Code No: RR320404 **RR** **Set No. 2**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Write short notes on "Magnetron Oscillator", and its applications.
   (b) A cylindrical magnetron is operated at 5 GHz with a= 3 cm, b= 5 cm, N=16, V_0 = 20KV, B_0 = 0.05 T calculate hull cut off voltage and cut off magnetic flux density and Hatree voltages. [8+8]
2. (a) Write short notes on " Microwave frequency measurement"
   (b) Draw a neat sketch of a microwave test bench for making impedance measurements, naming the various components connected. [8+8]
3. (a) With the aid of neat sketches, describe the construction and operation of TWT.
   (b) Starting with the assumption that there are three forward traveling waves in TWT, derive an expression for power gain of the tube.. [6+10]
4. (a) Find the resonant frequency of rectangular waveguide resonator with dimensions of 2 cm x 1 cm x 2 cm for TE_{101} mode.
   (b) Discuss the merits demerits and applications of rectangular wave guides and circular wave guides. [8+8]
5. (a) What is a parametric amplifier? How is a varactor diode is made use of in building a parametric amplifier?
   (b) Describe the operating principle of IMPATT diodes, giving their structure and characteristics. [8+8]
6. (a) Discuss the advantages of microwaves over low frequencies.
   (b) A two cavity Klystron amplifier has the following parameters.
   V_0 = 1200V, I_0 = 25mA, R_o = 30 KΩ, f= 10GHz, d= 1 mn, L = 4 cm, R_{sh} = 30Ω Calculate
      i. the input voltage for maximum output voltage
      ii. the Voltage gain in decibels
      iii. Efficiency.. [7+9]
7. (a) What are ferrites? What property do they have different from ordinary conductors or insulators?
   (b) Describe any one microwave component which make use of Faraday rotation principle, with neat sketches. [8+8]

8. (a) Explain the working of two hole directional coupler with a neat diagram.
   (b) Explain about E plane Tee junction with a neat sketch. Why it is called a series Tee? [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR320404 **RR** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Write short notes on " Microwave frequency measurement"
   (b) Draw a neat sketch of a microwave test bench for making impedance measurements, naming the various components connected. [8+8]
2. (a) Explain the working of two hole directional coupler with a neat diagram.
   (b) Explain about E plane Tee junction with a neat sketch. Why it is called a series Tee? [8+8]
3. (a) Discuss the advantages of microwaves over low frequencies.
   (b) A two cavity Klystron amplifier has the following parameters.
   V_0 = 1200V, I_0 = 25mA, R_o = 30 KΩ, f= 10GHz, d= 1 mn, L = 4 cm, R_{sh} = 30Ω Calculate
      i. the input voltage for maximum output voltage
      ii. the Voltage gain in decibels
      iii. Efficiency..
   [7+9]
4. (a) Find the resonant frequency of rectangular waveguide resonator with dimensions of 2 cm x 1 cm x 2 cm for TE_{101} mode.
   (b) Discuss the merits demerits and applications of rectangular wave guides and circular wave guides. [8+8]
5. (a) With the aid of neat sketches, describe the construction and operation of TWT.
   (b) Starting with the assumption that there are three forward traveling waves in TWT, derive an expression for power gain of the tube.. [6+10]
6. (a) What are ferrites? What property do they have different from ordinary conductors or insulators?
   (b) Describe any one microwave component which make use of Faraday rotation principle, with neat sketches. [8+8]
7. (a) What is a parametric amplifier? How is a varactor diode is made use of in building a parametric amplifier?
   (b) Describe the operating principle of IMPATT diodes, giving their structure and characteristics. [8+8]
8. (a) Write short notes on "Magnetron Oscillator", and its applications.

