Date: 29 October 2024

Bangladesh Army University of Engineering & Technology (BAUET)

Department of Computer Science and Engineering

Second Year Fourth Semester (16th Batch), Summer-2024

Course Code: MATH – 2247

Course Title: Complex Variable and Laplace Transformation

Class Test-03

Full Marks: 15 **Time: 25 Minutes**

N.B.: Answer **Two** questions including **Q.1** and figures shown in the right margin indicate full marks.

Q.1 What do you mean by Laplace transform for a function $G(t)$. Assess the Laplace transform of $9t^2 + 19e^{-t} + 7\cos 5t$. **2+6**

Q.2 If $L\{F(t)\} = f(s)$ and $G(t) = \begin{cases} F(t-b) & \text{when } t > b \\ 0 & \text{when } t < b \end{cases}$, then show that $L\{G(t)\} = e^{-bs} f(s)$. **7**

Q.3 Applying the Laplace transform, evaluate the Laplace transform of $F(t) = 7e^{5t}\sin^2 2t$. **7**

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N.B.: Answer **Two** questions including **Q.1** and figures shown in the right margin indicate full marks.

Q.1 What do you mean by Laplace transform for a function $G(t)$. Assess the Laplace transform of $9t^4 + 19e^{-7t} + 7\cos 9t$. **2+6**

Q.2 If $L\{F(t)\} = f(s)$ and $G(t) = \begin{cases} F(t-m) & \text{when } t > m \\ 0 & \text{when } t < m \end{cases}$, then show that $L\{G(t)\} = e^{-ms} f(s)$. **7**

Q.3 Applying the Laplace transform, evaluate the Laplace transform of $F(t) = 9e^{-9t} \sin^2 2t$. **7**