Bhavan's Tripura Vidyamandir

2nd Periodic Assessment : (2024-2025)

Class:- 10 **Subject:- Mathematics**

Time:- 2 hours Total :- 50 Marks

Name of the student : Roll: Section:

General Instructions :

- **This question paper contains 5 sections A,B,C,D &E**
- **Section A contains 10 MCQ based questions. Each carries 1 mark**
- **Section B contains 5 question each carries 2 marks.**
- **Section C contain 4 questions each carries 3 marks.**
- **Section D contains 2 questions each carries 5 marks.**
- **Section E contains 4 case based questions each carries 2 marks.**

1) If two positive integers p and q are written as $p= x^3y^2$ and $q= xy^3$; where x and y are prime numbers, then HCF (p , q) is

(a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2

2) A quadratic polynomial whose zeroes are –3 and 4 is

(a) $x^2 – x -12$ (b) $x^2 +x + 12$ (c) $2x^2 + 2x – 24$. (d) none of the above.

3)The distance between the points A(0, 6) and B(0, -2) is:

(a) 2 (b) 6 (c) 4 (d) 8

4) All _____triangles are similar.

(a) isosceles (b) equilateral (c) scalene (d) right angled

5) If a pair of equation is consistent, then the lines will be

(a) parallel (b) always coincident

(c) always intersecting (d) intersecting or coincident

6)The roots of the equation $x^2 + 7x + 10 =0$ are

(a) 2 and 5 (b) –2 and 5 (c) –2 and –5 (d) 2 and –5

7) If the equation $x^2 + 4x + k = 0$ has real and distinct roots then

(a) $k < 4$ (b) $k > 4$ (c) $k \leq 4$ (d) $k \geq 4$

8) Which of the following is not an A.P.?

(a)1, 4, 7, …. (b) 3, 7, 12, 18, …..

(c) 11, 14, 17, 20, ……. (d) –5, –2, 1, 4,…

9) There are 6 marbles in a box with number 1 to 6 marked on each of them. What is the probability of drawing a marble with number 2 ?

(a) $\frac{1}{6}$ (b) $\frac{1}{5}$ (c) $\frac{1}{3}$ (d) 1

10)The probability of a sure event is

(a) 0 (b) 1 (c) 0.5 (d) 0.25

SECTION: B

11)Explain why 7 x 11 x 13 + 13 is a composite number.

12) Find the discriminant of the quadratic equation $2x^2 – 4x + 3 = 0$

13) If P(E) = 0.05. What is the probability of "not E"?

14)Find the zeros of the quadratic polynomial $x^2 + 7x +10$.

15)Find the distance between the points (2, 3) and (4, 1).

SECTION: C

16) Find the point on X-axis which is equidistant from (7, 6) and (–3, 4).

17) Solve for x and y, $2x + 3y + 8$; $x + 2y - 3 = 0$

18) The sum of numerator and denominator of a fraction is 12. If the denominator is increased by 3, then the fraction becomes $\frac{1}{2}$. Find the fraction.

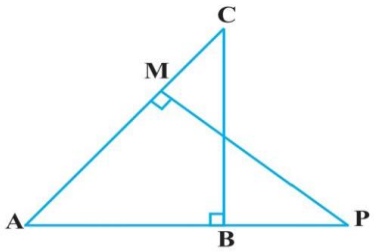
19) Find the sum of first 24 terms of the AP 5, 8, 11, 14,…….

SECTION: D

20) In the given figure, ABC and AMP are two right triangles, right angled at B and M respectively. Prove that:

(i) Δ ABC~ Δ AMP

(ii) CA /BC= PA/ MP



21) The difference of two natural numbers is 5. If the difference of their reciprocals is 1/10, find the two numbers.

SECTION: E

22) India is competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

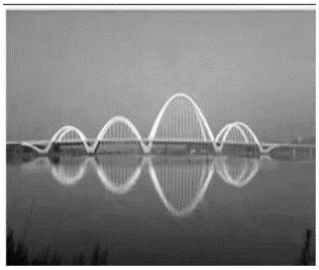
i) In which year the production is 29,200?

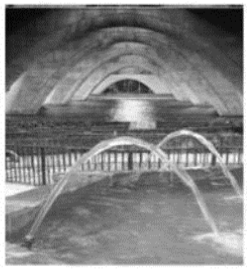
ii) Find the production during 8th year.

or

Find the production during first three year.

23) The below picture are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arch is an arch in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and in architecture in a variety of forms.





i. In the standard form of quadratic polynomial, $ax^2 + bx + c$, a, b and c are _____

ii. If a and 1/a are the zeroes of the quadratic polynomial $2x^2 – x + 4k$, then the value of k is _____