

R13

Code No: 114DN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech II Year II Semester Examinations, May - 2015****PULSE AND DIGITAL CIRCUITS****(Common to ECE, BME)****Time: 3 Hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

Part- A**(25 Marks)**

- 1.a) Define rise time. [2M]
- b) Draw and briefly explain the RC differentiator circuit. [3M]
- c) What is meant by clipping in wave shaping? [2M]
- d) Explain Clipping at two independent levels with circuit. [3M]
- e) Compare unidirectional and bi-directional Sampling Gates. [2M]
- f) Draw the Piecewise Linear Diode Characteristics. [3M]
- g) Write a basic principle of time base generator. [2M]
- h) Write the Methods of Generating Time Base Waveform. [3M]
- i) Define positive and negative logic systems. [2M]
- j) List out the applications of sweep circuits. [3M]

Part-B**(50 Marks)**

2. Draw the output of the low pass RC circuit for different time constant to
 - a) Pulse input.
 - b) Step voltage input. [5+5]
- OR**
- 3.a) Prove that for any periodic input waveform the average level of the steady state output signal from RC high pass circuit is always zero.
- b) Draw and explain the response of RLC circuit for step input. [5+5]
4. Classify different types of clipper circuits. Draw their circuits and explain their operation and also transfer characteristics. [10]
- OR**
- 5.a) State and prove clamping circuit theorem.
- b) Explain negative peak clipper with and without reference voltage. [5+5]
- 6.a) Explain the operation of linear bidirectional sampling gate using transistors.
- b) Explain in detail the junction diode switching times. [5+5]
- OR**
- 7.a) Explain about basic operation principles of sampling gates.
- b) Write the advantages and disadvantages of unidirectional diode gate. [5+5]

8. Explain with neat diagram the following methods of linearizing a voltage sweep.
a) Miller Sweep
b) Bootstrap sweep.
Compare their merits and limitations. [5+5]
- OR**
9. Draw and explain the working principle of bistable multivibrator circuit and also explain the merits and limitations of it. [10]
- 10.a) Explain about DTL NAND gate.
b) Distinguish between voltage and current sweep circuit. [4+6]
- OR**
11. Draw the circuit of a linear current sweep and explain its operation with wave forms. Explain the necessity of generating trapezoidal wave form. [10]

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