

PARUL UNIVERSITY
FACULTY OF MANAGEMENT
BBA Winter 2019 - 20 Examination

Semester: 2
 Subject Code: 06101155
 Subject Name: Business Maths-2

Date: 11/12/2019
 Time: 10:30am to 1:00pm
 Total Marks: 60

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A). Multiple choice type questions/Fill in the blanks. (Each of 1 mark)****(05)**

1. $\lim_{x \rightarrow 0} (x^3 + 2x + 6) = \underline{\hspace{2cm}}$.

- a) 6 c) 2
 b) 5 d) 0

2. The derivative of constant number is _____.

- a) 1 c) 4
 b) 0 d) 2

3. Formula of simple interest _____.

- a) $\frac{P + R + T}{100}$ c) $\frac{P * R * T}{100}$
 b) $\frac{P * T}{100}$ d) $\frac{R * T}{100}$

4. $\frac{d(uv)}{dx} = \underline{\hspace{2cm}}$.

- a) $v \frac{dv}{dx} - u \frac{du}{dx}$ c) $v \frac{dv}{dx} * u \frac{du}{dx}$
 b) $u \frac{dv}{dx} - v \frac{du}{dx}$ d) $u \frac{dv}{dx} + v \frac{du}{dx}$

5. $\int 4x^3 dx = \underline{\hspace{2cm}}$.

- a) $4x + c$ c) $x^2 + c$
 b) $2x^2 + c$ d) $x^4 + c$

B). Define the following. (Each of 1 mark)**(05)**

1. Annuity
2. Definite Integral
3. Profit function
4. Continuity
5. Unitary Elastic Demand

C). Fill in the blanks. (Each of 1 mark)**(05)**

1. The Revenue function R is equal to _____.

2. The average cost of is AC is equals to _____.

3. $\frac{dx^{\frac{5}{2}}}{dx} = \underline{\hspace{2cm}}$.

4. If $f(x) = e^x$ then $f(0) = \underline{\hspace{2cm}}$.

$$5. \lim_{x \rightarrow 0} \left(\frac{3n+3}{2n+4} \right) = \text{_____}.$$

Q.2 Answer the following questions.

A). (1) If $y = t^3 + 2e^t + 2t$, $x = \log t + 3e^t$ find $\frac{dy}{dx}$. (04)

(2) The demand function of a commodity is given as $x = 40 - \sqrt{p}$. Calculate the elasticity. (03)

B). (1) Find the equations of the tangent and normal to the curve $2x^2 - xy + 3y^2$ at (3,1). (04)

(2) Evaluate the definite integral $\int_0^2 \left(x^3 + \frac{x}{2} + 3x^2 \right) dx$. (04)

Q.3 Answer the following questions.

A). (1) If the cost function of an item is $C(x) = 300x - 10x^2 + x^3$. Find the average cost and marginal cost when 6 units are produced. (04)

(2) Find Compound interest on Rs. 25000 at 5% per annum at the end of 2 year. (03)

(1) The cost of manufacturing 500 water bottles is Rs.1500 and that of manufacturing 600 water bottles is Rs.1700. If the cost function is linear, find its exact form and also find cost of manufacturing 1000 water bottles. (04)

(2) Evaluate $\lim_{x \rightarrow 0} \left(\frac{\sqrt{1+x} - \sqrt{1-x}}{x} \right)$ (04)

Q.4 Attempt any three questions.(Each of 5 mark) (15)

(1) Evaluate the $\int \frac{x}{(x-1)(x-2)} dx$ using partial fractions.

(2) Find maximum and minimum values of $y = x^3 + 6x^2 - 15x + 7$.

(3) If $y = x^3 + 6e^x - x + 7$ find $\frac{d^2y}{dx^2}$.

(4) Find $\lim_{x \rightarrow 0} \frac{(x+h)^3 - x^3}{h}$