following equations, the point of the form (m, –m) lies?

    (a) x = –m   (b) x + y = 0   (c) y = x   (d) x – y = 0.

Q12. In a right triangle, the longest side is:

    (a) Perpendicular   (b) Hypotenuse   (c) Base   (d) None of the above

Q13. In the given figure, AD is the median then $\angle BAD$ is
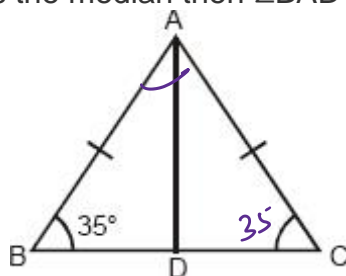
    (a) 35°   (b) 70°   (c) 110°   (d) 55°

Q14. The number $(3-\sqrt{3})(3+\sqrt{3})$ is

    (a) an irrational number   (b) a rational number
    (c) not a natural number   (d) none of these

Q15. The graph of which of the following equations passes through the origin?

    (a) y = 2x + c   (b) y = 2x – c   (c) y = 2x   (d) y = 2x +C

Q16. An exterior angle of a triangle is 105° and its two interior opposite angles are equal. Each of these equal angles is

    (a) 37 ½°   (b) 72 ½°   (c) 75°   (d) 52 ½°

Q17. What is the length of each side of an equilateral triangle having an area of $4\sqrt{3}\ cm^2$?

    (a) 4cm   (b) 5cm   (c) 3cm   (d) 6cm

Q18. Through which of the following points, the graph of the linear equation 3x – 2y = 0, passes?

    (a) (2/3, -2/3)   (b) (2/3, 3/2)   (c) (1/3, ½)   (d) (1/2, 1/3)

Q19. If one of the angles of a triangle is 130°, then the angle between the bisectors of the other two angles can be

    (a) 50°   (b) 65°   (c) 145°   (d) 155°

Q20. The sides of a triangle are 8 cm, 11 cm and 13 cm. What is its area?

    (a) 8√30cm²   (b) 4√10cm²   (c) 3√100cm²   (d) 6√200cm²

SECTION B

Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

Q21. Assertion (A): Sum of 0.5 and 7/13 is irrational.
Reason(R): Sum of rational and irrational number always irrational.
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q22. Assertion (A): A linear equation $3x + 5y = 2$ has a unique solution.
Reason(R): A linear equation in two variables has infinitely many solutions.
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q23. Assertion (A): If two internal opposite angles of a triangle are equal and external angle is given to be 110°, then each of the equal internal angle is 55°
Reason(R): A triangle with one of its angle 90°, is called a right triangle.
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q24. Assertion (A): The side of an equilateral triangle is 6cm then the area of the triangle is $9\sqrt{3}$ cm2.
Reason(R): All the sides of equilateral triangle are equal.
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q25. Assertion (A): The mode and mean is given by 7 and 8, respectively.
Then the median is 23/3
Reason(R): Mode = 3Median – 2 Mean
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q26. Assertion (A): $9^5 \times 9^7 = 9^{12}$
Reason(R): If a > 0 be a real number and p and q be rational numbers.
Then $a^p \times a^q = a^{p+q}$.
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q27. Assertion (A): The point (3, 0) lies on the graph of the linear equation $4x + 3y = 12$.
Reason(R): (3, 0) satisfies the equation $4x + 3y = 1$
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q28. Assertion (A): A triangle can have two obtuse angles.
Reason(R): The sum of all the interior angles of a triangle is 180°
(a) ◯　　(b) ◯　　(c) ◯　　(d) ◯

Q29. Assertion (A): The edges of a triangular board are 6cm, 8cm, and 10 cm. the cost of painting it at the rate of Rupees 9 per cm² is rupees 216.

Reason(R): If 2s = (a +b+c), where a, b, c are the sides of a triangle, then Area of triangle $= 2\sqrt{s(s-a)(s-b)(s-c)}$

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q30. Assertion (A): Sum of two irrational numbers 2 + √3 and 4 + √3 is irrational number.

Reason(R): Sum of two irrational numbers is always an irrational n

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q31. Assertion (A): The point (0, 4) lies on y -axis.

Reason(R): The x co-ordinate on the point on y -axis is 0.

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q32. Assertion (A): In △ABC, ∠C = ∠A, BC = 4 cm and AC = 5 cm. Then, AB = 4 cm

Reason(R): In a triangle, angles opposite to two equal sides are equal.

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q33. Assertion (A): If the area of an equilateral triangle is $9\sqrt{3}cm^2$ then the semi perimeter of the triangle is 24cm.

Reason(R): Semi-perimeter of a triangle is s=(a+b+c)/2, where a, b and c are the sides of a triangle.

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q34. Assertion (A): √5 is an irrational number.

