Total No. of printed pages = 3

Et-401/C.Engg-I/4th Sem/2016/N

COMMUNICATION ENGINEERING - I

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *four* from the rest.

1. (a) Fill in the blanks : 1×5=5

(i) The Amplitude Modulation index depends on the amplitude of the message and amplitude of the ———— .

(ii) Bandwidth required for FM wave is ———— than the AM wave.

(iii) With an isotropic source transmitting power *Pt*, the power density at distance *r* is given by ———— .

(iv) The Standing Wave Ratio is the ratio of the values of load resistor and the ————.

[Turn over

(v) In dipole arrays, the parasitic elements shorter than the driven element is called _____.

(b) Answer the following : 3×3=9

(i) Give three objectives for modulating a signal to be transmitted.

(ii) Explain why a co-axial cable is terminated with a terminator.

(iii) Define antenna resistances and antenna efficiency.

2. (a) With necessary diagrams, describe an Amplitude Modulation circuit that gives high power output. 8

(b) Derive an expression to calculate the total power in an AM wave. 6

3. (a) Draw and describe the transistor reactance tube modulator. 8

(b) Derive an expression for FM wave. 6

4. (a) Describe in brief the effect of environment on the propagation of electromagnetic waves. 8

(b) What are the different ways of electromagnetic wave propagation ? Describe in brief the sky wave propagation. 1+5=6

5. (a) With necessary diagrams, describe the wave propagation in a quarter wavelength transmission line. 8

(b) Discuss the following in brief : 3×2=6

(i) Directional coupler

(ii) Double stub.

6. (a) Discuss the resonant and non-resonant antennas and draw their radiation patterns. 8

(b) Explain the effect of height of antennas. 6

7. Write short notes on any *two* : 2×7=14

(a) Balanced modulator

(b) VSWR

(c) Electronic telephone exchange

(d) Grounded antennas.