SET NO. 1

Exam ID. | | | | | | |

Candidates must write the Set No. on the title page of the OMR Sheet.

DAV PUBLIC SCHOOLS, ODISHA ZONE –I
PA-II EXAMINATION, 2021-22

- **Check that this question paper contains 08 printed pages.**
- **Set number given on the right-hand side of the question paper should be written on the OMR SHEET by the candidate.**
- **Check that this question paper contains 50 questions.**

CLASS – IX

SUB : MATHEMATICS (041)

Time :90 Minutes **Maximum Marks:40**

General Instruction:

1. ***The question paper contains three parts A, B and 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 two Case Studies. Attempt any 8 questions.***
5. ***There is no negative marking.***

SECTION – A

Section – A consists of 20 questions. Attempt any 16 questions from this section. The first attempted 16 questions would be evaluated.

Q1. The value of 2.999…. in the form of $\frac{p}{q}$, where p and q are integers and q ≠ 0.

(A) $\frac{2999}{100}$ (B) $\frac{19}{10}$ (C) 3 (D) $\frac{26}{9}$

Q2. The value of $\frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$ is equal to

(A) $\sqrt{2}$ (B) 2 (C) 4 (D) 8

Q3. Any solution of the linear equation 2x + 0y + 9 = 0 in two variables is of the form.

(A) $\left(\frac{-9}{2}, m\right)$ (B) $\left(n, \frac{-9}{2}\right)$ (C) $\left(0, \frac{-9}{2}\right)$ (D) (–9, 0)

Q4. The graph of the linear equation 2x + 3y = 6 is a line which meets the x- axis at the points

(A) (0, 2) (B) (2, 0) (C) (0 , 3) (D) (3 , 0)

Q5. The point which lies on the line y = $\frac{-3}{2}$x + 5 is

(A) (4, 1) (B) (–2, 2) (C) (6 , –4) (D) (–4 , 11)

Q6. If *y* coordinate of a point is zero, then this point will always lie

(A) In 2nd Quadrant (B) In 1st Quadrant (C) On y–axis (D) On x –axis

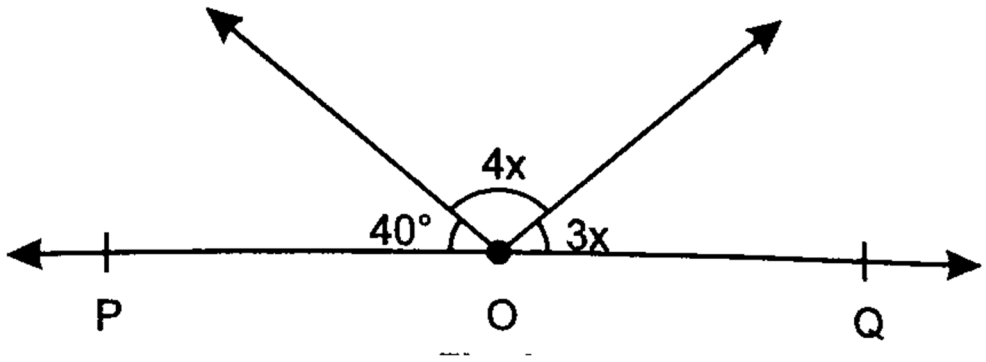
Q7. An exterior angle of a triangle is 105^0 and its two interior opposite angles are equal. Each of those equal angles is

(A) $37\frac{1}{2}^0$ (B) $52\frac{1}{2}^0$ (C) $72\frac{1}{2}^0$ (D) 75^0

Q8. The sum of the exterior angles of the triangle is-

(A) 90^0 (B) 180^0 (C) 270^0 (D) 360^0

Q9. In the given figure, POQ is a straight line. Then the value of x is



(A) 20^0 (B) 25^0 (C) 30^0 (D) 35^0

Q10. The Angles of a triangle are in the ratio 2: 4: 3. The smallest angle of the triangle is

(A) 60^0 (B) 40^0 (C) 10^0 (D) 20^0

Q11. If the difference between two supplementary angles is 40^0, then the angles are

