

SEMESTER-TWO

MATHEMATICS

Grade-12

Sample Paper-2

Max. Marks: 50

Time Allowed: 90 minutes

General Instructions:

- (i) This question paper consists of 40 questions in 4 sections.
- (ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- (iii) Section A consists of 10 Multiple Choice Questions carrying 1 mark each.
- (iv) Section B consists of 10 Fill in the Blank Type Questions carrying 1 mark each.
- (v) Section C consists of 10 True or False Type Questions carrying 1 mark each.
- (vi) Section D consists of 10 Very Short Answer Questions carrying 2 mark each.

Section A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 10.

- 1.** Which number is written in standard form?
- (a) 30,252
 - (b) $30,000 + 200 + 50 + 2$
 - (c) thirty thousand two hundred and fifty two
 - (d) 3 ten thousands + 2 hundreds + 5 tens + 2 ones

2. If $p \times q = p + q + \frac{p}{q}$, then the value of 8×2 is?
- (a) 6 (b) 10
(c) 14 (d) 16
3. If the plane passes through three collinear points (x_1, y_1, z_1) , (x_2, y_2, z_2) , (x_3, y_3, z_3) then which of the following is true?
- (a) $x_1y_1z_1 + x_2y_2z_2 + x_3y_3z_3 = 0$ (b) $\begin{vmatrix} x_1 & y_1 & z_1 \\ x_2 & y_2 & z_2 \\ x_3 & y_3 & z_3 \end{vmatrix} = 0$
- (c) $\begin{vmatrix} x_1 \\ y_2 \\ z_3 \end{vmatrix} = 0$ (d) $x_1x_2x_3 + y_1y_2y_3 + z_1z_2z_3 = 0$
4. What is the area of an obtuse angled triangle whose two sides are 8 and 12 and the angle included between the two sides is 150° ?
- (a) 24 sq. units (b) 48 sq. units
(c) $24\sqrt{3}$ (d) $48\sqrt{3}$
5. Consider the weight (in kg) of students in a class are as follows [70, 60, 80, 75, 55, 62, 92, 75, 55, 80]. What is the Mean or average weight of the class?
- (a) 90.4 kg (b) 80.4 kg
(c) 70.4 kg (d) 60.4 kg
6. If $y = \sin(x^x)$, then $\frac{dy}{dx}$ is
- (a) $x^x \cos(x^x)$ (b) $x^x \cos(x^x) + [1 + \log x]$
(c) $x^x \cos(x^x) \log x$ (d) None of them
7. $\int \left(\sqrt{x} - \frac{1}{\sqrt{x}} + \sqrt[3]{x} \right) dx$
- (a) $\frac{2}{3}x^{3/2} - 2x^{1/2} + \frac{3}{4}x^{4/3} + c$ (b) $\frac{2}{3}x^{3/2} - 2x^{-1/2} + \frac{3}{4}x^{4/3} + c$
(c) $x^{3/2} + x^{-1/2} + x^{4/3} + c$ (d) $x^{3/2} - x^{-1/2} + x^{4/3} + c$

8. The general form of algebraic function a^3 multiplied by a^5 have solved form as
(a) a^8 (b) $2a^8$ (c) a^2 (d) $2a^2$
9. When a transformation takes place on a 2D plane, it is called?
(a) 1D transformation (b) 2D transformation
(c) 3D transformation (d) 4D transformation
10. We can represent the point by 3 numbers instead of 2 numbers, which is called?
(a) Hetrogenous Coordinate system
(b) Simple Coordinate system
(c) Homogenous Coordinate system
(d) All of the above

Section B

Fill in the blanks with a suitable word for each of the questions 11 – 20.

11. The third derivative of a polynomial of degree _____ is the same value at any x .
12. A rectangle is a _____ sided plane _____.
13. Let E be an event. Then, $P(\text{not E}) =$ _____.
14. $P(E) + P(\text{not E}) =$ _____ dimensions.
15. A number is divisible by 3 onyl when the sum of its digits is _____.
16. A set is said to be a _____ if it contains only finite number of elements. Otherwise, the set is said to be an _____.
17. A function $f: A \rightarrow B$ is said to be _____ function if two or more elements of set A have the same image on B.
18. $(a + b + c)^2 =$ _____ + $b^2 + c^2$ 2($ab + bc + ca$).
19. The measure of each exterior angle of an n -sided regular polygon = _____.
20. A principal P is invested at an annual rate r compounded n times a year, then the amount A in the account at the end of t years is given by _____.

