The CES College of Arts and Commerce Cuncolim Salcete Goa
FYBCOM II Semester End Examination, April 2018
Commercial Arithmatic

Marks: 80 | Duration: 2hrs
Date:19/04/2018 | Time: 10.00.a.m. to 12.00 noon

Instructions: 1) Attempt all questions.
2) Figure to the right indicates full marks.
3) Use of non – programmable calculator is allowed.
4) Log tables and graph papers will be supplied on request.

Q.1. Answer the following: (4X5=20)

a) If A≡(2, 5), B≡(K, -7) and d(AB) =13 find k.
b) Differentiate the following w.r.t x. (i) x^7+8x^2-10 (ii) xe^x
c) If $f(x)=\frac{2x+1}{2x-1}$ and $g(x)=3x^2+2$; find f(g(x)) and g(f(x)).
d) Integrate the following w.r.t x (i) x^4+3x+1 (ii) $x(2x-4)$
e) Monthly incomes of A and B are in the ratio 8:7 and those of B and C are in the ratio 5:3. If the monthly income of C is Rs.3, 360/- find the monthly incomes of A and B.

OR

Q.I. Answer the following: (4X5=20)

v) Find the Co-ordinates of a point on x-axis which is at a distance of 5 units from (5, -4).
w) If $y=(2x+4)^3+x^2\log 2x$, find $\frac{dy}{dx}$.
x) If $f(x)=\frac{3x+4}{3x+1}$, find f(f(2x)).
y) $\int(2x+4)(x-1)dx$.
z) Monthly salaries of two friends are in the ratio 5:6. The Company offered them an increment of Rs.100/- each. The ratio of their new salaries is 26:31. Find their original salaries.

Q.2. Answer the following: (4X5=20)

a) The cost of manufacturing x items is given by $c=x^2+6x+8$. Find cost, average cost and marginal cost at x=10.
b) Point P divides Seg AB internally in the ratio 3:2. If A≡(1, 2) and B≡(3, 4), find co-ordinates of P.
c) If $f(x)=e^{2x}.(x^2-x+8)$, find $f^{|}(x)$.
d) Evaluate $\int_0^2(x^2+8x+3)dx$.
e) Mr. A purchased a Scooter for Rs.60,000/- and sold it to B at a discount of 20%. B then sold it to C at a discount of 30%. How much percent less does C pay than A?

OR

Q.II. Answer the following: (4X5=20)

v) The demand function is given by $P=30+6D-D^2$. Find the revenue, average revenue and marginal revenue when demand is 4.
w) P(2, 4) divides Seg AB externally in the ratio 2:3. If A≡(1, 6), find the co-ordinates of point B.
x) $y=(7x-6)^4+\log(3x-1)$. Find $\frac{dy}{dx}$.
y) Find $\int\frac{(x^2+4x+8)(x+1)}{x}dx$.
z) Ashok was drawing a Salary of Rs.60,000/- per month. He got 15% hike in salary. One year later his Salary reduced by 10% by way of deduction from his loan. Find his new Salary.

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(4X5=20)

Q.3. Answer the following:

a) The total cost function is given by $C = 2x^3 - 15x^2 + 24x + 50$. Find the value of x for which the total cost is decreasing.

b) Find $\lim_{x \to 2} \frac{x^2-4}{x^2-x-2}$

c) Find the equation of the line passing through the points (1, 4) and (2, -7).

d) If the cost of 20 books is 800, find the cost of 35 books.

e) If $z = x^5+y^4+3x^3y^2-10$, find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$

OR

(4X5=20)

Q.III. Answer the following:

v) Divide 100 into two parts such that sum of their squares is minimum.

w) $f(x) = \frac{x^2 16}{x-4}$; $x \neq 4$

$= 9$; $x = 4$

Discuss continuity of $f(x)$ at $x = 4$.

x) The line passing through the point (2, 3) and is parallel to the line $x - 2y - 4 = 0$. Find its equation.

y) The cost of a carpet 12 meters by 8 meters is Rs. 9,00/- Find the cost of a similar carpet with dimension 20 meters by 6 meters.

z) If $z = \frac{5x^2}{y}$, s.t. $x\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = z$.

Q.4. Answer the following: (4X5=20)

a) A wholesaler allows 25% trade discount and 5% discount for cash. What will be the net price of an article marked at Rs.1, 300/-?

b) The demand function for a commodity is $p = 20 - 2x - x^2$. Find the Consumers Surplus when $p = 5$.

c) The demand function for a commodity is given by $p = 16 - \frac{D^2}{4}$. Find the total revenue when $D = 1$.

d) Line makes equal intercept on co-ordinate axis and passing through the point (3, -8). Find its equation.

e) Solve the following LPP by graphical method.

Minimize $z = 2x - y$

s.t. $x+y \leq 5$

$x+2y \leq 8$; $x, y \geq 0$

OR

Q.IV. Answer the following: (4X5=20)

v) A trader allows 15% discount on the list price and further 5% for cash payment. What is the list price of the goods sold for a net amount of Rs.8,075/-

w) The supply function of a commodity is $p = 7+2x^2$. Find the producers surplus at the price of Rs. 39/- per unit.

x) The demand function is given by $x = 15 - 4p - p^2$. Find price elasticity of demand when $p = 2$.

y) A≡(-2, -4) and B≡(6, 2) are two points. Find the equation of the perpendicular bisector of Seg AB.

z) Maximize $p = x + y$

s.t. $x+2y \leq 8$

$3x+2y \leq 12$; $x, y \geq 0$

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