

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

Electronics and Communication Engineering

VII Semester

EC9401 RF and Microwave Engineering

(Regulation 2008)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

- 1) Write the S matrix of a three port circulator
- 2) Draw the equivalent circuit of a $\lambda/4$ -resistor at high frequency.
- 3) Define Noise figure .
- 4) Specify the advantages of microstrip matching networks
- 5) Indicate the role of tuning screws in impedance matching.
- 6) What are the applications of Schottky diode
- 7) Can a two cavity Klystron be made to work as an oscillator? Give reasons for your answer
- 8) What is strapping in magnetron
- 9) Define Q factor and give its significance
- 10) outline the principle of impedance measurement methods.

Part – B (5 x 16 = 80 marks)

- 11.i) State and explain the properties of S-matrix **(8)**
ii) Derive the S-matrix of a Directional coupler **(8)**

12.a) Explain the stabilization methods and discuss the gain considerations of a microwave amplifier

(OR)

12.b) What is a matching network .Design a microstrip matching network for a microwave transistor amplifier whose reflection coefficients for a good match in a 50 Ohm system are $\Gamma_s=0.614 \angle 160^\circ$ and $\Gamma_L=0.682 \angle 97^\circ$

13a) Describe the PI mode of oscillation in Magnetron with suitable diagrams.

(OR)

13 b) Describe the working of a TWT amplifier. Compare its operation with Klystron amplifier

14a)Derive the Manley-Rowe relation and physically interpret these relations

(OR)

14b)i)Draw the construction and explain the working of i)IMPATT diode. ii) PIN diode

15a) Describe any two methods of microwave power measurement

(OR)

15b)i)Describe in detail the measurement procedure for loaded and unloaded Q