

Code No: NR320403

NR

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) Explain the methods of excitation and tuning of a cavity resonator.  
(b) Define and distinguish between the different types of microwave attenuators. [8+8]
2. (a) Derive the relationship between guide wavelength, cut-off wavelength and free space wavelength.  
(b) Give the experimental procedure to verify the above relationship. [8+8]
3. (a) Explain how a Tunnel diode can be used in negative resistance amplifiers.  
(b) Draw the equivalent circuit of a PIN diode under different biasing configurations and explain the parameters. [10+6]
4. (a) Give the classification of solid state Microwave devices along with examples?  
(b) Why conventional tubes and solid state devices can not be used at microwave frequencies? [8+8]
5. (a) Draw the applegate diagram of a Reflex Klystron and explain velocity modulation and bunching.  
(b) Describe the construction of a multicavity Klystron and the coupling techniques to be adopted for more interaction between RF electron beams. [8+8]
6. What is a Gyrator? Describe how a 4 port circulator can be realized by using Gyrator and Hybrids? Write down the scattering matrix for an ideal Gyrator, and the 4 port circulator. [16]
7. (a) What are the power capabilities and practical applications of various types of TWT S. What are the major advantages of CW and pulsed TWT S?  
(b) Explain the construction and principle of operation of coupled cavity TWT.  
(c) Describe the methods to avoid oscillations in a TWT amplifier. [6+5+5]
8. State the types of losses in a micro stripline. Explain each of them. [16]

\*\*\*\*\*

Code No: NR320403

NR

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. State the types of losses in a micro stripline. Explain each of them. [16]
2. (a) Draw the applegate diagram of a Reflex Klystron and explain velocity modulation and bunching.  
(b) Describe the construction of a multicavity Klystron and the coupling techniques to be adopted for more interaction between RF electron beams. [8+8]
3. (a) Give the classification of solid state Microwave devices along with examples?  
(b) Why conventional tubes and solid state devices can not be used at microwave frequencies? [8+8]
4. (a) Explain the methods of excitation and tuning of a cavity resonator.  
(b) Define and distinguish between the different types of microwave attenuators. [8+8]
5. (a) Explain how a Tunnel diode can be used in negative resistance amplifiers.  
(b) Draw the equivalent circuit of a PIN diode under different biasing configurations and explain the parameters. [10+6]
6. (a) What are the power capabilities and practical applications of various types of TWTS. What are the major advantages of CW and pulsed TWTS?  
(b) Explain the construction and principle of operation of coupled cavity TWT.  
(c) Describe the methods to avoid oscillations in a TWT amplifier. [6+5+5]
7. (a) Derive the relationship between guide wavelength, cut-off wavelength and free space wavelength.  
(b) Give the experimental procedure to verify the above relationship. [8+8]
8. What is a Gyrator? Describe how a 4 port circulator can be realized by using Gyrator and Hybrids? Write down the scattering matrix for an ideal Gyrator, and the 4 port circulator. [16]

\*\*\*\*\*

Code No: NR320403

NR

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) Derive the relationship between guide wavelength, cut-off wavelength and free space wavelength.  
(b) Give the experimental procedure to verify the above relationship. [8+8]
2. State the types of losses in a micro stripline. Explain each of them. [16]
3. (a) What are the power capabilities and practical applications of various types of TWTS. What are the major advantages of CW and pulsed TWTS?  
(b) Explain the construction and principle of operation of coupled cavity TWT.  
(c) Describe the methods to avoid oscillations in a TWT amplifier. [6+5+5]
4. (a) Explain how a Tunnel diode can be used in negative resistance amplifiers.  
(b) Draw the equivalent circuit of a PIN diode under different biasing configurations and explain the parameters. [10+6]
5. What is a Gyrator? Describe how a 4 port circulator can be realized by using Gyrator and Hybrids? Write down the scattering matrix for an ideal Gyrator, and the 4 port circulator. [16]
6. (a) Explain the methods of excitation and tuning of a cavity resonator.  
(b) Define and distinguish between the different types of microwave attenuators. [8+8]
7. (a) Draw the applegate diagram of a Reflex Klystron and explain velocity modulation and bunching.  
(b) Describe the construction of a multicavity Klystron and the coupling techniques to be adopted for more interaction between RF electron beams. [8+8]
8. (a) Give the classification of solid state Microwave devices along with examples?  
(b) Why conventional tubes and solid state devices can not be used at microwave frequencies? [8+8]

\*\*\*\*\*

Code No: NR320403

NR

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. State the types of losses in a micro stripline. Explain each of them. [16]
2. (a) Draw the applegate diagram of a Reflex Klystron and explain velocity modulation and bunching.  
(b) Describe the construction of a multicavity Klystron and the coupling techniques to be adopted for more interaction between RF electron beams. [8+8]
3. (a) Give the classification of solid state Microwave devices along with examples?  
(b) Why conventional tubes and solid state devices can not be used at microwave frequencies? [8+8]
4. (a) Explain how a Tunnel diode can be used in negative resistance amplifiers.  
(b) Draw the equivalent circuit of a PIN diode under different biasing configurations and explain the parameters. [10+8]
5. What is a Gyrator? Describe how a 4 port circulator can be realized by using Gyrator and Hybrids? Write down the scattering matrix for an ideal Gyrator, and the 4 port circulator. [16]
6. (a) Explain the methods of excitation and tuning of a cavity resonator.  
(b) Define and distinguish between the different types of microwave attenuators. [8+8]
7. (a) Derive the relationship between guide wavelength, cut-off wavelength and free space wavelength.  
(b) Give the experimental procedure to verify the above relationship. [8+8]
8. (a) What are the power capabilities and practical applications of various types of TWTS. What are the major advantages of CW and pulsed TWTS?  
(b) Explain the construction and principle of operation of coupled cavity TWT.  
(c) Describe the methods to avoid oscillations in a TWT amplifier. [6+5+5]

\*\*\*\*\*