

Goa Vidyaprasarak Mandal's
GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND
ECONOMICS PONDA GOA
B.COM. CBCS (SEMESTER I) SUPPLEMENTARY EXAMINATION,
AUGUST 2021

COMMERCIAL ARITHMETIC

Duration: 2 hours

Marks: 40

Q.I Attempt ANY 5 out of 8 from the following: (5 x 2 = 10)

- 1) Construct the truth table for $(p \vee q) \vee \sim p$.
- 2) What will be the amount of ₹ 12500 in 4.5 years at the rate of simple interest of 8% per annum?
- 3) If ${}^n P_3 = {}^n P_4$, find n.
- 4) If $A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 \\ 3 & 1 \end{bmatrix}$, find the matrix $5A - 5B$.
- 5) A 4 digits number is to be formed using the digits from 0 to 5. How many such numbers can be formed if the repetition of digits in the number is allowed.
- 6) Find the amount of an ordinary annuity of ₹ 6400 p.a. for 4 years at the rate of interest of 10% per period.
- 7) If $n(A) = 5$, $n(B) = 7$ and $n(A \cap B) = 2$. Find $n(A \cup B)$.
- 8) The third term of a G.P. is 12 and the sixth term is 96, find its first term and the common ratio.

Q.II Attempt ANY 2 out of 3 from the following: (2x 5 = 10)

- 1) Using Cramers's rule solve the following equations

$$2x + 3y = -4 \text{ and } 3x - 5y = 7.$$

- 2) Verify using truth table that $\sim (p \vee q) = (\sim p) \wedge (\sim q)$.

- 3) A person is promised the final amount of a half yearly ordinary annuity with periodic payment of ₹ 1600, the duration of the annuity being 4 years and the rate of interest is 10% to be compounded half-yearly. Find the present value of the annuity.

Q.III Attempt ANY 4 out of 6 from the following:

(4 x 5 = 20)

1) Use Venn diagram to show that for any sets A and B, $A \cup B = A \cup (B - A)$.

2) Prove that $(p \wedge q) \rightarrow (p \vee q)$ is a tautology.

3) Find the value of x if $\begin{vmatrix} x & 2 & 3 \\ 3 & 5 & 1 \\ 3 & 7 & 2 \end{vmatrix} = 0$

4) In a G.P. the fourth and seventh terms are 24 and 81 respectively. Find the first term and common ratio.

5) A club has 5 girls and 7 boys. If 4 persons out of these are to be selected find the total number of choices if there is no restriction on gender.

6) Find the principal, if the compound interest payable quarterly at 12% per annum for 2 years is ₹ 420.

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