



B.Tech III Semester Supplementary Examinations, July 2022
PULSE AND DIGITAL CIRCUITS

ECE

Maximum Marks: 70

Date: 29.07.2022 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Define the rise time and write the expression of it.
- 2 Why are RC circuits commonly used compared to RL circuits?
- 3 What are the applications of voltage comparators?
- 4 What are the applications of clamping circuit?
- 5 Explain how a diode act as a switch?
- 6 Compare Miller and Bootstrap time-base generators.
- 7 What are the applications of a Bistable-Multivibrator?
- 8 Write down the applications of Schmitt trigger?
- 9 What is pedestal?
- 10 Give some applications of logic gates.

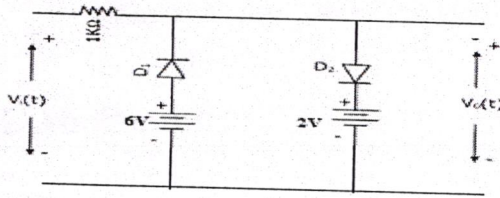
Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 Derive the expression for percentage tilt for a square wave output of RC high pass circuit. 10
OR
- 12 a) Explain the operation of RLC series and parallel circuits. 06
b) Prove that a low pass RC circuit with a large time constant acts as an integrator. 04
- 13 Draw the basic circuit diagram of negative peak clamper circuit and explain its operation. 10
OR
- 14 a) With the help of neat circuit diagram, explain the working of two level diode clipper. 05

- b) Determine V_o for the network shown in figure, for the given 16V peak to peak sinusoidal input and also sketch the transfer characteristics. 05



- 15 Write a short notes on Transistor switching times. 10
OR
- 16 a) With the help of a neat circuit diagram, explain the working of a transistor Miller time base generator. 07
b) Explain the methods of Linearity improvement. 03
- 17 What is Monostable Multivibrator? Explain the principle of operation of a monostable multivibrator with the help of neat circuit diagram. 10
OR
- 18 a) Design a Schmitt trigger circuit using npn silicon transistors with $V_{BE} = 0.7V$, $V_{CE(sat)} = 0.2V$, $h_{fe(min)} = 60$ and $I_{C(ON)} = 3mA$ to meet the following specifications: $V_{CC} = 12V$, upper threshold voltage, $V_{UT} = 4V$, lower threshold voltage specifications: $V_{CC} = 12V$, upper threshold voltage, $V_{UT} = 4V$, lower threshold voltage $V_{LT} = 2V$. 06
b) Explain how the commutating capacitors will increase the speed of a fixed-bias binary. 04
- 19 a) Describe the working of a 4-Diode sampling gate with necessary diagram & equations. 06
b) Explain the working of bi-directional gate using transistors. 04
OR
- 20 Draw the circuit diagram of a positive 3 i/p NAND gate in DTL logic and explain its working. 10