Jan 2023

BBA I SEMESTER (Reappear)

Business Mathematics (BBA-GEN-102)

Time: 90 Minutes   **Max. Marks:75**

Instructions: 1. *It is compulsory to answer all the questions (1 marks each) of Part -A in short.*

2. *Answer any three questions from Part -B in detail.*

3. *Different sub-parts of a question are to be attempted adjacent to each other.*

4. *Any other specific instructions*

PART –A

Q1 (a) Examine the equality of the sets A={a,b.c} and B= {2,3,8}.   (1.5)

(b) If A={2,3,4,5}, B={3,6,9} and C={5,6,7,8}, Find $A \cap (B \cup C)$ (1.5)

(c) Simplify $log_4\{log_{\sqrt{2}}(log_3 81)\}$ (1.5)

(d) Prove that $\dfrac{1}{log_a(abc)} + \dfrac{1}{log_b(abc)} + \dfrac{1}{log_c(abc)} = 1$ (1.5)

(e) Find the coefficient of x $^{-18}$ in the expansion $(x^3 - \frac{1}{x^4})^{15}$ (1.5)

(f) If $(n+1)_{P_3} = 10\, X(n-1)_{P_2}$, then what is the value of n?   (1.5)

(g) If two dices are tossed, in how many ways they can fall?   (1.5)

(h) The tenth term of the expansion $(x^2 - \frac{1}{x})^{12}$ (1.5)

(i) If $y = (x+2)(x+1)^4$, $find$ $\frac{dy}{dx}$ (1.5)

(j) Evaluate $\int_3^4 \frac{dx}{x^2+1}$ (1.5)

PART –B

Q2 (a) In a school, there are 20 teachers who teach Mathematics or Physics. Of these 12 teach Mathematics and 4 teach Physics and Mathematics . How many teach Physics ? **(8)**

(b) In a certain town the inhabitants speak Assamese and Bengali . If 64% can speak Assamese and 55% can Speak Bengali , Find in percent how many can speak both. **(7)**

Q3 (a) If $a^{1/x} = b^{1/x} = c^{1/x}$ and a,b,c are in G.P. , Prove that x,y,z are in A.P. **(8)**

(b) Prove that $7log\frac{10}{9} - 2log\frac{25}{24} + 3log\frac{81}{80} = log\,2$ **(7)**

Q4 There are 11 Questions in a commercial arithmetic paperof the HSEC commerce examination . In how many ways an examinee can select 6 questions ? If the question number 11 is made compulsory , in how many ways can select 6 questions ? If the question number 10 and11 both made compulsory , in how many ways can select 6 questions ? **(15)**

Q5 (a) A committee of 6 is formed from 7 Indians and 4 Nepalese . In how many ways can this be done when the committee must contain at least two Nepalese ? **(8)**

(b) The sum of three consecutive terms of a G.P is 35 and their product is 1000. Find the terms. **(7)**

Q6 (a) Solve the following system of linear equations using Gauss-jordan Method **(8)**

x+2y+z=7; x+3z=11; 2x-3y=1

(b) An investor Deposited Rs. 100000 in a saving bank . Part of the money is invested at half yearly rate of 5% and the remaining at the annual rate of 12% . At the end of the year he received annual interest of Rs. 11,600. Using Matrix method , find out how much he deposited at 5% half yearly rate? **(7)**

Q7 (a)

Suppose the marginal cost of a product is given by $25 + 30x - 9x^2$ and the fixed cost is known to be 55. Find the total cost and average cost functions. **(8)**

(b)

Find the values of x for which the following function is a maximum or minimum

$$y = \frac{2x + 1}{x^2 - 8x - 2}$$

(7)