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GIET UNIVERSITY, GUNUPUR – 765022
 B. B. A(Second Semester) Examinations, August – 2021
20BBA205 – Business Mathematics

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)**(1 x 10 =10 Marks)**Q. 1 Answer ALL questions

- a. $3x - 4 + 7 = 0$, then $x = ?$
- (i) -1(A) (ii) +1.
 (iii) 0 (iv) 2
- b. From 8 gentlemen and 4 ladies, a committee of 5 is to be formed. In how many ways can this be done so as to include at least one lady?
- (i) 736 (ii) 728
 (iii) 280 (iv) 792
- c. How many 10 digits numbers can be written by using the digits 1 and 2
- (i) $^{10}C_1 + ^9C_2$ (ii) 210
 (iii) $^{10}C_2$ (iv) 10!
- d. Among 14 players, 5 are bowlers. In how many ways a team of 11 may be formed with at least 4 bowlers?
- (i) 265 (ii) 263
 (iii) 264 (iv) 275
- e. Cramer's Rule is also known as _____.
- (i) Inverse Matrix Method (ii) Matrix Method
 (iii) Determinant Method (v) Inverse Method
- f. If A,B and C are matrices the associative property is _____.
1. (i) $(AB)C < A(BC)$. 2. (ii) $(AB)C > A(BC)$.
 3. (iii) $(AB)C \neq A(BC)$. (iv) $(AB)C = A(BC)$.
- g. Find the derivative of $f(x) = x^{5/2}$
- (i) $\frac{2}{5}x^{-1/2}$ (ii) $\frac{5}{2}x^{-1/2}$
 (iii) $\frac{5}{2}x^{3/2}$ (iv) $5x^{3/2}$
- h. Differentiate $f(x) = 3x^4 + 5x^3 + 7$
- (i) $4x^3 + 3x^2 - 7$ (ii) $12x^3 + 15x^2 - 7$
 (iii) $4x^3 + 3x^2$ (iv) $12x^3 + 15x^2$
- i. Under simple interest, the interest for n years is _____.
- (i) $I = P(1 + ni)$. (ii) $I = P(+i)$.
 (iii) $I = Pnr/100$. (iv) $I = P(1+i)n$.
- j. Compound Interest is always _____ the Simple Interest.
- (i) Lesser than (ii) Equal to
 (iii) Greater than (iv) None of the above

PART – B: (Short Answer Questions) (2 x 5=10 Marks)

Q.2. Answer ALL questions

- a. What do you mean by sides of an equation?
- b. What is liquidity of Matrices?
- c. What is partial differentiation?
- d. Calculate consumer's surplus if the demand function $d(q) = 50 - 2x$ and supply function $s(p) = 20$.
- e. Define perpetual annuity and give example.

PART – C: (Long Answer Questions) (6 x 5=30 Marks)

Answer ANY FIVE questions

Marks

3. What are Indices? Explain the laws of Indices 6
4. The denominator of a fraction exceeds the numerator by 5 and if 3 be added to both, numerator and denominator of the fraction, it becomes $\frac{3}{4}$. Find the fraction. 6
5. Solve: $13x + 6y + z = 52$, $5x + 7y + 9z = 38$ and $10x + 20y + 30z = 100$. 6
6. Find the determinant of $\begin{bmatrix} 1 & 3 & 2 \\ 2 & 1 & 3 \\ 3 & 1 & 2 \end{bmatrix}$ 6
7. Differentiate $f(x) = (6x^2 + 2x)(x^3 + 1)$
8. Integrate: $\int [(\log x)^2 / x] dx$ (use integration by substitution) 6
9. A city is bonded for Rs.50,000. What sum must be set aside annually as a sinking fund, to cancel the debt in 20 years, provided money is worth 5%. 6
10. Find the maxima and minima of the following function: 6
$$f(x) = x^3 - 18x^2 + 96x$$

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