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BBF-010-001107 Seat No. _____

B. B. A. (Sem. I) (CBCS) (W.E.F. 2010) Examination

July - 2021

Mathematics : Paper - 107

(Business Mathematics - 1) (Old Course)

Faculty Code : 010

Subject Code : 001107

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) Attempt all five questions.
(2) Each question carries equal marks.

1 (a) Define the following : **7**
(1) One-one function.
(2) Many-one function.

(b) If $f(x)=\frac{x^2-x}{x+3}$ find $\frac{f(1)+f(2)}{f(-2)+f(0)}$. **7**

OR

1 (a) Define the following : **7**
(1) Constant function.
(2) Range of function.

(b) If $f(x)=3x^2+mx+5$ and $f(2)=27$ then find m. **7**

2 Evaluate the following limits : (any **four**) **14**

(1) $\lim\limits_{x\to -1}\frac{x^2+x-2}{x^2-2x-3}$

(2) $\lim\limits_{x\to 5}\frac{x^3-125}{x^2-25}$

(3) $\lim\limits_{x\to 4}\frac{3-\sqrt{5+x}}{x-4}$

(4) $\lim\limits_{n\to \infty}\frac{n^2+5n+6}{(n+4)(n+5)}$

(5) $\lim\limits_{x\to 0}\frac{e^{5x}-e^{2x}}{x}$

(6) $\lim\limits_{x\to 3}\frac{4x^2-17x+15}{x^2-x+6}$

3 (a) Explain : Arithmetic Progression. **7**

(b) In A.P. $S_{11} = 19$, $S_{19} = 11$. Find S_{30}. **7**

OR

3 (a) Explain Geometric Progression. **7**

(b) Prove that : **7**

(1) $AH = G^2$

(2) $A \geq G \geq H$

4 (a) Explain : Permutations. **7**

(b) $4Px = 6 \times 4P_{(x-3)}$ find x. **7**

OR

(a) Explain : Combination. **7**

(b) ${}^{18}C_{x+3} = {}^{18}C_{2x-1}$ find x. **7**

5 (a) Using M.I.P. prove that $1 + 2 + 3 + ... + n = \frac{n(n+1)}{2}$. **7**

(b) Find sum : $21^2 + 22^2 + ... + 30^2$. **7**

OR

5 (a) Write properties of Binomial theorem. **7**

(b) Find the fifth term in the expansion of $\left(\frac{5x}{4} + \frac{4}{5x}\right)^{12}$. **7**
