

Saraswat Vidyalaya's
Sridora Caculo College of Commerce & Management Studies
First Year B.C.A. Semester-I Supplementary Examination, October 2020

BASIC MATHEMATICS

Duration: 2 Hours

Total Marks: 30

Instructions: 1) *All questions are compulsory*
2) *Figures to the right indicate full marks*
3) *Use of Calculator is prohibited*

Q.I) Answer the following questions: - (Any 5) (5X2=10)

a) The diameter of right circular cone is 14 cm, height is 3cm and slant height is 5cm. Find its

a) Curved surface area

b) Volume (Use $\pi = \frac{22}{7}$)

b) Find the value of $\lim_{x \rightarrow 2} \frac{(x-2)(x+3)}{x^2-4}$

c) find the zeroes of the quadratic equation, $x^2 - x + 1 = 0$.

d) Convert 120° into radians and $\frac{5\pi}{4}$ into degrees.

e) Find the complex conjugate and modulus of $\sqrt{4} + 2i$.

f) Solve for x , $\frac{\log_x(8x)}{\log_x(3)} - \log_x 4 = 1$

g) Find the equation of the line through (2,1) perpendicular to the line through (-3, -1) and (-1,2).

h) Examine the continuity of f at $x = 3$ if $f(3) = 10$ and

$$f(x) = x^2 + 2 \quad 0 \leq x < 3$$

$$= 3x + 1 \quad 3 \leq x \leq 6$$

Q.II) Answer the following questions: - (Any 4) (4X5=20)

a) If $y = (x^2 + 1) \times \log x + x^2 - 4x + \frac{e^x}{x}$, find $\frac{dy}{dx}$

b) Represent the complex number $z = -1 + \sqrt{3}i$ in the polar form.

c) Find the inverse of $A = \begin{bmatrix} 3 & 2 & -4 \\ 1 & -1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$

d) Integrate the following with respect to x .

$$\int \frac{6x^3 + 10x^2 - 9x + 4}{x} dx$$

e) If 7^{th} term of an A.P is 13 and 10^{th} term of A.P is 19 ,
find the n^{th} term of an A.P.

f) Let $\vec{a} = \hat{i} - \sqrt{2}\hat{j} + \hat{k}$, $\vec{b} = 2\hat{i} - \hat{j} + \sqrt{5}\hat{k}$, $\vec{c} = \hat{i} - \hat{j} - 2\hat{k}$.

Compute $(\vec{a} \times \vec{b})$ and $\{(\vec{a} \times \vec{c}) \cdot \vec{b}\}$