Bhavan's Tripura Vidyamandir
Annual Examination (2024-2025)

Class:- 9 **Sub:- Mathematics**
Time:- 3 Hours Total :- 80 Marks
Name of the student : Roll: Sec:

General Instructions:

Read the following instructions carefully and follow them:

- *This question paper contains 38 questions.*
- *This Question Paper is divided into 5 Sections A, B, C, D and E.*
- *In Section A, Questions no. 1-20 are multiple choice questions of 1 mark each.*
- *In Section B, Questions no. 21-25 are very short answer (VSA) type questions, carrying 02 marks each.*
- *In Section C, Questions no. 26-31 are short answer (SA) type questions, carrying 03 marks each.*
- *In Section D, Questions no. 32-35 are long answer (LA) type questions, carrying 05 marks each.*
- *In Section E, Questions no. 36-38 are case study based questions carrying 4 marks each.*

SECTION: A

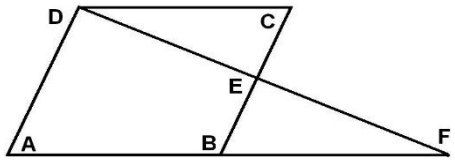
1. Which of the following is not a rational number?
   a) $(2+\sqrt{3})-\sqrt{3}$ b) 0.62 c) 3.2222…. d) 0.010020003……..
2. $64^{\frac{1}{3}}$ = ?
   a) 2 b) 8 c) 4 d) $\frac{64}{3}$
3. Which of the following is not a polynomial?
   a) 2x+ 3 b) $2x^2 + \sqrt{3}x + 5$ c) $\sqrt{x^2} + 3$ d) $2\sqrt{x} + 5$
4. The degree of the polynomial $a2x^3+3x^2 - 5x + 16$ is
   a) 3 b) 2 c) 5 d) -2
5. The value of $p(x)= 2x^2 + x + 2$ at x= 1 is
   a) -5 b) 5 c) 3 d) 4
6. Which of the following is a solution of 2x + 3y = 7?
   a) (2, 2) b) (-5, 3) c) (5, 1) d) (5, -1)
7. The general form of any point in x- axis is
   a) (1,1) b) (0, y) c) (x , 0) d) (x , y)
8. How many postulates did Euclid proposed?
   a) 3 b) 4 c) 5 d) 6
9. Two angles are said to be complementary if their sum is
   a) 90^0 b) 180^0 c) 360^0 d) 45^0
10. In a triangle, if one angle is 90^0, the other two angles are always
    a) Equal b) complementary c) supplementary d) right angles
11. Which of the following is not congruence criteria?
    a) SAS b) SSS c) AAA d) RHS
12. If $\Delta ABC \cong \Delta RPQ$, which of the following is not true?
    a) AB=RP b) $\angle ABC = \angle RPQ$ c) AC= RQ d) $\angle B = \angle Q$
13. Which of the following is true for a parallelogram?
    a) Opposite sides are equal and parallel. b) Diagonals bisects each other at right angles.
    c) All sides are equal. d) Diagonals are equal.
14. A line that intersects a circle at two distinct points is called a
    a) Tangent b) secant c) chord d) diameter
15. The region enclosed by a chord and the corresponding arc is called a
    a) Segment b) sector c) circumference d) diameter
16. The area of a triangle using Heron's formula is given by
    a) $\sqrt{s(s-a)(s-b)(s-c)}$ b) $\sqrt{s(s+a)(s+b)(s+c)}$
    c) $\sqrt{s+(s-a)(s-b)(s-c)}$ d) s(s-a)(s-b)(s-c)
17. The sides of a triangle are 3 cm , 4 cm and 5 cm. Its area is
    a) 12 cm2 b) 15 cm2 c) 6 cm2 d) 9 cm2
18. The total surface area of cylinder of base radius 'r' and height 'h' is
    a) 2π(r + h) b) 2πr(r + h) c) 3πr(r + h) d) 4πr(r + h)
19. The height of a cone is 16 cm and base radius is 12 cm. Its slant height is
    a) 10 cm b) 15 cm c) 20 cm d) 8 cm
20. Class mark of class 150 – 160 is
    a) 150 b) 160 c) 155 d) none of these.

