Ahsanullah Univertsity of Science and Technology Date: 07/09/2020
Department of Arts and Sciences
Programme: B.Sc. in Computer Science and Engineering
Quiz#2 Year: 2019 Semester: Fall
Course Name: Mathematics III, Course Code: Math 2101

Time: 75 min **Marks:30**

Answer all the questions

1. Evaluate $\int_0^{\infty} t\,e^{-3t}\cos t\,dt$ **[6]**

2. Write down the function defined by $f(t)=\begin{cases} 2 & \text{when } t<1 \\ 3t & \text{when } 1\le t<2 \\ e^{2t} & \text{when } t\ge 2 \end{cases}$ into its corresponding unit step function and hence find out its the Laplace transform. **[8]**

3. Using Laplace transform solve the initial value problem $y''+4y=f(t), y(0)=y'(0)=0$ where $f(t)=\begin{cases} 0 & \text{for } t<3 \\ t & \text{for } t\ge 3. \end{cases}$ **[8]**

4. Find *a*) $L^{-1}\left\{\frac{1}{s(s-4)^2}\right\}$; *b*) $L^{-1}\left\{\frac{1}{(s+1)\sqrt{s^2+a^2}}\right\}$. **[8]**

Marks will be deducted for late submission.

Exam Time: 60 min
For Scan and uploading Time :15 min. (max)

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