ABES Engineering College, Ghaziabad

Department of Applied Sciences & Humanities

Session: 2023-24   **Semester: II**   **Section: All**

Course Code: BAS-203   **Course Name: Engineering Mathematics-II**

Assignment 3

Date of Assignment: **Date of submission:**

S. No	KL	CO	PI	Question	Marks
1	K3	CO2	1.3.1,2.4.4,2.1.3 ,2.4.1	Find the Laplace transform of $e^{-3t}(cos4t + 3sin4t)$.	5
2.	K3	CO2	2.1.3,2.4.1 4.3.4	Find $L\{F(t)\}$, where $F(t) = \begin{cases} t, & 0 < t < 4 \\ 5, & t > 4 \end{cases}$	5
3.	K3	CO2	1.3.1,2.1.3 2.4.1,5.2.2	Find $L\{t\, sin^2\, 3t\}$	5
4.	K3	CO2	1.3.1,2.1.3 2.4.1,2.4.4	Find $L\left\{\frac{cos\,at - cos\,bt}{t}\right\}$	5
5.	K3	CO2	1.3.1,2.1.3 2.4.1,2.4.4	Find $L^{-1}\left\{\frac{2p^2+5p-4}{p^3+p^2-2p}\right\}$	5
6.	K3	CO2	1.3.1,2.1.3 2.4.1,4.3.4	Find $L^{-1}\left\{tan^{-1}(\frac{2}{p^2})\right\}$	5
7.	K3	CO2	1.3.1,2.1.3 2.4.1,2.4.4	Find $L^{-1}\left\{\frac{1}{(p^2+4)^2}\right\}$ by convolution theorem.	5
8.	K3	CO2	1.3.1,2.1.3 2.4.1,2.4.4	Solve $x'' - 2x' + x = e^t$ by laplace transform; $x(0) = 2,\ x'(0) = -1$	5
9.	K3	CO2	1.2.1 2.4.1	Find $L^{-1}\left\{\frac{e^{-2\pi p}}{p(p^2+1)}\right\}$	5
10.	K3	CO2	4.3.3, 1.2.1 4.3.4	Evaluate $\int_0^\infty \frac{e^{-3t}\sin t}{t}\,dt$	5

Answers:

1. $\dfrac{p+15}{p^2+6p+25}$

2. $\dfrac{1}{p^2} + e^{-4p}\left(\dfrac{1}{p} - \dfrac{1}{p^2}\right)$

3. $\dfrac{54(p^2+12)}{p^2(p^2+36)^2}$

4. $\dfrac{1}{2} \log\left\{\dfrac{p^2+b^2}{p^2+a^2}\right\}$

5. $2 + e^t - e^{-2t}$

6. $\dfrac{2}{t}\sin t \, \sin ht$

7. $\dfrac{t}{4}\sin 2t$

8. $x = e^t\left(2 - 3t + \dfrac{1}{2}t^2\right)$

9. $1 - \cos t \; u(t - 2\pi)$

10. $\cot^{-1}3$