साधना देवी विद्यापीठ

Punjabi Colony (Dharampur) Samastipur. 848101 (Bihar)

Half Yearly Examination-2019-20

Class :- IX
Sub :- Maths

Time :-3hrs
F.M. :-100

20×1=20
2×6=12
3×8=24
4×6=24

General Instructions
Section A contains 9 questions of 1 mark each.
Section B contains 9 questions of 3 marks each.
Section C contains 8 questions of 5 marks each.
Section D contains 4 questions of 6 marks each.

Section - A

* Tick the correct option :-

1. Which of the following is a rational number ?
(a) $1+\sqrt{3}$ (b) π (c) $2\sqrt{3}$ (d) 0

2. Which of the following is an irrational ?
(a) $\sqrt{23}$ (b) $\sqrt{225}$ (c) 0.3799 (d) $7.\overline{478}$

3. If $(x+1)$ is a factor of the polynomial $(2x^2+Kx)$ then the value of K is
(a) -2 (b) -3 (c) 2 (d) 3

4. if $\frac{a}{b}+\frac{b}{a}=-1$ then $(a^3-b^3)=?$
(a) -3 (b) -2 (c) -1 (d) 0

5. If (2, 0) is a solution of the linear equation $2x+3y=K$ then the value of K is
(a) 6 (b) 5 (c) 9 (d) 4

6. If the point (3,4) lies on the graph of $3y=ax+7$ then the value of a is
(a) $\frac{2}{5}$ (b) $\frac{5}{3}$ (c) $\frac{3}{5}$ (d) $\frac{2}{7}$

7. The ordinate of every point on the x-axis is
(a) 1 (b) -1 (c) O (d) any real number

8. An exterior angle of a triangle is 110^0 and its two interior opposite angle are equal. Each of there equal angle is.
(a) 70^0 (b) 55^0 (c) 35^0 (d) $24\frac{1}{2}^0$

9. In ΔABC $\angle A=40^0$ $\angle B=60^0$ Then the longest side of ΔABC is
(a) BC (b) AC (c) AB (d) Cannot be determined.

Section - B

Solve the following

10. Locate $\sqrt{3}$ on the number line.
11. Find the remainder when x^3+3x^2+3x+1 is divided by $(x-\frac{1}{2})$
12. Factorise $12x^2-7x+1$
13. Locate the points on the cartesian plane (-2, 4), (3, -1) and (-1, 0)
14. The taxi fare in a city is as fallows. for the first kilimetre, the fare is Rs. 8 and for the subsequent distance it is Rs. 5 per km taking distance covered as x km and total fare as Rs y write linear equation for this information and draw its graph.
15. In the given figure AC = BD then prove that AB = CD

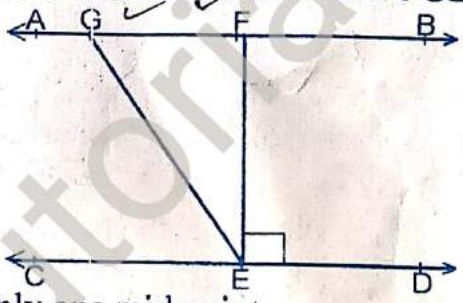
A B C D

PTO

16. If two lines intersect each other then prove that vertically opposite angles are equal.
17. Lines which are paralled to the same lines are paralled to each other prove it.
18. Show that in a right angled triangle the hypotenuse is the longest side.

Section C

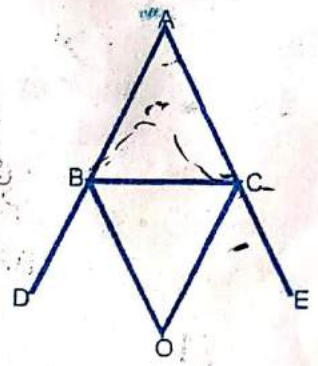
19. Solve :-
Prove that the sum of any two sides of a triangle is greater then the third side.
20. ΔABC is an isosceles triangle in which AB=AC side BA is produced to D such that AD=AB. Show that $\angle BCD$ is a right angle.
21. In right triangle ABC right angled at C M is the mid point of hypotenuse AB C is joined to M and produced to a point D such that DM = CM point D is joined to point B. Show that.
(a) $\angle DBC$ is a right anlge. (b) $CM = \frac{1}{2} AB$
22. The side QR of ΔPQR is produced to a point S if the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T. Than prove that $\angle QTR = \frac{1}{2} \angle QPR$ (Draw figure).
23. If AB $\parallel$ CD, EF $\perp$ CD and $\angle GED = 126^0$, Find $\angle AGE$ $\angle GEF$ and $\angle FGE$.



24. Prove that every line segment has one and only one mid point.
25. Prove that $x^3+y^3+z^3 - 3xyz = \frac{1}{2}(x+y+z)\,[(x-y)^2 + (y-z)^2 + (z-x)^2]$ By splitting L.H.S
26. Factorise $x^3-23x^2+142x-120$ by using factor theorem.

Section D

27. In a ΔABC the sides AB and AC are produced to points D and E respetively. The bisectors of $\angle DBC$ and $\angle ECB$ intersect at point o. Prove that $\angle BOC = (90^0 - \frac{1}{2}A)$



28. Prove that sum of all angles around a point is 360^0.
29. Prove that the perimeter of a triangle is greater than the sum of its three medians.
30. In a quadrilatual ABCD the line segment bisecting $\angle C$ and $\angle D$ meet at E. Prove $\angle A+\angle B = 2\,\angle CED$