Code : 302204

BBA 2nd Semester Exam., 2019

BUSINESS MATHEMATICS AND STATISTICS–1

Time : 3 hours *Full Marks* : 60

Instructions :

(i) The marks are indicated in the right-hand margin.

(ii) There are ***SEVEN*** *questions in this paper.*

(iii) Attempt ***FIVE*** *questions in all.*

(iv) Question Nos. ***1*** *and* ***2*** *are compulsory.*

1. Choose the correct answer (any *six*) : 2×6=12

(a) If A and B are sets and $A \cup B = A \cap B$, then

(i) $A = \varnothing$

(ii) $B = \varnothing$

(iii) $A = B$

(iv) None of the above

(b) If X and Y are two sets, then $X \cap (Y \cup X)C$ equals

(i) X

(ii) Y

(iii) $\varnothing$

(iv) None of the above

(Turn Over)

(c) The function $f(x) = x^3 - 6x^2 + 9x + 25$ has

(i) a maxima at $x = 1$ and a minima at $x = 3$

(ii) a maxima at $x = 3$ and a minima at $x = 1$

(iii) no maxima, but a minima at $x = 1$

(iv) a maxima at $x = 1$, but no minima

(d) What is the derivative of $f(x) = |x|$ at $x = 0$?

(i) 1

(ii) −1

(iii) 0

(iv) Does not exist

(e) What is the sum of all 3-digit numbers that leave a remainder of '2' when divided by 3?

(i) 897

(ii) 1,64,850

(iii) 1,64,749

(iv) 1,49,700

(Continu

(f) The sum of the three numbers in AP is 21 and the product of the first and third number of the sequence is 45. What are the three numbers?

(i) 5, 7 and 9

(ii) 9, 7 and 5

(iii) 3, 7 and 11

(iv) Both (i) and (ii)

(v) None of the above

(g) If the order of matrix A is $m \times p$ and the order of B is $p \times n$ then the order of matrix AB is

(i) $m \times n$

(ii) $n \times m$

(iii) $n \times p$

(iv) $m \times p$

(h) If A and B are two matrices, then which from the following is true?

(i) $A + B \neq B + A$

(ii) (At) $t \neq A$

(iii) $AB \neq BA$

(iv) All of the above are true

(i) What is the integral of $(3t - 1)3\,dt$?

(i) $(1/12)(3t - 1)4 + C$

(ii) $(1/12)(3t - 4)4 + C$

(iii) $(1/4)(3t - 1)4 + C$

(iv) $(1/4)(3t - 1)3 + C$

(j) Integrate $x\cos(2 \times 2 + 7)dx$.

(i) $(1/4)\sin(2 \times 2 + 7) + C$

(ii) $(1/4)\cos(2 \times 2 + 7) + C$

(iii) $((\sin\theta)/4(x^2 + 7)) + C$

(iv) $\sin(2 \times 2 + 7) + C$

2. Answer any *three* of the following : 4×3=

(a) Compute

$$\lim_{x \to 3} \frac{5x^2 - 8x - 13}{x^2 - 5}$$

(b) Determine if the following function is continuous at $x = 1$.

$$f(x) = \begin{cases} 3x - 5, & \text{if } x \neq 1 \\ 2 \quad , & \text{if } x = 1 \end{cases}$$

(c) Differentiate

$$y = \sqrt{13x^2 - 5x + 8}$$

(d) Differentiate

$$y = \sin(2x) + \cos^2 x$$

(e) Integrate

$$\int xe^x dx$$

Answer any *three* long answer type questions : 12×3=36

3. Differentiate

$$y = 10(1 + (2 - (6 + 7x^4)^9)^3)^5$$

4. Differentiate

$$y = \cos^3(\tan(3x))$$

5. Integrate

$$\int x^3 \ln 5x \, dx$$

6. Sum of first 12 terms of a GP is equal to the sum of the first 14 terms in the same GP. Sum of the first 17 terms is 92, what is the third term in the GP?

7. Sum of first 25 terms in AP is 525, sum of the next 25 terms is 725, what is the common difference?