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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (2012 to 2017) / (ETE) (Sem.-4)

PULSE WAVE SHAPING AND SWITCHING

Subject Code : BTEC-405

M.Code : 57597

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**Q1. Answer briefly :**

- a) Draw the input and output waveforms when sine wave is given to the pure inductor.
- b) What is the difference between average value and peak value?
- c) Define the role of positive feedback in electronic circuits.
- d) What do you mean by bistable multivibrator?
- e) Define UTP in Schmitt trigger.
- f) Only write the expression for gate width in monostable multivibrator.
- g) Define the cut in voltage in silicon diode.
- h) Draw the output response if square wave is applied to the RC high pass circuit.
- i) Only draw a circuit that sliced off the negative cycle.
- j) List the applications of operational amplifier comparator.

SECTION-B

- Q2. Define Delay time, rise & fall time and storage time with waveform in transistor switching.
- Q3. Differentiate between linear and non-linear wave-shaping circuits.
- Q4. For a common emitter circuit, $V_{CC} = 18\text{ V}$, $R_C = 4\text{ k}\Omega$ and $I_B = 0.5\text{ mA}$.
- a) Determine the value of h_{fe} (min) for saturation to occur.
 - b) If R_C is changed to $1.5\text{ k}\Omega$, will the transistor be saturated?
- Q5. Explain how a high pass RC circuit works as a differentiator.
- Q6. Explain the working of attenuator.

SECTION-C

- Q7. The fixed-bias bistable multivibrator uses NPN transistors with $h_{fe} = 25$. The circuit parameters are $V_{CC} = 20\text{ V}$, $V_{BB} = 3\text{ V}$, $R_C = 2\text{ k}\Omega$, $R_1 = 7\text{ k}\Omega$, $R_2 = 10\text{ k}\Omega$, $V_{CE(sat)} = 0.5\text{ V}$, and $V_{BE(sat)} = 0.8\text{ V}$. Find the stable state voltages and currents.
- Q8. With the help of circuit diagrams, expressions and waveforms explain the working of monostable multivibrator.
- Q9. Explain any two with necessary diagrams ;
- a) Schottky diode
 - b) Emitter coupled monostable multivibrator.
 - c) Positive and negative clipper.

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.