(b) A cylindrical magnetron is operated at 5 GHz with a= 3 cm, b= 5 cm, N=16, V_0 = 20KV, B_0 = 0.05 T calculate hull cut off voltage and cut off magnetic flux density and Hatree voltages. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR320404 **RR** **Set No. 1**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Write short notes on " Microwave frequency measurement"
   (b) Draw a neat sketch of a microwave test bench for making impedance measurements, naming the various components connected. [8+8]
2. (a) Explain the working of two hole directional coupler with a neat diagram.
   (b) Explain about E plane Tee junction with a neat sketch. Why it is called a series Tee? [8+8]
3. (a) With the aid of neat sketches, describe the construction and operation of TWT.
   (b) Starting with the assumption that there are three forward traveling waves in TWT, derive an expression for power gain of the tube.. [6+10]
4. (a) What are ferrites? What property do they have different from ordinary conductors or insulators?
   (b) Describe any one microwave component which make use of Faraday rotation principle, with neat sketches. [8+8]
5. (a) Write short notes on "Magnetron Oscillator", and its applications.
   (b) A cylindrical magnetron is operated at 5 GHz with a= 3 cm, b= 5 cm, N=16, V_0 = 20KV, B_0 = 0.05 T calculate hull cut off voltage and cut off magnetic flux density and Hatree voltages. [8+8]
6. (a) What is a parametric amplifier? How is a varactor diode is made use of in building a parametric amplifier?
   (b) Describe the operating principle of IMPATT diodes, giving their structure and characteristics. [8+8]
7. (a) Discuss the advantages of microwaves over low frequencies.
   (b) A two cavity Klystron amplifier has the following parameters.
   V_0 = 1200V, I_0 = 25mA, R_o = 30 KΩ, f= 10GHz, d= 1 mn, L = 4 cm, R_{sh} = 30Ω Calculate
      i. the input voltage for maximum output voltage
      ii. the Voltage gain in decibels
      iii. Efficiency.. [7+9]

8. (a) Find the resonant frequency of rectangular waveguide resonator with dimensions of 2 cm x 1 cm x 2 cm for TE_{101} mode.

   (b) Discuss the merits demerits and applications of rectangular wave guides and circular wave guides. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: RR320404 **RR** **Set No. 3**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain the working of two hole directional coupler with a neat diagram.
   (b) Explain about E plane Tee junction with a neat sketch. Why it is called a series Tee? [8+8]
2. (a) What are ferrites? What property do they have different from ordinary conductors or insulators?
   (b) Describe any one microwave component which make use of Faraday rotation principle, with neat sketches. [8+8]
3. (a) Write short notes on "Magnetron Oscillator", and its applications.
   (b) A cylindrical magnetron is operated at 5 GHz with a= 3 cm, b= 5 cm, N=16, V_0 = 20KV, B_0 = 0.05 T calculate hull cut off voltage and cut off magnetic flux density and Hatree voltages. [8+8]
4. (a) Discuss the advantages of microwaves over low frequencies.
   (b) A two cavity Klystron amplifier has the following parameters.
   V_0 = 1200V, I_0 = 25mA, R_o = 30 KΩ, f= 10GHz, d= 1 mn, L = 4 cm, R_{sh} = 30Ω Calculate
      i. the input voltage for maximum output voltage
      ii. the Voltage gain in decibels
      iii. Efficiency.. [7+9]
5. (a) Write short notes on " Microwave frequency measurement"
   (b) Draw a neat sketch of a microwave test bench for making impedance measurements, naming the various components connected. [8+8]
6. (a) With the aid of neat sketches, describe the construction and operation of TWT.
   (b) Starting with the assumption that there are three forward traveling waves in TWT, derive an expression for power gain of the tube.. [6+10]
7. (a) What is a parametric amplifier? How is a varactor diode is made use of in building a parametric amplifier?
   (b) Describe the operating principle of IMPATT diodes, giving their structure and characteristics. [8+8]

8. (a) Find the resonant frequency of rectangular waveguide resonator with dimensions of 2 cm x 1 cm x 2 cm for TE_{101} mode.

   (b) Discuss the merits demerits and applications of rectangular wave guides and circular wave guides. [8+8]

⋆ ⋆ ⋆ ⋆ ⋆