(A) 60^0, 125^0 (B) 210^0, 150^0 (C) 70^0, 110^0 (D) None of these

Q12. The length of the hypotenuse of an isosceles right triangle with area 72 cm^2 is

(A) 12 cm (B) $12\sqrt{2}$cm (C) 24 cm (D) 12.5 cm

Q13. The edges of a triangular board are 12 cm, 17 cm and 25 cm. The cost of painting one of its surfaces at the rate of 50 paise per cm^2 is

(A) Rs 22.50 (B) Rs. 45 (C) Rs. 55 (D) Rs. 90

Q14. Let *'m'* be the mid value and *'l'* be the upper-class limit of a class in a continuous frequency distribution. The lower-class limit of the class is

(A) 2m + l (B) 2m – l (C) m – l (D) m – 2l

Q15.In the class interval 14.5 – 19.5, 19.5 – 24.5, the number 19.5 is included in

(A) 14.5-19.5 (B) $19.5 - 24.5$ (C) both the intervals (D) None of these

Q16.The width of each five continuous classes in a frequency distribution is 5 and the lower-class limit of the lowest class is 10. The upper-class limit of the highest class is

(A) 15 (B) 25 (C) 35 (D) 40

Q17. On simplifying $(\sqrt{3} - \sqrt{7})^2$, we get

(A) $2 - \sqrt{21}$ (B) $5 - \sqrt{21}$ (C) $2(5 - \sqrt{21})$ (D) $10 - \sqrt{21}$

Q18.Type of equation that represents a line passing through the origin is

(A) x=m-y (B) y=mx (C) y=m+x (D) None of these

Q19. For one of the solutions of the equation ax + by + c = 0, x is negative and y is positive, then surely a portion of the line lies in

(A) First Quadrant (B) Second Quadrant

(C) Third Quadrant (D) Fourth Quadrant

Q20. An angle is 20^0 more than three times its supplementary angle, then the angles are-

(A) $\frac{70^\circ}{4}$, $\frac{290^\circ}{4}$ (B) 140^0, 40^0 (C) 60^0, 120^0 (D) 40^0, 50^0

SECTION-B

Section – B consists of 20 questions. Attempt any 16 questions from this section. The first attempted 16 questions would be evaluated.

Q21. The product of $(2\sqrt{2} + 5\sqrt{3})$ and $(2\sqrt{2} - 5\sqrt{3})$ is a

(A) a natural number (B) an irrational number

(C) a rational number (D) both a and c.

Q22. If a = $\frac{3+\sqrt{5}}{2}$, find the value of $a^2+\frac{1}{a^2}$

(A) 4 (B) 7 (C) 11 (D) 15

Q23. The linear equation 5x = 2y has

(A) a unique solution (B) no solution

(C) two solutions (D) infinitely many solutions

Q24. The equation of x- axis is of the form

(A) x = 0 (B) y = 0 (C) x + y = 0 (D) x = y

Q25. In a ΔABC, if$\angle A + \angle B = 110^0$, $\angle C + \angle A = 135^0$, then the value of $\angle A$ is

(A) 75^0 (B) 60^0 (C) 65^0 (D) 55^0

Q26. If the sides of a triangle are doubled, then its area

(A) remains same (B) is doubled

(C) becomes tripled (D) becomes four times

Q27. The class marks of a frequency distribution are

10, 12, 14, 16……. The class corresponding to the class mark 14 is

(A) 11-13 (B) $13 - 15$ (C) 14-16 (D) 12-14

Q28.In a histogram, the areas of rectangular columns of different classes are proportional to the-

(A) frequencies (B) class size (C) class mark (D) none of these

Q29. The point at which the two co-ordinate axes meet is called the

(A) abscissa (B) ordinate (C) origin (D) Quadrant

Q30. If one of the angles of a triangle is 130°, then the angle between the bisectors of the other two angles can be

(A) 50^0 (B) 65^0 (C) 145^0 (D) 155^0

Q31. Which of the following statements is correct?

