Code : 041811

B.Tech. 8th Semester Exam., 2017

Microwave Engineering

Time : 3 hours   *Full Marks : 70*

Instructions :

(i)   *The marks are indicated in the right-hand margin.*

(ii)   *There are **NINE** questions in this paper.*

(iii) *Attempt **FIVE** questions in all.*

(iv)   *Questions No. 1 is compulsory.*

1. Fill in the blanks of the following (any seven)   (2×7)

    (a) A magic Tee is a .... splitter.

    (b) The efficiency of reflex klystron is ....

    (c) VSWR ranges from .... to ....

    (d) A magnetron is a .... device.

    (e) Log Periodic antenna is .... antenna.

    (f) In 4/6 GHz microwave band 6 GHz is ....
         frequency.

    (g) Probe coupling is principally .... coupling.

    (h) ATWT works as an ....

    (i) Microwave experiments are performed in ....
         frequency range.

    (j) IMPATT is .... resistance diode.

P.T.O.

2. (a) Discuss the limitations of conventional tube at microwave frequencies.

(b) Discuss the advantages of microwaves.

8+6

3. (a) Derive the expression for round trip d.c. transit angle for reflex klystron and express the repeller voltage in terms of accelerating voltage.

(b) Obtain the theoretical efficiency of reflex klystron.

9+5

4. (a) Derive Hull's cut-off magnetic flux density for cylindrical magnetron.

(b) Discuss mode jumping in magnetron.   8+5

5. (a) A helical TWT has diameter of 2 mm with 50 turns per c.m. calculate axial phase velocity and the anode voltage at which TWT can be operated for useful gain.

(b) Describe about Backward wave oscillator.

7+7

6. (a) Discuss the working of IMPATT diode.

(b) An IMPATT diode has a drift length of 2 μm determine the drift time of the Carrier and the operating frequency of the diode.   9+5

7. Describe the following:

(a) Magic Tee

(b) Isolator

(c) Phase shifter

5+5+4

8. (a) Discuss slot antenna.

(b) Establish microwave link equation.   7+7=14

9. (a) Discuss about antenna noise temperature and noise factor.

(b) Discuss direct reading frequency meter.

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