Code No: RT31041 $\boxed{\text{R13}}$ $\boxed{\text{SET - 1}}$

III B. Tech I Semester Supplementary Examinations, March- 2021
PULSE AND DIGITAL CIRCUITS
(Common to Electronics and Communication Engineering, Electronics and
Instrumentation Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**
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PART –A   (22 Marks)

1. a) Draw the response of high pass RC circuit for a ramp input.   [4M]
   b) Draw the basic circuit diagram of negative peak clamper circuit.   [3M]
   c) When transistor acts as a switch? Explain.   [4M]
   d) Compare different types of multivibrators.   [4M]
   e) Write the Methods of Generating Time Base Waveform.   [4M]
   f) Compare unidirectional and bi-directional Sampling Gates.   [3M]

PART –B   (48 Marks)

2. a) Prove that for any periodic input waveform the average level of the steady state   [8M]
      output signal from the RC high pass circuit is always zero.
   b) Draw the output of the high pass RC circuit for square wave input. Derive the   [8M]
      expression for percentage tilt for a square wave output of RC high pass circuit.

3. a) With the help of a neat circuit diagram explain the working of a two–level diode   [8M]
      clipper.
   b) What is a comparator? List out the applications of a voltage comparator.   [8M]

4. a) Design a TTL NAND gate and explain the operation with the help of function   [8M]
      table.
   b) For a CE circuit V_{CC} = 10V, R_C= 1K, I_B =0.2A. Determine: [8M]
      i) The value of h_{fe}(min) for saturation to occur,
      ii) If R_C is change to 220 Ω, will the transistor be saturated?

5. a) Draw and explain the working principle of astable multivibrator circuit and also [8M]
      explain the merits and limitations of it.
   b) With the help of a neat circuit diagram and waveform, explain the principle of   [8M]
      operation of collector coupled monostable multivibrator.

6.   Explain the following methods of linearizing a voltage sweep with a neat diagram: [16M]
         i) Miller Sweep   ii) Bootstrap sweep.
      Compare their merits and limitations.

7. a) Discuss in detail the sine wave frequency division with a sweep circuit.   [8M]
   b) What is phase jitter? How to reduce it in frequency division?   [8M]

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