

Vidya Vikas Mandal's
Shree Damodar College of Commerce & Economics, Margao-Goa
FY B.Com, Semester-I, Semester End Examination November 2022
Commercial Arithmetic -I(CC 4)

Duration: 2hrs**Max Marks: 80****Instructions:**

- 1) Start each question on fresh page.
- 2) Figures to the right indicate maximum marks.
- 3) Non programmable calculator is allowed.

Q 1) Attempt the following questions.**5X4=20**

- a) A survey was conducted of the television programmes watched by 100 college students. It was found that 60 students watched News channel and 50 watched Sports channel, 20 watched both the programmes. Find the number of students who did not watch television that day?
- b) If $A = \begin{bmatrix} 6 & 8 \\ 9 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 5 & 1 \\ 3 & -4 \end{bmatrix}$ Find AB and BA?
- c) For a G.P, $a = \frac{2}{3}$, $T_6 = 162$ Find r and S_4 ?
- d) There are 7 boys and 4 girls, Find the number of ways in which a committee of 6 can be formed if the committee is to include atleast 3 girls?
- e) Find the compound interest on Rs 1200 at 8% annually for 2 years if the interest is calculated half yearly?

OR**Q 1) Attempt the following questions.****5X4=20**

- i) Find the simple interest on Rs 580 at the rate of 8% annually for 220 days?
- ii) A person wants to invest Rs 14560 in 6 installment. If each of his investment is 3 times the previous one, find out his first and last installment?
- iii) Find the value of
 a) ${}^{11}C_{11}$ b) $\frac{8!}{5!}$
- iv) If X is a universal set, A and B are subsets of X such that $n(X) = 99$, $n(A^c) = 80$, $n(B^c) = 85$, $n(A \cap B)^c = 94$ Find $n(A \cup B)$?

- v) Test the validity of the following argument .
The poem is readable if and only if the print is clear. The print is not clear therefore the poem is not readable .

Q 2) Attempt the following questions.

5X4=20

- a) Construct the truth tables for the following statement .
 $\sim(\sim p \wedge \sim q)$
- b) From a group of 4 professors and 6 students , a committee of 4 members is to be formed. In how many ways this can be done if the committee contains
i) exactly 2 professors
ii) atmost one professor
- c) For an A.P , given that $T_{26} = 103$, Find S_{51}
- d) Show that the following set of equations are consistent .
 $6x + y + 1 = 0$
 $3x - y + 8 = 0$
 $2x + 3y = 13$
- e) Find the future values of Rs 10000 after 3 years if compounded interest rate is 10% p.a?

OR

Q II) Attempt the following questions.

5X4=20

- i) How many different numbers can be formed using all the digits of the number
a) 737137 b) 8988448
- ii) Classify as Tautology , Contradiction or fallacy
 $\sim a \vee (a \vee b)$
- iii) If $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ $B = \begin{bmatrix} -1 & 2 \\ 2 & -1 \end{bmatrix}$ Find matrix X such that $2A + 5B - 2X = 0$?
- iv) A certain sum of simple interest becomes Rs. 1200 in 2 years and Rs. 1300 in 3 years
Find the principal and the rate of interest per annum.
- v) Santosh is repaying his debt in a monthly installment which form a G.P. If his fourth installment is 540 and his seventh installment is 14580 .Find the total amount paid by him in the entire period of 9 months.

Q 3) Attempt the following questions.**5X4=20**

- a) Find the value of
 i) ${}^{10}P_4$ ii) 5C_3
- b) Find the point of intersection using Cramers rule .
 $x + 2y + z = 7$
 $3x + z = -5$
 $2y + z = 9$
- c) For a G.P 5,15,45,135,....
 Find T_n and S_n
- d) Mr. X invests Rs 10000 in the first month and increase his installment by Rs 1000 in every month. What will be his total investment at the end of 2 years ?
- e) When John was born Rs. 5000 was placed by his mother in an account that paid interest at the rate of 10% p.a .compounded annually .How much amount will be there to his credit on his 18th birthday.

OR**Q III) Attempt the following questions.****5X4=20**

- i) Find the compound interest on Rs 800 at 6% p.a. for $3\frac{1}{2}$ years.
- ii) Find the value of x if $\begin{vmatrix} 1 & 3 & 7 \\ 7 & 5 & 9 \\ x & 2 & 1 \end{vmatrix} = 32$
- iii) Ashok invests Rs 600 in the first month and increase his monthly investment by Rs 50 in every succeeding month . What will be his investment at the end of 4 years ?
- iv) How many number of 5 digits can be formed using the digits 1,2,3,4,5,6 such that
 a) no digit is repeated
 b) repetition of digits is allowed.
- v) Using appropriate symbols , translate the following into symbolic form.
 a) Either it is very hot or the fan is off.
 b) Rohita is fair and unhappy.

Q 4) Attempt the following questions.**5X4=20**

- a) If $X = \{ x : x \in N, 1 \leq x < 10 \}$ be the universal set
 Let $A = \{ x : x \in N, 1 \leq x \leq 4 \}$, $B = \{ 2x : x \in N, 1 \leq x \leq 4 \}$
 Find A^c , B^c , $A-B$ and $(A \cup B)^c$

- b) Find the cofactor and minor for the following $\begin{vmatrix} -2 & 4 \\ 5 & -1 \end{vmatrix}$
- c) In how many different ways one can arrange the letters of the following word
 i) COMMITTEE ii) MOUSE
- d) Find the sum of all the number between 1 and 500 which are exactly divisible by 7.
- e) For an A.P ,nth term $T_n = 5n + 2$, find S_{12}

OR

Q IV) Attempt the following questions.

5X4=20

- i) Find the compound interest on Rs.10000 for 2 years at 8% p.a. compounded quarterly .
- ii) For an A.P with first term as 2 and common difference as 3 , write down its nth term and find S_n .
- iii) From a group of 15 boys and 20 girls , a committee of 5 boys and 3 girls is to be formed. Find the number of ways of forming such a committee?
- iv) How many seating arrangements can be made for 7 students in
 a) 4 chairs ii) 7 chairs .
- v) Define the following with an example.
 a) Scalar matrix b) Row matrix.