SECTION: B

21. (i) What is the name of each part of the plane formed by these two lines?
    (ii) Write the name of the point where these two lines intersect.
22. Write TRUE or FALSE
    (i) Only one line can pass through a single point.
    (ii) If two circles are equal, then their radii are equal.
23. Rationalize the denominator of $\frac{3}{\sqrt{7}-\sqrt{6}}$.
24. Factorize: $25x^2 + 16y^2 + 4z^2 - 40xy + 16yz - 20xz$
25. Find the value of k, if $x = 2$, $y = 1$ is a solution of the equation $2x + 3y = k$.

SECTION: C

26. Represent 5.354545454…… in $\frac{p}{q}$ form.
27. Find the value of a, if $x - a$ is a factor of $x^3 - ax^2 + 2x + a - 1$.
28. Write six solutions of the equation: $2x + y = 7$
29. In an isosceles triangle ABE, with AB = AC, bisectors of $\angle B$ and $\angle C$ intersect each other at O. Join A to O. Show that: OB = OC
30. Find the area of a triangle two sides of which are 18 cm and 10 cm and the perimeter is 42 cm.
31. In the below given figure, ABCD is a parallelogram and E is the midpoint of side BC, DE andAB when produced meet at F. Prove that AF = 2AB.



SECTION: D

32. Sides of a triangle are in the ratio of 17 : 12 : 25 and its perimeter is 540 cm. Find its area.
33. A circular park of radius 20m is situated in a colony. Three boys Ankur, Sayed and David are sitting at equal distance on its boundary each having a toy telephone in his hands to talk each other. Find the length of the string of each phone.
34. Monica has a piece of canvas whose area is 551 m^2. She uses it to have a conical tent made, witha base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m^2, find the volume of the tent that can be made with it.
35. The following table gives the life times of 400 neon lamps:
    (i) Represent the given information with the help of a histogram.
    (ii) How many lamps have a life time of more than 700 hours?

Life time (in hours)	Number of lamps
300 – 400	14
400 – 500	56
500 – 600	60
600 – 700	86
700 – 800	74
800 – 900	62
900 – 1000	48

SECTION: E

36. Prime Minister's National Relief Fund, (also called PMNRF in short) is the fund raised to provide support for people affected by natural and man-made disasters. Natural disasters that are covered under this include flood, cyclone, earthquake etc. Man made disasters that are included are major accidents, acid attacks, riots, etc.

    Two friends Sohan and Mohan together contributed ` 300 towards Prime Minister's Relief Fund.
    a) How to represent the above situation in linear equations in two variables?
    b) If Sohan contributed ` 80, then how much was contributed by Mohan?
    c) If both contributed equally, then how much is contributed by each?
37. While selling cloths for making flags, a shopkeeper claims to sell each piece of cloth in the shape of an equilateral triangle of sides 12cm. but he was actually selling it in the shape of an isosceles triangle with sides 12cm, 10cm and 10 cm. (use $\pi = 1.7$)
    Based on the above information, answer the following questions.
    i) Find the perimeter of the piece of cloth actually cut.
    ii) Find the area of the piece of cloth claimed by shopkeeper to sell.
    iii) How much area of cloth was the shopkeeper saving in selling each flag?
38. Shalini was making a toy butterfly with sticks for her younger sister. She arranged the sticks as shown in figure. Based on the information given in figure, answer the following questions.
    i) Find the angle between sticks OP and OB.
    ii) Find the measure of angle $\angle AOC$.
    iii) What will be the sum of the interior angles of both the wings of the butterfly?