

Code: EC5T2

III B.Tech - I Semester – Regular Examinations - November 2015

**TRANSMISSION LINES AND WAVE GUIDES
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) Using the general line equations, obtain an expression for the input impedance. 7 M
- b) Define loading. Explain the effect of loading and types. 7 M
2. a) A low loss transmission line of 100Ω characteristic impedance is connected to a load of 200Ω calculate the reflection coefficient and SWR. 5 M
- b) What are the parameters of open wire line at high frequencies? 6 M
- c) If $Z_{oc}=50\Omega$ and $Z_{sc}=50\Omega$ find Z_0 . 3 M
3. a) Describe all the characteristics of UHF lines. 5 M

- b) Explain the significance and utility of $\lambda/8$, $\lambda/4$ and $\lambda/2$ lines. 5 M
- c) Write about quarter wave transformer. 4 M
4. a) Explain about propagation of narrow pulses on finite lossless line. 7 M
- b) Write about reflections from discontinuities. 7 M
5. a) For a parallel plane wave guide of 3cm separation, determine all propagation characteristics for a signal at 10GHz for TE_{10} mode. 7 M
- b) Explain the factors on which cutoff frequency of a parallel plate wave guide depends. 7 M
6. a) Draw the field patterns of TE_{10} mode. Explain about dominant mode. 7 M
- b) Find the broad wall dimension of a rectangular wave guide when the cut-off frequency for TE_{10} mode is 3GHz and 30GHz? 7 M
7. a) Explain the current flow in walls of dominant and other important modes for circular Wave guide. 7 M

b) Derive the field expressions for circular wave guide for TM mode. 7 M

8. a) Define a cavity resonator. And write the salient features of it. 7 M

b) Explain about symmetrical and asymmetrical strip line. 7 M