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**B.E./B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2011  
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH**

**SIXTH SEMESTER**

**EC 385 – RF AND MICROWAVE ENGINEERING**

**(REGULATIONS 2004)**

**Duration: 3 Hours**

**Max.marks: 100**

**Answer ALL questions**

**PART-A**

**(10x2=20Marks)**

1. Draw the high frequency equivalent of capacitor.
2. List the properties of S-matrix.
3. Write the characteristics of matched termination.
4. Draw a complex matched transmission line system.
5. Write the equation for gain of parametric down converter.
6. What are the three categories of microwave transistors?
7. Why is TWTA called a broad band microwave amplifier?
8. Why is magnetron called a crossed field tube?
9. Draw the basic experimental set-up for VSWR measurement.
10. Define external Q.

**PART-B**

**(5x16=80 Marks)**

- 11.(i) Explain the characteristics of coaxial and strip lines. (8)  
(ii) Discuss the medical applications of microwaves. (8)
- 12.(a) Discuss the principle of four port circulator and Faraday rotation isolator. (16)  
**OR**
- 12.(b) Explain the types of attenuators and derive the S-matrix of a directional coupler. (16)
- 13.(a) Describe the physical structure, negative resistance, power output and efficiency of IMPATT diodes. (16)  
**OR**
- 13.(b) Explain power gain, noise figure and bandwidth of the following:  
(i) Parametric up converter. (5)  
(ii) Negative resistance parametric amplifier. (6)  
(iii) Degenerate parametric amplifier. (5)
- 14.(a) Explain the oscillation mechanism and oscillation modes of reflex klystron oscillator. (16)  
**OR**
- 14.(b) Explain the density modulation and operation mechanism of two cavity klystron amplifier. (16)
- 15.(a) With block diagrams explain the operation of spectrum analyzer and network analyzer. (16)  
**OR**
- 15.(b) Explain the operation of sensors used for power measurement. (16)

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