Goa Vidyaprasarak Mandal's
GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND ECONOMICS PONDA GOA
B.COM. CBCS (SEMESTER I) SUPPLEMENTARY EXAMINATION
December2020

COMMERCIAL ARITHMETIC

Duration: 2 hours **Marks: 40**

Q.I Attempt ANY 10 out of 16 from the following: **(10x2 = 20)**

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 $A = \begin{bmatrix} -2 & 1 \\ 4 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 \\ 3 & 2 \end{bmatrix}$, find the matrix 3A+ 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 4years 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.

9) A committee of 5 members is to be formed out of 6 men and 4 women. In how many ways committee can be formed to have 4 men and a woman ?

10) If ${}^{n}C_r = 120$ and ${}^{n}P_r = 720$, find the value of n and r.

11) A and B are two subsets of the universal set X such that n(X)=99, $n(A^C)$=80, $n(B^C) = 85$ and $n[(A \cap B)^C] = 94$, find n(AU B).

12) Find the 3 terms of an A.P. whose sum is 15 and the product is 80.

13) 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.

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

15) If A = $\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$ and B= $\begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$, find the matrix AB.

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

Q.II Attempt ANY 4 out of 6 from the following: (4x5 = 20)

1) Using Cramers's rule solve the following equations

$2x + 3y = -4$ 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.

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

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

6) Find x if $\begin{vmatrix} x & 2 & x+3 \\ 3 & 5 & 8 \\ x+1 & 7-x & 12 \end{vmatrix} = 0$

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