

PARUL UNIVERSITY
FACULTY OF MANAGEMENT
BBA Winter 2017 - 18 Examination

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

Date: 03/01/2018
Time: 10:30 am to 1:00 pm
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.****(05)**

1. If $y = uv$ then $\frac{dy}{dx}$ is equal to

a) $u \frac{dv}{dx} + v \frac{du}{dx}$

c) $u \frac{dv}{dx} - v \frac{du}{dx}$

b) $v \frac{du}{dx} + v \frac{dv}{dx}$

d) $v \frac{du}{dx} - u \frac{dv}{dx}$

2. In which type of Annuity payments are made at beginning of specified period?

a) Ordinary Annuity

c) Perceptual Annuity

b) Annuity Due

d) None of these

3. Amount for continuous compounding is

a) $Pe^{\frac{NR}{100}}$

c) $P\left(1 + \frac{RN}{100}\right)$

b) $P\left(1 + \frac{R}{100k}\right)^{Nk}$

d) $P\left(1 - \frac{RN}{100k}\right)$

4. The Revenue function R is equals to

a) xp

c) $\frac{x}{p}$

b) $\frac{p}{x}$

d) x^2p

5. $\int x^2 dx =$ _____

a) $\frac{x}{2} + c$

c) $\frac{x^3}{3}$

b) $\frac{x^3}{3} + c$

d) $x^3 + c$

B).Define the following.**(05)**

1. Annuity
2. Marginal Cost
3. Derivative
4. Revenue function
5. Continuity

C).Direct questions.**(05)**

1. Give the equation of the tangent to a given curve $y = f(x)$.
2. If $f(x) = x^2 + 5$ find $f'(1)$

3. Find the value of $\lim_{x \rightarrow 0} \frac{\sin mx}{x}$.

4. Evaluate $\int_a^b f(x) dx$

5. S.I. = $\frac{PRN}{100}$, N belongs to _____ ?

Q.2 Answer the following questions.

A). (i) Find $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - 1}{x}$ (04)

(ii) Find $\frac{dy}{dx}$ if $xy + x + y - 2 = 0$ (03)

B). (i) If $y = 2e^{3x} + 3e^{-2x}$, then prove that $\frac{d^2y}{dx^2} - \frac{dy}{dx} - 6y = 0$. (04)

(ii) Evaluate $\frac{dy}{dx}$ for $x^{\cos x}$. (04)

Q.3 Answer the following questions.

A). (i) Find the equations of the tangent and normal to the curve $2x^2 - xy + 3y^2 = 18$ at (3,1). (04)

(ii) Evaluate $\int xe^x dx$ (03)

B). (i) Evaluate the $\int \frac{x}{(x-1)(x-2)(x-3)} dx$ using partial fractions. (04)

(ii) If the demand function of monopolist is $p = 20 - x$ and its average cost is Rs 5. Find maximum profit. (04)

Q.4 Attempt any two questions. **(Each of 7.5 mark)** (15)

1. If the demand function is $p = \frac{7500 - x^2}{100}$, find the maximum revenue and also find the price for maximum revenue.

2. (i) Check whether $f(x) = \begin{cases} 3x + 2, & x > 1 \\ 5, & x = 1 \end{cases}$ is continuous or not?

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

3. Find the area of the region in the first quadrant enclosed by the x -axis, the line $y = x$, and the circle $x^2 + y^2 = 32$.

4. Evaluate $\frac{dy}{dx}$ for $x = a(\theta + \sin \theta)$, $y = a(1 - \cos \theta)$.