

BBA 1st Semester (Hons.) Examination, 2020-21

BACHELOR OF BUSINESS ADMINISTRATION

Course ID: 13212

Course Code: BBA-CC-02

Course Title: Business Mathematics

Full Marks: 80

Time: 3 Hours

The figures in the right hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

GROUP-A

(1) Answer all the questions:

1x10=10

- i) The value of ${}^{10}C_5$ is
- a) 250
 - b) 252
 - c) 251
 - d) 253
 - e) None of these

ii) The value of $\begin{vmatrix} 15 & -3 & 21 \\ 5 & -1 & 7 \\ 2 & -3 & 8 \end{vmatrix}$ is

- a) 273
- b) 0
- c) -273
- d) 275
- e) None of these

iii) The distance between the point (-2,4) and (4,-5) is

- a) 0 units
- b) 117 units
- c) $\sqrt{116}$ Units
- d) $\sqrt{117}$ units
- e) None of these

iv) If $f(x) = 2^x$, find $f(-2)$

- a) $1/4$
- b) 1
- c) $1/9$
- d) 0
- e) None of these

v) Find $\frac{d}{dx}(e^{-5x})$

a) $5e^{-5x}$

b) e^{-5x}

c) $-5e^{-5x}$

d) e^{5x}

d) None of these

vi) Find $\int \frac{1}{1+x^2} dx$

a) $\sin^{-1}x+c$

b) $\cos^{-1}x+c$

c) $\sec^{-1}x+c$

d) $\tan^{-1}x+c$

e) None of these

vii) The equation $x^2+4x+6y+9=0$ is

a) Circle

b) parabola

c) Ellipse

d) Hyperbola

e) None of these

viii) The sum of the G.P series of

$$1+2+4+8+ \dots +64 \text{ is}$$

a) 63

b) 255

c) 127

d) 227

e) None of these

ix) The value of $\log_2 [\log_2 \{\log_2^{16}\}]$ is

a) 0

b) 1

c) -1

d) 2

e) None of these

GROUP-C

3. Answer any four questions:

5 X 4 = 20

a) Show that $\begin{vmatrix} 1 & a & a^2 \\ a^2 & 1 & a \\ a & a^2 & 1 \end{vmatrix} = (a^3 - 1)^2$

b) Solve the system of the equation by matrix method:

$$X - 2y + 2z = 2$$

$$2x - y - 2z = 1$$

$$2x + 2y + z = 7$$

C) If a, b, c be the roots of the equation $x^3 - px^2 + qx - r = 0$, form the equation whose roots are $ab + 1/c, bc + 1/a, ca + 1/b$

D) If math term of a G.P is n and nth term is m, find $(2m - n)$ th term of the G.P

E) If $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x \dots \text{to infinity}}}}$, show that $\frac{dy}{dx} = \frac{\cos x}{2y - 1}$.

F) Show that $(yz)^{\log \frac{y}{x}} \times (zx)^{\log \frac{z}{x}} \times (xy)^{\log \frac{x}{y}} = 1$.

GROUP-D

4) Answer any three questions.

10 X 3 = 30

1) a) Apply Descart's rule of sign to examine the nature f the roots of the equation $x^4 + 2x^2 + 3x - 1 = 0$.

b) Find the center and radius of the circle $3(x^2 + y^2) = 5x + 6y - 4$. (5 + 5) = 10

2) a) If $2n + 1_{P_{n-1}} : 2n - 1_{P_n} = 3 : 5$, then find the value of n.

b) How many words can be formed from the letters of the word 'TRIANGLE'?
How many of these will begin with T and end with E? (5 + 5 = 10)

3) Show that the function $f(x)$ defined by $f(x) = 3 + 2x$ for $-\frac{3}{2} < x \leq 0$ and $3 - 2x$ for $0 < x \leq \frac{3}{2}$ is continuous but not differentiable at $x = 0$.

4) a) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, then show that $A^2 = 5A + 2I$, where I is the identity matrix of order 2 and hence find A^{-1} .

b) Prove that $\begin{vmatrix} b - c & c - a & a - b \\ c - a & a - b & b - c \\ a - b & b - c & c - a \end{vmatrix} = 0.$ 5 + 5 = 10

5) a) If 5th term of an A.P. is 30 and 12th term is 65, find the sum of first 20 terms.

b) Find the sum to n terms of the series 4+44+444+..... . 5 + 5 = 10

6) a) Evaluate $\int \frac{x+1}{\sqrt{4+8x-5x^2}} dx.$

b) Show that $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x + \sqrt{\cos x}}} dx = \frac{\pi}{4}.$ 5 + 5 = 10
