


The Islamia University of Bahawalpur

University College of Engineering & Technology

Department of Telecommunication Engineering

Mid-Term Examination, Fall-2019	Time Allowed: 75 minutes
BSc. Telecommunication Engineering, 6 th Semester	Max. Marks: 30
Course: Microwave Engineering	Instructor: Dr. Abdul Aziz

Note: Attempt All Questions.

Sr.	Questions	Marks	CLO
1	Demonstrate that the input impedance of a lossless open circuited transmission line of length l is always a pure reactance.	2	1
2	What is essential difference between a transmission line and an ordinary electrical network? Compare on the basis of frequency.	2	1
3	Compare multisection matching and QWT matching techniques. Elaborate precisely through pros. and cons.	2	1
4	Identify the conditions under which the resultant will be (a) linearly polarized wave (b) circularly polarized wave, If two orthogonal linearly polarized waves are combined.	2	2
5	A plane wave at 10 GHz is normally incident on a thin copper sheet of thickness t . (a) Compute the transmission losses, in dB, of the wave at the air-copper and the copper-air interfaces. (b) If the sheet is to be used as a shield to reduce the level of the transmitted wave by 150 dB, what is the minimum sheet thickness?	4	2
6	A radio transmitter is connected to an antenna having an impedance $60 + j30$ ohm with a 50-ohm coaxial cable. If the 50-ohm transmitter can deliver 40 W when connected to a 50-ohm load, how much power is delivered to the antenna?	3	2
7	A lossless transmission line with characteristic impedance of 60-ohm and electrical length of 0.25λ is terminated with a complex load impedance of $30 + j60$ ohm. Inspect and compare using both Smith chart and analytical formulas following parameters of the transmission line: a) the reflection coefficient at the load b) the SWR on the line c) the reflection coefficient at the input of the line, and d) the input impedance to the line.	5	3
8	Design a quarter-wave matching transformer to match a 60-ohm load to a 90-ohm line. What is the percent bandwidth of this transformer, for $SWR \leq 2$? If the design frequency is 4 GHz.	4	4
9	Design a double-stub tuner using open-circuited stubs with a $\lambda/8$ spacing to match a load admittance $Y_L = (0.4 + j1.2)Y_0$. Please select the lengths for both stubs during design which are suitable for broadband operation.	6	4
<p style="text-align: center;">Wish You Best of Luck! </p>			