Code No: 114DN **R13**

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 weep.
   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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