Reason(R): A number is called irrational, if it cannot be written in the form p/q where p and q are integers and q

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q35. Assertion (A): The points (-1, 2) and (2,-1) are at different positions in the coordinate plane.

Reason(R): Point (-1, 2) lies in II-quadrant and (2,-1) lies in IV quadrant.

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q36. Assertion (A): In △ABC, D is the midpoint of BC. If DL ⊥ AB and DM ⊥ AC such that DL = DM, then BL = CM

Reason(R): If two angles and the included side of one triangle are equal to two angles and the included side of the other triangle, then the two triangles are congruent.

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q37. Assertion (A): The median of the data: 4, 6, 8, 9, 11 is 4.

Reason(R): The median of the data: 155 160 145 149 150 147 152 144 148 is 149

(a) ◯   (b) ◯   (c) ◯   (d) ◯

Q38. Assertion (A): The median of the data: 17, 2, 7, 27, 15, 5, 14, 8, 10, 24, 48, 10, 8, 7, 18, 28 is:12

    Reason(R): The mean of the data 2, 3, 4, 5, 0, 1, 3, 3, 4, 3 is 14

       (a) ◯   (b) ◯   (c) ◯   (d) ◯

Q39. Assertion (A): In $\triangle ABC$, AB = AC and $\angle B = 50^\circ$, then $\angle C$ is 50°.

Reason(R): Angles opposite to equal sides of a triangle are

       (a) ◯   (b) ◯   (c) ◯   (d) ◯

**Q40. Assertion (A):** An angle is 14° more than its complementary angle, then angle is 52°

Reason(R): Two angles are said to be supplementary if their sum of measure of angles is 180°

       (a) ◯   (b) ◯   (c) ◯   (d) ◯

SECTION C

Q41.

Aditya purchased two types of chocolates A and B at the rate of Rs. x and Rs. y respectively. The total amount spent is Rs. 7. After reaching home, he forms a linear equation in two variables for two types of chocolates. He prepares a table and a graph of the linear equation as shown in adjoining graph:
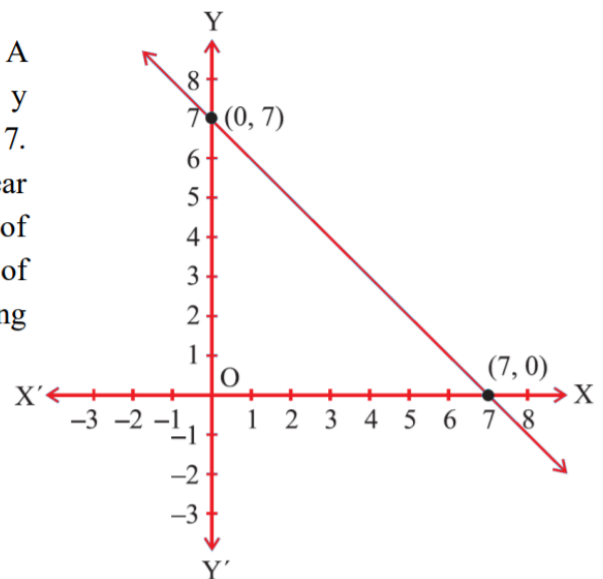
Qi. How to represent the above situation in linear equations in two variables?

  (a) $2X + y = 7$ (b) $X + y = 7$ (c) $X = 7$ (d) $y = 7$

Qii. If the chocolates A is 5, then find the cost of chocolates B?

  (a) 3   (b) 1   (c) 5   (d) 2

Qiii. Which of the following points lie on the line x+ y = 7?

  (a) (3,4)   (b) (1,5)   (c)(5,4)   (d)(2,6)

Qiv. The point where the line x+y=7 intersect y-axis is

  (a) (0,4)   (b)(7,0)   (c) (0,6)   (d)(0,7)

Qv. For what value of K, x=2 and y= -1 is a solution of x + 3y − k = 0.

  (a) 1   (b) -1   (c) -2   (d) 2

Q42.

A group of students decided to make a project on Statistics. They are collecting the heights (in cm) of their 51 girls of Class IX-A, B and C of their school. After collecting the data, they arranged the data in the following frequency distribution table form:

Height (in cm)	Number of girls
135 – 140	4
140 – 145	7
145 – 150	18
150 – 155	11
155 – 160	6
160 – 165	5

Based on the above information, Answer the following questions:

Qi. The class interval with highest frequency is;
    (a) 145-150   (b)150-155   (c) 140-145   (d) 155-160

Qii. What is the width of the class?
    (a) 10   (b) 15   (c)5   (d) None of these

Qiii. How many students of the height 150cm and below are there?
    (a) 40   (b) 29   (c) 18   (d) 22

Qiv. How many students of the height 145 cm and above are there?
    (a) 40   (b) 29   (c) 18   (d) 22

Qv. How many students of the height more than145 cm but less than 155 are there?
    (a) 40   (b) 29   (c) 18   (d) 22