

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

F.Y.B.COM. SEMESTER END EXAMINATION, OCTOBER 2017
REGULAR SEMESTER I

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

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

Instructions:- 1. Attempt all the questions.

2. Attempt each question on a new page and sub-questions together.
3. No internal choice for sub-questions.
4. Use of scientific calculator is not allowed.
5. Figures to the right indicate full marks.

Q.1. Attempt the following:

(5x4 = 20)

a) Answer the following:

i) Which of the following sets are different: $\emptyset, \{\emptyset\}, \{0\}$? Comment

ii) Which of the following sets are equal? :

$\{a, b, c\}, \{a, b, c, a\}, \{b, a, b, c\}, \{c, a, c, b\}$

iii) Let $A = \{x / 3x = 12\}$ and let $b = 4$. Does $\{4\} = A$?

b) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, Show that $A^2 - 5A - 2I$ is a null matrix, where I is the identity matrix.

c) In how many ways 5 boys and two girls can be arranged among themselves such that the two girls are at extreme positions?

d) Find the simple interest on Rs. 1,000/- for 3 years at 5% p.a. Also find the amount after 3 years.

.OR.

Q.I. Attempt the following:

(5x4 = 20)

w) In each of the following finite sets, write the number of elements in the set.

a) \emptyset

b) $A = \{0\}$

c) $B = \{x / 3x = 12\}$

d) $C = \{1, 2, 3, \dots, 9\}$

e) $D = \{x / x \in N, x + 3 < 8\}$

- x) Mr. Satyajit buys 5 pens, 6 pencils and 2 erasers. Pens cost Rs. 10 per piece, pencils cost Rs. 3 per piece and erasers cost Rs. 2 per piece. Obtain his total cost.
- y) How many words are possible with the letters in the word 'GOOGLE'?
- z) In how many years, the amount of money will be double the Principal at simple interest of 12% per annum?

Q.2. Attempt the following:

(5x4 = 20)

a) Find S_{16} for an A.P., if its 8th and 16th terms are respectively 19 and 35.

b) In a survey of 1000 customers the number of people that buy the various grades of coffee seeds were found to be as follows:

'A' grade only	180
'A' grade and 'C' grade	80
'C' grade	480
'A' grade but not 'B' grade	230
'A' grade	260
'C' grade and 'B' grade	80
None of the three grades	240

- (i) How many buy 'B' grade coffee seeds only?
- (ii) How many buy 'C' grade, but do not buy 'B' grade?
- (iii) How many buy the 'C' and 'B' grades but not the 'A' grade?

c) Solve the following determinant

$$\begin{vmatrix} x & 1 & 2 \\ 3 & x & 3 \\ 1 & 3 & 2 \end{vmatrix} = 6$$

d) What principal will yield Rs. 1000/- as S.I. at 8 % per annum in 5 years?

.OR.

Q.II. Attempt the following:

(5x4 = 20)

- w) A person pays Rs. 1000 along with interest of Rs. 950 in monthly instalment such that each instalment is less than the former by Rs. 10. The amount of the first instalment is Rs. 200. In what time will the entire amount be paid?

Let $X = \{1, 2, 3, \dots, 10\}$ be the universal set.
 $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 6, 8\}$, $C = \{3, 4, 5, 6\}$
 be the subsets of X . Verify that

- i. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
- ii. $(A \cup B)' = A' \cap B'$

Solve the following equations using C-rule.
 $x + y = 0$, $2x + 3y = 5$, $x + y + z = 2$

Find the compound interest and the amount for a Principal of Rs. 5000/- for 3 years at 8% per annum when the interest is payable quarterly.
 (Given that: $(1.08)^3 = 1.2597$, $(1.02)^{12} = 1.2682$, $(1.02)^3 = 1.0612$)

Q.3. Attempt the following:

- a) How many 4 digits numbers greater than 3000 can be formed with the digits 1, 2, 3, and 4 if repetition a) are not allowed and b) are allowed? (5x4 = 20)
- b) Find the sum of the first 49 terms of an A.P. whose 25th term is 25.
- c) Translate the following verbal statements into symbolic form.
 - i) The water is blue and blood is red.
 - ii) If it rain then we will not go on play ground.
 - iii) A student will be successful if and only if he works hard
- d) Find the present value of Rs. 20,000/- due after 5 years if the interest rate of 9% is compounded semi-annually. (Give that $(1.045)^{-10} = 0.6439$).

.OR.

Q.III. Attempt the following:

- w) In an examination paper on business mathematics, 11 questions are set. In how many different ways can choose 6 questions to answer? If however question no.1 is made compulsory; in how many ways can you select to answer 6 questions in all? (5x4 = 20)
- x) Find the sum of all two digit numbers divisible by 4.
- y) Show that $p \rightarrow q$ and $\sim p \vee q$ are logically equivalent.
- z) Find the amount of an annuity Rs. 5000/- for is made semi-annually for seven years at 8% p.a. convertible semi-annually. (Given: $(1.04)^{14} = 1.7317$)