Total No. of Questions : 4]

SEAT No. :

PC224

[Total No. of Pages : 2

[6361]-90

B.E. (E & TC) (Insem)

RADIATION AND MICROWAVE THEORY

(2019 Pattern) (Semester - VII) (404181)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, jf necessary.***

Q1) a) A free space microwave link operating at 10GHz consists of transmitting and receiving antennas each having gain of 30dB. The distance between the two antennas is 20km and the power radiated by the transmitter antenna is 15W. Calculate the received power and path loss in db. **[5]**

b) Explain the following terms : **[6]**

i) Antenna gain

ii) Radiation Intensity

iii) Directivity

c) Explain radiation pattern of antenna. **[4]**

OR

Q2) a) Define Antenna. Explain types of antenna. **[5]**

b) Explain : **[6]**

i) Bandwidth

ii) Beamwidth

iii) Effective area

c) Describe various field regions of radiation for antennas. **[4]**

P.T.O.

Q3) a) An air filled rectangular waveguide of inside dimensions 7cm × 3.5cm operates in the dominant TE10 mode

i) find the cut off frequency

ii) determine the phase velocity of the wave in the guide at a frequency of 3.5GHZ. **[5]**

b) Describe advantages and applications of Microwaves in detail. **[6]**

c) Explain various types of coupling methods. **[4]**

OR

Q4) a) Write short note on stripline. **[4]**

b) Find the resonant frequencies of the dominant mode of an air filled rectangular cavity of dimensions 5cm × 4cm × 2.5cm. The dominant mode for rectangular cavity resonator is TE_{101}. **[4]**

c) What is a waveguide? Describe the following parameters of waveguide : **[7]**

i) Cutoff frequency

ii) Group velocity

iii) Phase velocity

iv) Guided wavelength

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