

B.B.A. Semester - 2 (CBCS) Examination

March/April- 2019 (New Course)

Advanced Techniques of Business Mathematics(ALLIED)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que-1(A) Prove that $\begin{vmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{vmatrix} = 4a^2b^2c^2$ (07)

Que-1(B) Prove that $\begin{vmatrix} a & a & a \\ a & b & b \\ a & b & c \end{vmatrix} = a(b-c)(a-b)$ (07)

OR

Que-1(A) Explain: Rules of determinants. (07)

Que-1(B) Solve the equation, using cramer's Rule (07)

$$2x+3y-z = 5$$

$$3x+2y+z = 10$$

$$x-5y+3z = 0$$

Que-2(A) Explain: Unit matrix, Adjoint matrix, skew-symmetric matrix (07)

Que-2(B) If $AB = \begin{vmatrix} 2 & 4 \\ 3 & 5 \end{vmatrix}$ and $ABC = \begin{vmatrix} 2 & -1 \\ 3 & 0 \end{vmatrix}$ then find C. (07)

OR

Que-2 Using inverse matrix solve the following equations: (14)
 $x+y+z = 3$, $2x-y-z = 3$, $x-y+z = 9$

Que-3 Find the following limits: (Any Four) (14)

(1) $\lim_{x \rightarrow \infty} \frac{x^3+2x^2-6x+3}{x^3-5x^2+2x+2}$ (2)

(3) $\lim_{x \rightarrow \infty} \frac{\sqrt{1+x}-1}{x}$ (4)

(5) $\lim_n \frac{\sum n^2}{n^3}$ (6)

Que-4 Find $\frac{dy}{dx}$ (any four) (14)

(1) $y = \frac{1+x}{1+x^2}$ (2) $y = \left(x + \frac{2x+3}{x+2}\right) \left(x + \frac{4x+10}{x+3}\right)$

(3) $xy+x+y-2 = 0$ (4) $y = e^x \cdot \log x \cdot x^2$

(5) $y = \log \left(\frac{1+x^2}{1-x^2}\right)$ (6) $x = \frac{y+1}{y-1}$

Que-5(A) Explain: Compound Interest (07)

Que-5(B) Explain: Sinking Fund (07)

OR

Que-5(A) At what percent rate of simple interest a sum will double itself in 25 years. (07)

Que-5(B) Present value of an Annuity (07)