(A) A triangle cannot have an obtuse angle and a right angle

(B) A triangle cannot have two obtuse angle

(C) A triangle can have three acute angles.
(D) All of these

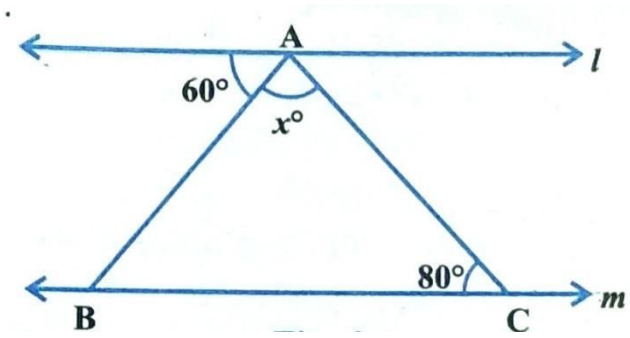
Q32. A linear equation in two variables is of the form ax + by + c = 0, where a, b and c are real numbers and

(A) $a \neq 0, b \neq 0$ (B) $a = 0, b \neq 0$
(C) $a \neq 0, b = 0$ (D) $a = 0, c = 0$

Q33. The point which lies on y – axis at a distance of 5 units in the negative direction of y – axis is

(A) (0, 5) (B) (5, 0) (C) (0, – 5) (D) (– 5, 0)

Q34. In the given figure if l ‖ m, then the value of x is



(A) 60^0 (B) 80^0 (C) 40^0 (D) 140^0

Q35. Two sides of a triangle are 5 cm and 13 cm and its perimeter is 30 cm. The area of the triangle is

(A) $30cm^2$ (B) $60cm^2$ (C) $32.5\ cm^2$ (D) $65\ cm^2$

Q36.To draw a histogram the adjusted frequency for the class 25-45 is-

Class Interval	5-10	10-15	15-25	25-45	45-75
Frequency	6	12	10	8	15

(A) 6 (B) 5 (C) 3 (D) 2

Q37. In two triangles ΔABC and ΔPQR, $\angle A = 30^0, \angle B = 70^0, \angle P = 70^0, \angle Q = 80^0$

and AB = RP, then

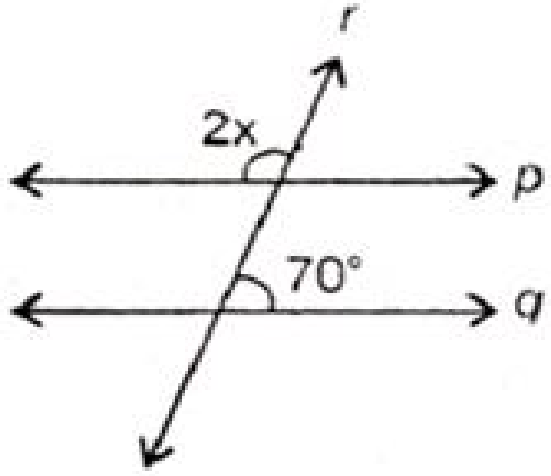
(A) $\Delta ABC \cong \Delta PQR$ (B) $\Delta ABC \cong \Delta QRP$

(C) $\Delta ABC \cong \Delta RPQ$ (D) $\Delta ABC \cong \Delta RQP$

Q38. The sides of a triangle are 34cm, 54cm and 61cm respectively. The length of its longest altitude is

(A) $16\sqrt{5}$cm (B) $10\sqrt{5}$cm (C) $24\sqrt{5}$cm (D) 28cm

Q39.In the figure, $p \parallel q$. The value of x is:



(A) 35^0 (B) 55^0 (C) 70^0 (D) 110^0

Q40. We want to know and collect the percentage of students who passed during the last 10 years of class 10^{th} board examination; the data thus collected is known as a

(A) Primary data (B) Secondary data (C) Frequency data (D) None of these

SECTION –C

Section – C consists of 10 questions bases on two case study of 1 mark each. Attempt any 8 questions from this section. The first attempted 8 questions would be evaluated.

