B.Tech. 5th Semester (ECE) F-Scheme Examination, December–2017

ANTENNA WAVE PROPAGATION AND TV ENGINEERING

Paper–EE-307-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : ***Question No. 1 is compulsory.*** *Attempt any* ***one*** *question from each section.*

1. (i) Differentiate between gain and directive gain of an antenna. 5

   (ii) Explain broadband matching in antenna. 5

   (iii) Discuss properties of parabolic antenna. 5

   (iv) Differentiate between monochrome and color television. 5

Section–A

2. (a) Define aperture and Radiation resistance of an antenna and enumerate the factors which effects them. 10

   (b) State and prove reciprocity theorem of an antenna. 10

3. (a) What is Directivity in an antenna ? How is it different from Directive gain ? 10

   (b) The radiation resistance of an antenna is 72 ohms and loss resistance is 8 ohms. What is the directivity if power gain is 30 ? 10

Section–B

4. Explain wave equations in terms of electric scalar and magnetic vector potential. 20

5. (a) Explain the concept of various impedance in antenna. 10

   (b) Derive the expressions for power radiated and find the radiation resistance of half wave Dipole. 10

Section–C

6. (a) Explain the operating principle of microwave antenna with diagram. 10

   (b) Explain conical antenna with its different applications. 10

7. (a) Explain the principle of pattern multiplication and find the array factor of two element array. 10

   (b) Differentiate between ground wave and sky wave propagation. 10

Section–D

8. (a) Explain the block diagram of monochrome television transmitter in detail. 10

   (b) Explain monochrome picture tube in television. 10

9. Explain image orthicon camera tube with its characteristics. Also discuss how it is different from Vidicon camera tube. 20