BCM
2ND SEMESTER
BUSINESS MATHEMATICS
BCM-202

Duration: 3 Hrs.   Marks: 70

$\left\{ \begin{array}{l} \text{Part : A (Objective)} = 20 \\ \text{Part : B (Descriptive)} = 50 \end{array} \right\}$

[**PART-B : Descriptive**]

Duration: 2 Hrs. 40 Mins.   Marks: 50

[Answer question no. One (1) & any four (4) from the rest]

1. What is LPP? Maximize $Z = 3x_1 + 4x_2$ 2+8
    subject to:
    $4x_1 + 2x_2 \leq 80$
    $2x_1 + 5x_2 \leq 180$
    $x_1 \geq 0, x_2 \geq 0$

2. Find Maximum and or Minimum value of following function   10
    $f(x) = 2x^3 - 21x^2 + 36x - 20$

3. What is Singular Matrix. Solve the following system of equations   2+8
    by Matrix Method
    $3x + y + 2z = 3$
    $2x - 3y - z = -3$
    $x + 2y + z = 4$

4. Mention any two property of Determinant. Show that   2+8
    $$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} = (a+b+c)^3$$

5. Find $\dfrac{dy}{dx}$ if   5+5
    $(i) y = (x+2)(x+1)$
    $(ii) y = x^x$

6. If the third and the sixth terms of an AP are 7 and 13 respectively. Find the first term and the common difference.   10

7. What is S.I.Find the simple interest on Rs 640 from March 15 to September 1 @ 5% per annum.   2+8

8. Find the Compound interest on Rs 16,000 at 5% per annum at the end of $1\frac{1}{2}$ yrs if the interest is calculated half yearly.   10

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[PART-A : Objective]

Choose the correct answer from the following: 1X20=20

1. Common Difference of $a, a+d, a+2d, a+3d, ...$ is

   a. a b. d

   c. $2d$ d. $2a$

2. The Series $5, 2, -1, -4, ...$ is

   a. GP   b. HP

   c. AP   d. AM

3. If a, b, c are in GP, then GM

   a. $\sqrt{ac}$ b. $\sqrt{ab}$

   c. ac d. ab

4. n^{th} term of GP is

   a. $t_n = ar^{n-1}$ b. $t_n = r^{n-1}$

   c. $t_n = \frac{n}{2}\{2a+(n-1)d\}$ d. $t_n = \{2a+(n-1)d\}$

5. Value of $\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}$ is

   a. $a_1 b_1 - a_2 b_2$ b. $a_1 a_2 - b_1 b_2$

   c. $a_1 b_2 - a_2 b_1$ d. $a_1 b_2 - a_2 b_1$

6. Minor element 1 of $\begin{vmatrix} 1 & 2 & -3 \\ -2 & 3 & 4 \\ 2 & -1 & 5 \end{vmatrix}$ is

   a. 19   b. 18

   c. -19   d. 11

7. The scalar matrix is one whose all diagonal element

   a. non zero   b. zero

   c. equal   d. one

8. Order of $\begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$ is

   a. 2×1 b. 1×2

   c. 1×3 d. 3×1

9. $\lim_{x \to a} f(x) = l$, where a is

   a. Integer   b. Whole number

   c. positive number   d. Real number

10. The limit of a function exists iff

    a. RHL=LHL   b. RHL=LHL=0

    c. RHL=0   d. LHL>RHL

11. $\frac{d}{dx}(x^n) = ?$

    a. x b. x^{n-1}

    c. nx^{n-1} d. x^n

12. $\frac{d}{dx}(e^{2x}) = ?$

    a. $2e^{2x}$ b. e^{2x}

    c. e^x d. none of these

13. In LPP, given restrictions are

    a. Negative   b. Non-negative

    c. Non-positive   d. zero

14. The equation of X axis is

    a. $X = 0$ b. $Y = 0$

    c. $Y = X$ d. $Y = K(const)$

15. The equation of the line parallel to X axis

    a. $X = const$ b. $Y = const$

    c. $Y = X$ d. $Y = 0$

16. If P denotes Principal, I denotes compound interest, A denotes Amount, then

    a. $A = P$ b. $A = P + I$

    c. $A + P = I$ d. $A + P = I$

17. The Simple interest on the principal of Rs 100 for 1 year at 6% is

    a. Rs106   b. Rs 6

    c. Rs 100   d. Rs 94

18. The interest on Rs P for 2 years

a. $I = \dfrac{Pnr}{100}$

b. $I = \dfrac{2Pr}{100}$

c. $I = \dfrac{100 \times P \times r}{2}$

d. $I = \dfrac{100 \times P}{2 \times r}$

19. The Compound interest (CI) is

a. $A - P$

b. $A + P$

c. $A = P$

d. $A = -P$

20. The amount on Rs 100 at 5% for 3 years

a. Rs 100

b. Rs 105

c. Rs 15

d. Rs 115

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UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA

Question Paper CUM Answer Sheet

[PART (A) : OBJECTIVE]

Serial no. of the main Answer sheet

Course : ....

Semester : .... Roll No : ....

Enrollment No : .... Course code : ....

Course Title : ....

Session : .... 2016-17 .... Date : ....

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Instructions / Guidelines

➢ The paper contains twenty (20) / ten (10) questions.

➢ The student shall write the answer in the box where it is provided.

➢ The student shall not overwrite / erase any answer and no mark shall be given for such act.

➢ Hand over the question paper cum answer sheet (Objective) within the allotted time (20 minutes / 10 minutes) to the invigilator.

Full Marks	Marks Obtained	Remarks
20		