

Code No: 07A30401

R07**Set No. 2**

II B.Tech I Semester Examinations, MAY 2011

PULSE AND DIGITAL CIRCUITS

Common to Electronics And Instrumentation Engineering, Electrical And
Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Draw the circuit diagram of diode - resistor logic AND gate and explain its operation.
- (b) Design a transistor inverter circuit (NOT gate) with the following specifications. $V_{CC} = V_{BB} = 10V$, $i_{csat} = 10mA$; $h_{femin} = 30$; the input is varying between 0 and 10V. Assume typical junction voltages of npn silicon transistor. [16]
2. (a) Give the circuits of different types of shunt clippers and explain their operation with the help of their transfer characteristics.
- (b) Draw the diode differentiator comparator circuit and explain the operation of it when ramp input signal is applied. [8+8]
3. (a) List out the applications of sweep circuits.
- (b) Distinguish between voltage and current sweep circuits.
- (c) Draw the circuit of a linear current sweep and explain its operation with waveforms. Explain the necessity of generating trapezoidal waveform. [4+4+8]
4. (a) Describe the working of a four diode gate with necessary diagrams and equations.
- (b) For the four diode gate, $R_L = R_C = 100k \Omega$ and that $R_2 = 2k\Omega$, $R_F = 50\Omega$. For $V_s = 25V$, compute gain A, V_{min} and $(V_c)_{min}$. Compute $(V_n)_{min}$ for $V = V_{min}$. [16]
5. (a) Design an Schmitt trigger circuit NPN silicon transistors to meet the following specifications. $V_{cc} = 12v$, $UTP = 4v$, $LTP = 2V$, $h_{FE} = 60$, $I_{C2} = 3 \mu A$. Use relevant assumptions and the empirical relationships.
- (b) Give the Applications of Schmitt trigger. [12+4]
6. Write short notes on the following
 - (a) Attenuators
 - (b) RLC Ringing circuit.
 - (c) RC double differentiator [5+6+5]
7. (a) Describe the switching times of BJT by considering charge distribution across the base region. Explain this for cut-off, active and saturation region.

Code No: 07A30401

R07

Set No. 2

- (b) Give the expressions for rise time & fall time in terms of transistor parameters and operating currents. [8+8]
8. (a) What is phase delay and phase jitter?
(b) Explain the method of synchronization of a sinusoidal oscillator with pulses.
(c) Explain the frequency division in sweep circuit. [4+8+4]

FIRSTRANKER

Code No: 07A30401

R07**Set No. 4**

II B.Tech I Semester Examinations, MAY 2011

PULSE AND DIGITAL CIRCUITSCommon to Electronics And Instrumentation Engineering, Electrical And
Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Give the circuits of different types of shunt clippers and explain their operation with the help of their transfer characteristics.
- (b) Draw the diode differentiator comparator circuit and explain the operation of it when ramp input signal is applied. [8+8]
2. (a) Design an Schmitt trigger circuit NPN silicon transistors to meet the following specifications. $V_{CC} = 12V$, $UTP = 4V$, $LTP = 2V$, $h_{FE} = 60$, $I_{C2} = 3 \mu A$. Use relevant assumptions and the empirical relationships.
- (b) Give the Applications of Schmitt trigger. [12+4]
3. (a) Describe the switching times of BJT by considering charge distribution across the base region. Explain this far cut-off, active and saturation region.
- (b) Give the expressions for rise time & fall time in terms of transistor parameters and operating currents. [8+8]
4. Write short notes on the following
 - (a) Attenuators
 - (b) RLC Ringing circuit.
 - (c) RC double differentiator [5+6+5]
5. (a) Draw the circuit diagram of diode - resistor logic AND gate and explain its operation.
- (b) Design a transistor inverter circuit (NOT gate) with the following specifications. $V_{CC} = V_{BB} = 10V$, $i_{csat} = 10mA$; $h_{femin} = 30$; the input is varying between 0 and 10V. Assume typical junction voltages of npn silicon transistor. [16]
6. (a) List out the applications of sweep circuits.
- (b) Distinguish between voltage and current sweep circuits.
- (c) Draw the circuit of a linear current sweep and explain its operation with waveforms. Explain the necessity of generating trapezoidal waveform. [4+4+8]
7. (a) What is phase delay and phase jitter?
- (b) Explain the method of synchronization of a sinusoidal oscillator with pulses.
- (c) Explain the frequency division in sweep circuit. [4+8+4]

Code No: 07A30401

R07

Set No. 4

8. (a) Describe the working of a four diode gate with necessary diagrams and equations.
- (b) For the four diode gate, $R_L = R_C = 100k \Omega$ and that $R_2 = 2k\Omega$, $R_F = 50\Omega$. For $V_s = 25V$, compute gain A , V_{min} and $(V_c)_{min}$. Compute $(V_n)_{min}$ for $V = V_{min}$.

