Total No. of Questions : 8]

SEAT No. : [ ]

P3331

[Total No. of Pages : 2

[56701-600
B.E. (E & TC)
RADIATION & MICROWAVE TECHNIQUES
(2015 Course) (Semester - I) (404183) (End Sem.)

Time : 2½ Hours] ***[Max. Marks :70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data; if necessary.***
5) ***Use of calculators is allowed.***

Q1) a) Define & explain following Antenna parameters **[8]**

i) Radiation efficiency ii) Gain

iii) Directivity iv) Radiation Pattern

b) Compare infinitesimal dipole, small dipole & Half wave dipole using following parameters **[6]**

i) Electrical length

ii) Current distribution

iii) Electric field intensity

iv) Radiation resistance

v) Directivity

vi) Radiation pattern

c) For an air filled rectangular wave guide of dimensions a=4cms and b=3cms. Find all the modes which will propagate at 5000MHz. **[6]**

OR

Q2) a) Derive fundamental equation for free space transmission. **[6]**

b) Draw radiation pattern of broad side array and explain principle of working. Derive expression for null direction, side lobe maxima. **[8]**

c) Explain following terms with respect to waveguide. **[6]**

i) Cutoff frequency

ii) Dominant mode

iii) Phase velocity

P.T.O.

Q3) a) Draw & explain two hole directional coupler? Also derive s-matrix for it? **[6]**

b) With the help of neat diagram, s-matrix & properties explain H plane Tee? **[8]**

c) Explain the operation of isolator. **[4]**

OR

Q4) a) Explain faraday's rotation principle. Explain in brief the working principle of nonreciprocal 3 port circulator? **[6]**

b) Explain applications of Magic tee. **[6]**

c) With neat schematic diagram explain the operation of Gyrator. Also state S matrix for it. **[6]**

Q5) a) What are linear beam tubes? Explain construction, operation, & applications of two cavity klystron? **[8]**

b) Explain in detail construction, operation, equivalent circuit & applications of PIN diode? **[8]**

OR

Q6) a) Discuss the limitations of conventional tubes at microwave frequencies and how to overcome these limitations? **[8]**

b) Write a short note on Schottky Barrier Diode, also explain difference between P-N junction diode and Schottky Barrier Diode. **[8]**

Q7) a) Explain Microwave Terrestrial Communication System. Also differentiate between Satellite and Terrestrial Communication System. **[8]**

b) Explain any two methods for measuring impendance of a terminating load in a microwave system? **[8]**

OR

Q8) a) Write short note on; **[10]**

i) Effect of microwave radiations on human.

ii) Applications of Microwaves.

b) Calculate Standing Wave Ratio of a transmission system operating at a 10GHz. Assume TE10 wave transmitting inside a wave guide of dimensions a=4cm & b=2.5cm. Distance between twice minima power points is 1mm on slotted line. **[6]**