CASE STUDY-1

Ron and Harry are bench mates in class. In Mathematics class, Ron was finding it difficult to simplify $\frac{1}{\sqrt{5}-\sqrt{2}}$. His bench mate Harry gave him a clue to rationalize the denominator by taking a conjugate of $\sqrt{5}-\sqrt{2}$. Ron simplified the expression and also thanked Harry for the help. Harry also gave him approximate values of $\sqrt{5}$ = 2.236 and $\sqrt{2}$ = 1.414

to find the approximate value of the expression.

Based on the above information answer the following questions:

Q41.What is the conjugate of $\sqrt{5}-\sqrt{2}$?

(A) $\sqrt{5}$ (B) $\sqrt{2}$ (C) $\sqrt{5}+\sqrt{2}$ (D) $\sqrt{5}-\sqrt{2}$

Q42.To rationalize $\frac{1}{\sqrt{5}-\sqrt{2}}$ the conjugate has to be multiplied to:

(A) Numerator (B) Denominator

(C) Both Numerator and Denominator (D) None of these

Q43.What is the simplified form of the expression that Ron found out?

(A) $\frac{\sqrt{5}+\sqrt{2}}{3}$ (B) $\frac{\sqrt{5}-\sqrt{2}}{3}$ (C) $\sqrt{5}+\sqrt{2}$ (D) $\sqrt{5}-\sqrt{2}$

Q44.What is the approximate value of the expression did Ron find after putting the values $\sqrt{5}$ = 2.236 and $\sqrt{2}$ = 1.414?

(A)2.216 (B) 1.216 (C) 3.216 (D) 0.216

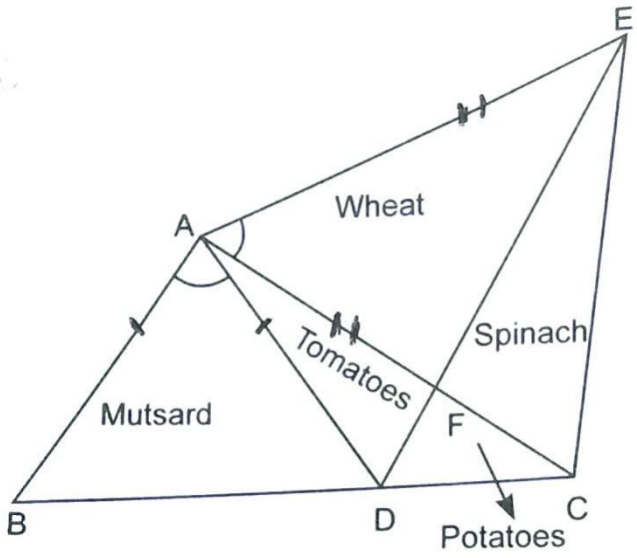
Q45.The number $\sqrt{5}-\sqrt{2}$ is a/an:

(A) Rational Number (B) Natural Number

(C) Integer (D) Irrational Number

CASE STUDY-2

Shyam has an agricultural field. For winter he planned to cultivate different types of crops. So he divided his quadrilateral field ABDCE into five triangular fields. In ΔABD he sowed mustard seeds, in ΔADF he sowed tomatoes, in ΔFDC he sowed potatoes, in ΔAEF he sowed wheat and in ΔEFC he sowed spinach. The dimensions of the triangles were such that AC=AE, AB=AD and $\angle BAD = \angle EAC$.



Based on the above information answer the following questions:

Q46.In the above figure ∠CAB =?

(A)∠BAD (B) ∠EAD (C)∠EAC (D) ∠DAC

Q47. ΔCAB ≅ ΔEAD by which property of congruency?

(A) AAS (B) SSS (C) RHS (D) SAS

Q48. Length of BC =?

(A) DE (B) BC (C) AD (D) CE

Q49.Major of ∠ABC =?

(A)∠ACB (B) ∠AED (C) ∠ADE (D) ∠EAD

Q50.Major of∠ACB =?

(A)∠ABC (B) ∠AED (C) ∠EAD (D) ∠ACB

***** ALL THE BEST *****