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Total No. of Pages: 02
Total No. of Questions: 09

BBA (Sem.-2nd)

BUSINESS MATHEMATICS

Subject Code: BBA-203
Paper ID: [C0242]

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATE:

1. *Section-A all questions are compulsory.*
2. *Attempt any four question from Section-B.*
3. *Attempt any two question from Section-C.*

SECTION-A

10x2=20

Q.1

(a) Let A= {1, 2, 3}

B={x|x ∈ N, *x* is prime less than 5} Find A x B & B x A

(b) Differentiate $x\sin x$ w.r.t. x

(c) Differentiate $\frac{2x+3}{x^2-5}$ w.r.t x

(d) Expend $(2x-3y)^4$ by binomial theorem

(e) Write general term in the expansion of $(x^2-y)^6$

(f) If A and B are symmetric matrices, Prove that AB-BA in skew symmetric matrices

(g) If *x* and *y* are two sets such that n*(x)=17, n(y)=23* ,n (x ∪ y)=38 Find n(x ∩ y)

(h) Show that A= $\begin{bmatrix} 2 & -3 \\ 3 & 4 \end{bmatrix}$ satisfies the equation $x^2-6x+17=0$

(i) *If* x= $\log_a(bc)$, y= $\log_b(ca)$, z= $\log_c(ab)$ Find value of xyz.

(j) Find the value of log(ab) -log $|b|$

SECTION-B (4x5=20)

Q.2 Solve $2x - y + 3z = 4$

$x + y - 3z = -1$

$5x - y + 3z = 7$

By Crameis method

Q.3. $x\sqrt{1+y} + y\sqrt{1+x} = 0$ Prove that $\frac{dy}{dx} = \frac{-1}{(1+x)^2}$

Q.4. If the coefficient of (r-5)th & (2r-1)th terms in the expansion of $(1+x)^{3h}$ are equal. Find r.

Q.5. State and Prove Dr. Morgan's laws

Q.6. If $\log_e\left(\frac{a+b}{2}\right) = \frac{1}{2}[\log_e(a) + \log_e b]$ then prove that a=b

SECTION-C (2x10=20)

Q.7. Prove that $\begin{vmatrix} 1+a & 1 & 1 & 1 \\ 1 & 1+b & 1 & 1 \\ 1 & 1 & 1+c & 1 \\ 1 & 1 & 1 & 1+d \end{vmatrix}$

$= abcd\left(1 + \frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d}\right)$

Q.8. Find two the numbers x and y such that their sum is 35 and product x^2y^5 is maximum.

Q.9. Find the coefficient of x^7 in $\left(ax^2 + \frac{1}{bx}\right)^{11}$ and x^{-7} in $\left(ax - \frac{1}{bx^2}\right)^{11}$ and find the relation b/w a and b so that these coefficients are equal.

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