

Electronics and Communication Engineering

Fourth Semester

EC 284 – TRANSMISSION LINES AND WAVEGUIDES

(Regulation: R-2004)

Time: Three Hours

Maximum: 100 Marks

(Smith Chart to be provided)

Answer ALL questions

PART -A (10x2=20-Marks)

1. For a transmission line the per unit length parameters are $0.1 \Omega/m$, $0.2 \mu H/m$, $20 pF/m$ and $0.05 mho/m$. Find the propagation constant at 100 MHz.
2. Define reflection and insertion loss.
3. A lossless 100Ω transmission line is terminated with $(75 + j 50) \Omega$. Find the voltage standing wave ratio and VSWR.
4. What are the uses of $\lambda/8$ transmission line?
5. Draw the inverse network of RLC parallel network.
6. A composite low pass filter is to be terminated with 300Ω at a cut off frequency of 4 KHz. Calculate the values of L and C.
7. Find the cutoff wavelength of air filled rectangular waveguide with dimensions 8.6×4.3 cm.
8. What are the applications of rectangular cavity resonator?
9. Define dominant mode. What is the dominant mode for cylindrical waveguide?
10. What field components exist in a cylindrical cavity operating in the TM_{010} mode?

PART- B (5 x 16 = 80 marks)

- 11.a.i. Explain the transmission line parameters of co axial line at radio frequencies. (8)
- ii. Derive the expression for attenuation and phase constants in terms of primary constants. (8)

12.(b)(i). With a neat diagram and vector locations explain the interrupts available in 8085. (8 Marks).

12.(b)(ii). Write short notes on MACROS and Assembler Directives. (8 Marks).

13.(a). With a neat block diagram and interfacing schematic explain the function of the of IC 8279. (16 Marks).

(OR)

13.(b)(i). How do you establish serial communication using 8251? Explain. (8 Marks).

(ii) How do you interface 8255 with microprocessor? Explain. (8 Marks).

4.(a)(i). With a neat diagram explain the internal structure of parallel I/O Ports P0 and P1 of 8051 microcontroller.

(8 Marks).

(ii). With a neat diagram explain the architecture of 8051.

(8 Marks).

(OR)

4.(b)(i). Briefly explain the branching instructions available for 8051.

(8 Marks).

4.(b)(ii). How do you configure the timers and counters available in 8051.

(8 Marks).

5.(a). With a neat functional diagram, show how a 8051 micro controller is used in controlling a stepper motor.

(16 Marks)

(OR)

5.(b)(i). Explain the method of generating PWM using microcontroller.

(8 Marks).

(ii). How do you interface external memory in 8051.

(8 Marks).
