Code : 302204

BBA 2nd Semester Exam., 2018

BUSINESS MATHEMATICS AND STATISTICS

Time : 3 hours *Full Marks* : 60

Instructions :

(i) All questions carry equal marks.

(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 option of the following (any *six*) :

(a) If ${}^{n}C_{12} = {}^{n}C_{6}$, then the value of n is

(i) 12

(ii) 14

(iii) 16

(iv) 18

(b) Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

(i) 24400

(ii) 21300

(iii) 210

(iv) 25200

(c) From a group of 7 men and 6 women persons are to be selected to for committee so that at least 3 men are the the committee. In how many ways can done?

(i) 624

(ii) 702

(iii) 756

(iv) 812

(d) In how many different ways can the lett the word 'MATHEMATICS' be arranged that the vowels must always come toget

(i) 9800

(ii) 100020

(iii) 120960

(iv) 140020

(e) A coin is tossed 3 times. Find out number of possible outcomes.

(i) 1

(ii) 8

(iii) 2

(iv) None of the above

(f) The number of elements in the power set $P(S)$ of the set $S = [|\Phi|, 1, |2, 3|]$ is

(i) 2

(ii) 4

(iii) 8

(iv) None of the above

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

(i) $A = \Phi$

(ii) $B = \Phi$

(iii) $A = B$

(iv) None of the above

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

(i) X

(ii) Y

(iii) Φ

(iv) None of the above

(i) If $f: X \to Y$ and $a, b \subseteq X$, then $f(a \cap b)$ is equal to

(i) $f(a) - f(b)$

(ii) $f(a) \cap f(b)$

(iii) a proper subset of $f(a) \cap f(b)$

(iv) $f(b) - f(a)$

(Turn Over)

(j) Fifth term of sequence $a^n = 2n + 3$ is

(i) 13

(ii) 7

(iii) 7

(iv) 13

2. Answer any *three* questions of the following

(a) Compute

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

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

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

(c) Differentiate

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

(d) Integrate

$$\int x^2 e^{3x} \, dx$$

(e) Find the number of terms in the sequence 8, 12, 16,....72

3. Integrate

$$\int (2x + 5)(x^2 + 5x)^7 \, dx$$

(Contin

An open rectangular box with square base is to be made from $48\ ft^2$ of material. What dimensions will result in a box with the largest possible volume?

Find the number of words, with or without meaning, that can be formed with the letters of the word 'CHAIR'.

In how many ways can a committee of 1 man and 3 women be formed from a group of 3 men and 4 women?

(a) Find $1+12+14+18+\cdots\infty$.

(b) If a, b, c are in GP and x, y are AMs between a, b and b, c respectively, then prove that x, b, y are in HP.

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