

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (Sem.-4)
PULSE WAVE SHAPING AND SWITCHING

Subject Code : BTEC-405

M.Code : 57597

Date of Examination : 12-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.
4. Any missing data can be assumed appropriately.

SECTION-A

1. Answer briefly :

- a) Draw the input and output waveforms when sine wave is given to the pure capacitor.
- b) What is the difference between r.m.s. value and peak value?
- c) Define the role of negative feedback in electronics circuits.
- d) What do you mean by astable multivibrator?
- e) Define LTP in Schmitt trigger.
- f) Only write the expression for gate width in monostable multivibrator.
- g) Define cut in voltage in germanium diode.
- h) Draw the output response if square wave is applied to the RC low pass circuit.
- i) Only draw a circuit that sliced off the positive cycle.
- j) List the applications of an attenuator.

SECTION-B

2. Why RC circuits are commonly used as compared to RL circuits?
3. Differentiate between clipper and clamper circuits.
4. For a common emitter circuit, $V_{CC} = 24\text{ V}$, $R_C = 4\text{ k}\Omega$ and $I_B = 0.4\text{ mA}$.
 - a) Determine the value of H_{FE} (min) for saturation to occur,
 - b) If R_C is changed to 2.4Ω , will the transistor be saturated?
5. Define Delay time, rise & fall time and storage time with waveform in transistor switching.
6. Explain the working of an operational amplifier comparator.

SECTION C

7. The fixed-bias bistable multivibrator uses NPN transistors with $h_{fe} = 50$. The circuit parameters are $V_{CC} = 40\text{ V}$, $V_{BB} = 3\text{ V}$, $R_C = 5\text{ k}\Omega$, $R_1 = 10\text{ k}\Omega$, $R_2 = 20\text{ k}\Omega$, $V_{CE(sat)} = 0.6\text{ V}$, and $V_{BE(sat)} = 0.9\text{ V}$. Find the stable state voltages and currents.
8. With the help of circuit diagrams, expressions and waveforms, explain the working of monostable multivibrator.
9. Explain any two with necessary diagrams;
 - a) Series resonant circuits.
 - b) Astable collector coupled multivibrator.
 - c) Linear and nonlinear wave shaping circuits.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.