University of Technology
Department of Communication Engineering
1st Semester Final Exam. 2016-2017

Divisions: (Wireless) & (Optical) Comm. Eng. Sys Year: First
Subject : Mathematics II Time: 3 Hrs.
Examiner: Lec. Lemia abd alameer Date: / 6 / 2017

08 JUN 2017

Note: Answer Only Six Questions

Q1: Prove that :

$$\cos(z) = \frac{e^{iz} + e^{-iz}}{2} \text{ , and } \sin(z) = \frac{e^{iz} - e^{-iz}}{2i}$$ (10 mark)

Q2: Evaluate the following integral: (10 mark)

$$\int \frac{dt}{\sqrt{25t^2 - 9}}$$

Q3: Find the area of parallelogram and triangle determined by (10 mark)

V=i+2j-k and W= -2i+2j+2k

Q4: **A**// Find the value H if : (10 mark)

$$\begin{vmatrix} 3 & 5 & 2 \\ -1 & 2 & 0 \\ 4 & 5 & H \end{vmatrix} = \begin{vmatrix} H+1 & 2 \\ 3 & 10 \end{vmatrix}$$

B// Evaluate the following integral:

$$\int_0^{\pi/6} \cos(\theta) \cdot 4^{-\sin\theta}\, d\theta$$

Q5: Evaluate the following integral: (10 mark)

$$\int \frac{x^2 - 7}{X^3 - 2x^2 - 3X}\, dx$$

Q6: Find the volume of the solid generated by revolving the region between the y-axis and the curve $x = \frac{2}{y}$, $1 \le y \le 4$ about the y-axis . (10 mark)

Q7: Find the inverse of the matrix : (10 mark)

$$A = \begin{bmatrix} 2 & -3 & 1 \\ 0 & 1 & 4 \\ -1 & 2 & 3 \end{bmatrix}$$