[16]

FIRSTRANKER

Code No: 07A30401

R07**Set No. 1**

II B.Tech I Semester Examinations, MAY 2011

PULSE AND DIGITAL CIRCUITSCommon to Electronics And Instrumentation Engineering, Electrical And
Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Write short notes on the following
 - (a) Attenuators
 - (b) RLC Ringing circuit.
 - (c) RC double differentiator [5+6+5]
2. (a) List out the applications of sweep circuits.
 (b) Distinguish between voltage and current sweep circuits.
 (c) Draw the circuit of a linear current sweep and explain its operation with waveforms. Explain the necessity of generating trapezoidal waveform. [4+4+8]
3. (a) Describe the switching times of BJT by considering charge distribution across the base region. Explain this for cut-off, active and saturation region.
 (b) Give the expressions for rise time & fall time in terms of transistor parameters and operating currents. [8+8]
4. (a) Draw the circuit diagram of diode - resistor logic AND gate and explain its operation.
 (b) Design a transistor inverter circuit (NOT gate) with the following specifications. $V_{CC} = V_{BB} = 10V$, $i_{csat} = 10mA$; $h_{femin} = 30$; the input is varying between 0 and 10V. Assume typical junction voltages of npn silicon transistor. [16]
5. (a) Give the circuits of different types of shunt clippers and explain their operation with the help of their transfer characteristics.
 (b) Draw the diode differentiator comparator circuit and explain the operation of it when ramp input signal is applied. [8+8]
6. (a) What is phase delay and phase jitter?
 (b) Explain the method of synchronization of a sinusoidal oscillator with pulses.
 (c) Explain the frequency division in sweep circuit. [4+8+4]
7. (a) Describe the working of a four diode gate with necessary diagrams and equations.

Code No: 07A30401

R07

Set No. 1

- (b) For the four diode gate, $R_L = R_C = 100k \Omega$ and that $R_2 = 2k\Omega$, $R_F = 50\Omega$. For $V_s = 25V$, compute gain A , V_{min} and $(V_c)_{min}$. Compute $(V_n)_{min}$ for $V = V_{min}$. [16]
8. (a) Design an Schmitt trigger circuit NPN silicon transistors to meet the following specifications. $V_{cc} = 12v$, $UTP = 4v$, $LTP = 2V$, $h_{FE} = 60$, $I_{C2} = 3 \mu A$. Use relevant assumptions and the empirical relationships.
- (b) Give the Applications of Schmitt trigger. [12+4]

FIRSTRANKER

Code No: 07A30401

R07**Set No. 3**

II B.Tech I Semester Examinations, MAY 2011

PULSE AND DIGITAL CIRCUITS

Common to Electronics And Instrumentation Engineering, Electrical And
Electronics Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe the working of a four diode gate with necessary diagrams and equations.
(b) For the four diode gate, $R_L = R_C = 100k \Omega$ and that $R_2 = 2k\Omega$, $R_F = 50\Omega$. For $V_s = 25V$, compute gain A , V_{min} and $(V_c)_{min}$. Compute $(V_n)_{min}$ for $V = V_{min}$. [16]
2. (a) Describe the switching times of BJT by considering charge distribution across the base region. Explain this for cut-off, active and saturation region.
(b) Give the expressions for rise time & fall time in terms of transistor parameters and operating currents. [8+8]
3. Write short notes on the following
 - (a) Attenuators
 - (b) RLC Ringing circuit.
 - (c) RC double differentiator [5+6+5]
4. (a) Design an Schmitt trigger circuit using NPN silicon transistors to meet the following specifications. $V_{CC} = 12V$, $UTP = 4V$, $LTP = 2V$, $h_{FE} = 60$, $I_{C2} = 3 \mu A$. Use relevant assumptions and the empirical relationships.
(b) Give the Applications of Schmitt trigger. [12+4]
5. (a) Give the circuits of different types of shunt clippers and explain their operation with the help of their transfer characteristics.
(b) Draw the diode differentiator comparator circuit and explain the operation of it when ramp input signal is applied. [8+8]
6. (a) Draw the circuit diagram of diode - resistor logic AND gate and explain its operation.
(b) Design a transistor inverter circuit (NOT gate) with the following specifications. $V_{CC} = V_{BB} = 10V$, $i_{csat} = 10mA$; $h_{femin} = 30$; the input is varying between 0 and 10V. Assume typical junction voltages of npn silicon transistor. [16]
7. (a) What is phase delay and phase jitter?

Code No: 07A30401

R07

Set No. 3

- (b) Explain the method of synchronization of a sinusoidal oscillator with pulses.
- (c) Explain the frequency division in sweep circuit. [4+8+4]
8. (a) List out the applications of sweep circuits.
- (b) Distinguish between voltage and current sweep circuits.
- (c) Draw the circuit of a linear current sweep and explain its operation with waveforms. Explain the necessity of generating trapezoidal waveform. [4+4+8]

FIRSTRANKER