

Goa Vidyaprasarak Mandal's
GOPAL GOVIND POY RAITURCAR COLLEGE OF COMMERCE AND
ECONOMICSPONDA GOA

B.COM. CHOICE BASED CREDIT SYSTEM (SEMESTER - II)
SUPPLEMENTARY EXAMINATION, JUNE 2019

COMMERCIAL ARITHMETIC

Duration: 2 hours

Marks: 80

- Instructions:**
1. Attempt all questions
 2. Figures to the right indicate full marks.

Q.1 Attempt the following:

(5 X 4=20)

- a. If A(4,-5) and B(3,2), find the co-ordinates of the point which divide segment AB externally in the ratio 4:3.
- b. If $f(x) = mx + 8$ and $f(2) = 10$ find m.
- c. Find $\frac{dy}{dx}$ for the following:
 - i) $y = \frac{2x+5}{x-1}$
 - ii) $y = (2x+3)(x+3)$
- d. Evaluate $\int (x^2 - 6x + 7)dx$
- e. If the total cost of x item is $C = 50 + 15x - x^2$, find i) the average cost
ii) marginal cost when 10 items are produced.

OR

Q.I Attempt the following:

(5 X 4=20)

- p. Find a point on x-axis whose distance from (7,5) is 13 units.
- q. If $f(x) = x^2 + 5x + 7$, the find x if $f(x) = f(x+1)$.
- r. Differentiate w.r.t. x
 - i) $y = 3x^2 + 2x + 1$
 - ii) $y = \frac{x-2}{x-1}$
- s. The sum of two numbers is 30 and their difference is 4. Find the ratio of the two numbers.
- t. Integrate the following w.r.t. x
 - i) $x^6 - 5x^4 + \frac{3}{x} + e^x$
 - ii) $(x^2 - x - 12)/(x - 4)$

- d. The income of A and B is in the ratio 4:3 and their expenditure is in the ratio 3:2. If each of them save 600 at the end of a year, find the annual income of each.
- e. Find the value of x , for which y is maximum, where $y=15+112x-3x^2$.

OR

Q. III Attempt the following:

(5 X 4=20)

- p. Given $f(x) = 100 + 10x - 2x^2$. For what value of x , $f(x)$ is minimum?
- q. A company manufactures two types of bags S: small and B: big. The raw materials and labour available per day are 60 units and 50 hours respectively. S requires 2 units of raw material and 5 hours of labour whereas B requires 6 units of raw material and 2 hours of labour. It is observed that, however they try, the total number of bags produced per day, does not exceed 12. Formulate the above problem to maximise the profit.
- r. A seller bought a smartphone for ₹ 10000 and sold it for Rs. 13500, allowing a 20% discount. Calculate his gain or loss percentage.
- s. Examine the continuity at $x=4$ of the function
 $f(x) = (x^2-16)/(x-4)$ for $x \neq 4$
 $f(4) = 8$
- t. If $u = x^3 + x^2y + y^3$, prove that

$$x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 3u.$$

Q.4 Attempt the following:

(5 X 4=20)

- a. Verify that $A=(2,2)$, $B=(-2,4)$ and $C=(2,6)$ are the vertices of isosceles triangle ABC.
- b. A person bought a book for Rs. 360. For what price should he sell it to gain 20%?
- c. The supply function for a commodity is $p = x^2 + 5x + 4$, where x is the quantity supplied. Find the producer's surplus, when the price is 10.
- d. The ages of Ram and Shyam are in ratio 5:7 and the difference between their ages is 12 years. Find the present ages of Ram and Shyam.
- e. Bombay Dyeing allows a discount of Rs. 20% on the clothes purchased. Reema purchases clothes worth Rs. 5600. How much will she pay?