Goa Vidyaprasarak Mandal´ s
Gopal Govind Poy Raiturcar College of Commerce and Economics
Farmagudi Ponda Goa
B.Com. (Semester II) Supplementary Examination, December 2020

COMMERCIAL ARITHMETIC

Duration:- 2 Hours **Marks:-40**

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QI Attempt ANY 10 out of 16 from the following. (10x 2 = 20)

1) Write the domain and range of the function given by

$$f(x) = 2x + 1, \text{ for } 2 \leq x \leq 5$$

2) Find $\frac{dy}{dx}$ if $y = x^2(e^x + 1)$

3) Show that the points A=(2,2), B=(-2,4), and C=(2,6) are the vertices of an isosceles triangle.

4) Find the co-ordinates of a point on X-axis at a distance of 5 units from the point (5,-4).

5) A=(1,2) and B=(3,4) are two points. If P is the mid-point of segment AB, find the co-ordinates of the point P.

6) Find the equation of the line passing through the point (1,4) and is parallel to a line $4x - 3y + 10 = 0$.

7) The demand function is given by $D = 60 + 9p - p^3$. Find the demand when price is 2. *

8) Find $\lim_{x \to 1}(\frac{1}{x-1} - \frac{1}{x^2 - x})$

9) Evaluate the following integral:
$\int \frac{x^2 + 2x + 1}{x} dx$

10) If A is (3,-2) and B(3,1), find the co-ordinate of the points which divides AB externally in the ratio 2::3.

11) If $f(x) = x^2 + 5x - 2$ where x is real number, find $f(a)$ and $f(a+1)$.

12) Find the range of the function given by

$$f(x) = 3x - 4 \quad \text{for} \quad -1 \leq x \leq 3.$$

13) If $z = \dfrac{3x^5}{y^4}$, evaluate $\dfrac{\delta z}{\delta x}$ *and* $\dfrac{\delta z}{\delta y}$.

14) Differentiate with respect to x
$y = \dfrac{3x-1}{x+2}$

15) If the marginal cost $MC = 3x^2 + 4x + 5$, find the cost function if the fixed cost is 100. Find its value at $x = 20$.

16) Find the equation of the line passing through (4,-3) and having slope $\frac{1}{3}$.

Q II Attempt ANY 4 out of 6 from the following. (4x 5 = 20)

1) Examine for continuity of function at x=5,

$$f(x) = \begin{cases} \dfrac{x^2-25}{x-5} & \text{if } x \neq 5 \\ 15 & \text{if } x = 5 \end{cases}$$

2) Solve the following L.P.P. by graphical method.
Minimize $Z = 9x + 13y$ subject to
. $2x + 3y \leq 18$
. $2x + y \leq 10$
. $x \geq 0, \;\; y \geq 0.$

3) The supply function for a commodity is given by $S = 20 - 3p - 3p^2$ where S is supply and p is price. Find the price elasticity of supply when p=3.

4) If $z = x^2 + 5xy + y^2$. Show that $x\dfrac{\delta z}{\delta x} + y\dfrac{\delta z}{\delta y} = 2z$.

5) Find the equation of the line passing through origin and perpendicular to a line having slope -2/3.

6) Evaluate the integral $\int_{-1}^{1}(2x-1)dx$.

End