(Common with Bio Medical, Computer, Food
Computer Information, Electrical, Electronics,
Food Processing & Preservation, Instrument, Critical Health Care and
Telecommunication Technologies.)

MATH-233 APPLIED MATHEMATICS – II
PAPER – B (PART – B)

Time: 2:30 Hours   Marks: 60

SECTION – I

Q.1: Write short answer to any Eighteen (18) of the questions: - $18 \times 2 = 36$

1.	Evaluate $\int \left(\sqrt{x} + \dfrac{1}{\sqrt{x}} \right)^2 dx$	**2.**	Evaluate $\int (\sin x - \cos x) dx$
3.	Evaluate $\int \left(3x^2 + 2x + 1 \right) dx$	**4.**	Evaluate $\int \left(\dfrac{\sin^2 x - \cos^2 x}{\sin^2 x \cos^2 x} \right) dx$
5.	Evaluate $\int \left(\sqrt{\sin x} \cos x \right) dx$	**6.**	Evaluate $\int \left(\dfrac{e^x + e^{-x}}{e^x - e^{-x}} \right) dx$
7.	Evaluate $\int \dfrac{dx}{x(1 + \ell nx)}$	**8.**	Evaluate $\int \left(x^2 + 3x + 4 \right)^3 (2x + 3) dx$
9.	Evaluate $\int (x \cos x) dx$	**10.**	Evaluate $\int (\ell n x) dx$
11.	Evaluate $\int_1^3 \left(x^2 \right) dx$	**12.**	Find the area bounded by the line $3x - y - 3 = 0$ and $x = 1$ & $x = 5$.
13.	Evaluate $\int_0^{\pi/4} \dfrac{dx}{\cos^2 x}$	**14.**	Find the solution of $\dfrac{dy}{dx} = \dfrac{y}{4 + x^2}$
15.	Evaluate $\int_0^{\pi/4} \left(1 + \sec^2 x \right) dx$	**16.**	Find the general solution $\left(e^x + e^{-x} \right) \dfrac{dy}{dx} = \left(e^x - e^{-x} \right)$
17.	What are Fourier coefficients.	**18.**	Find Laplace transform of a constant $'k'$.
19.	If $L\left\{ e^{at} \right\} = \dfrac{1}{s - a}$ then what will be the Laplace transformation of $e^{t/2}$.	**20.**	Find the solution of $dy = e^{x+y} dx$
21.	Evaluate $\int 8(2x + 1)^3 dx$	**22.**	Find $\int \left(\dfrac{1}{t^3} + \dfrac{1}{t^2} - 2 \right) dt$
23.	Find $\int \dfrac{1}{25 + x^2} dx$	**24.**	What is the inverse transformation of $\dfrac{1}{s + a}$?
25.	Evaluate $\int \dfrac{dx}{2x + 3}$	**26.**	Evaluate $\int \left(ax^n + bx^m \right) dx$
27.	Evaluate $\int \left(\sin^6 x \cos x \right) dx$		

SECTION – II

Note: Attempt any three (03) questions. $3 \times 8 = 24$

Q.2. **[a]**   Evaluate $\int \left(\dfrac{x^3 - 8}{x + 2} \right) dx$

    [b]   Evaluate $\int \dfrac{dx}{1 - \cos x}$

Q.3. **[a]**   Evaluate $\int \dfrac{x + 2}{\sqrt{2x^2 + 8x + 9}} \, dx$

    [b]   Evaluate $\int \left(x^2 \tan^{-1} x \right) dx$.

Q.4. **[a]**   Evaluate $\int_0^{\pi/4} \left(\tan^2 x \right) dx$

    [b]   Compute the area of the region bounded by the curve y = x⁴ and line y = 8x.

Q.5. **[a]**   Find the general solution of $(x + 1) \dfrac{dy}{dx} = x \left(y^2 + 1 \right)$

    [b]   Integrate $\int \left(\dfrac{\cot x}{\ell n \sin x} \right) dx$

Q.6.   Find $L\{\cos \omega t\}$.

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