

**SARASWAT VIDYALAYA'S
SRIDORA CACULO COLLEGE OF COMMERCE & MANAGEMENT STUDIES
KHORLIM, MAPUSA, GOA**

B.Com - Honors / B.Com - General (w. e. f. 2017-18)

F.Y.B.COM. SEMESTER END EXAMINATION, OCTBER, 2019

SEMESTER I

Subject:- COMMERCIAL ARITHMETIC - I (CC-4)
(CBCS)

M.Marks:- 80
Duration:- 2 hrs.

- Instructions:-
1. Attempt all the questions.
 2. Use of non-programmable calculator is allowed.
 3. Each question carries marks as shown in bracket
 4. Sub-questions of a question should be answered continuously.
 5. Log table / graph paper will be supplied on request.

Q.1. Attempt the following:

(5x4 = 20)

a) Give one example in each of the following:

- i) Singleton set
- ii) Empty set
- iii) Non-empty set
- iv) Infinite set
- v) Subset of {1, 2, 3}

b) If for an A.P., $T_8 = 36$, find S_{15}

c) Find x if $\begin{vmatrix} 5 & -3 & 7 \\ 2 & 1 & 2 \\ 9 & -1 & x \end{vmatrix} = 0$

d) Construct the truth table of Conjunction. Give one statement on it.

.OR.

Q.I. Attempt the following:

(5x4 = 20)

w) Write down all possible subsets of {1, 2, 3}.

x) Find S_n for the following sequence after filling the sequence:

3, _ , _ , _ , 27, _ ,

y) Solve the following using C- Rule:

$$\frac{2}{x} - \frac{1}{y} = 1, \quad \frac{1}{x} + \frac{2}{y} = 3$$

z) Construct the truth table of Disjunction. Give one statement on it.

Q.2. Attempt the following:

(5x4 = 20)

a) In how many ways can the letters in the word "DAUGHTER" be arranged so that the vowels appear in the beginning positions.

b) Find the simple interest and the accumulated amount on Rs. 10,200 for 7 years and six months at 6 % p. a..

c) In a group of 13 students, 7 play cricket, 8 play hockey and 6 play football, 3 play hockey and football, 2 play cricket and football and 4 play cricket and hockey. Each student plays at least one of the three games. How many play all the three games?

d) Find the value of a, b and c from the following the matrix equation:

$$\begin{bmatrix} a & 2 \\ b & a \end{bmatrix} + \begin{bmatrix} 2b & -b \\ c & -c \end{bmatrix} = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$$

.OR.

Q.II. Attempt the following:

(5x4 = 20)

w) How many numbers lying between 10 and 100 can be formed out of the digits 3, 0, 4, 5 and 6 if repetition is : i) not allowed , ii) allowed?

x) In what time will Rs.1250 amount to Rs.1400 at 6% p.a. on simple interest?

y) Let $X = \{1, 2, 3, \dots, 10\}$

$A = \{1, 2, 3, 4\}$, $B = \{1, 2, 7, 8, 9\}$, $C = \{3, 5, 7, 9\}$

Represent these sets using Venn diagrams.

z) If $A = \begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix}$ and I is a unit matrix of order 2, find $A^2 + 2A - 2I$

Q.3. Attempt the following:

(5x4 = 20)

a) Translate the following verbal statement into symbolic form.

i) Riya is a model if and only if she can dance.

ii) A person does not like animals then he is not kind.

iii) Honesty and education bring success in life.

- b) In a class of 6 boys and 7 girls a committee of 5 students is to be formed. Find the number of committees with majority of girls.
- c) The gate receipts of a show amounted to Rs. 6500/- in the first night and showed a drop of Rs. 110/- every succeeding night. If the operational expenses of the show is Rs. 1000/- a night, find on which night the show ceases to be profitable/ also find the total earning during these nights.
- d) Find the compound interest on Rs. 2000/- for 2 years at 10% p.a. compounded semi annually.

.OR.

Q.III. Attempt the following:

(5x4 = 20)

- w) Test the validity of the statement:

I am Sincere. I am punctual in work. Therefore I shall be successful.

- x) How many words are possible with the letters in the word 'MILLIMILLILLION'

- y) Find the sum of all natural numbers from 100 to 400 which are divisible by 4

- z) Find the present value of Rs. 500/- due 10 yrs hence when interest rate of 10% compounded semi -annually.

Q.4. Attempt the following:

(5x4 = 20)

- a) Find n if ${}^nC_3 : {}^nC_2 = 3 : 2$, find the value of n.

- b) A manufacturer produces two products A and B and sells in two markets. The monthly sales in the two markets are given below:

	Products	
	A	B
Market I	29,000	15,000
Market II	14,000	30,000

If the unit sale prices of A and B are Rs. 50 and 36 respectively, find the total revenue in each market.

- c) A company borrows a loan of Rs. 400,950 /- on the condition to repay it with compound interest at 6% per month. Further it is also agreed upon to repay the entire loan amount in three equal instalments. Find the amount of EMI.

- d) How much would be the sum of the sequence : 4, - 4, 4, - 4, 4, - 4,
Also find S_{10}

.OR.

Q.IV. Attempt the following:

(5x4 = 20)

- w) If ${}^{10}P_{r-1} : {}^{11}P_{r-2} = 30 : 11$, find the value of r .

- x) A firm produces three products P, Q and R and sells in two markets.
The monthly sales in the two markets are given below:

	Products		
	P	Q	R
Market I	30	20	40
Market II	25	35	40

If the unit sale prices of P, Q and R are Rs. 50/-, Rs. 30/- and Rs.40/- respectively, find the total revenue in each market.

- y) A company borrows a loan of Rs. 400,950 /- on the condition to repay it with compound interest at 6% per month. Further it is also agreed upon to repay the entire loan amount in three equal monthly instalments of Rs. 150000.00/-. Prepare an amortization chart showing the interest component and the principal repayment component of the EMI for each month.

- z) For a G.P. $a = \frac{2}{3}$ and $T_6 = 162$, find S_4