**Reg. No. \_\_\_\_\_\_\_\_**

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination - June 2011**

**Subject Title: PULSE AND WAVE SHAPING CIRCUITS Time: 3 hours**

**Subject Code: EC289 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. What is Clamper?

2. What is meant by Schmitt Trigger?

3. What is Blocking Oscillator?

4. List various sweep circuits.

5. Why is monostable multivibrator called as gating circuit?

6. Define pulse-width.

7. When generators with equal frequency run in synchronism, the synchronization is said to be on a \_\_\_\_\_\_\_\_\_\_\_.

8. Ratio of difference in slope at beginning and end of sweep to the initial value of slope is called \_\_\_\_\_\_\_\_\_\_\_.

9. What is a sampling gate?

10. Sum of storage time and fall time of transistor is called as \_\_\_\_\_\_\_\_\_\_\_.

**PART – B (5 x 3 = 15 MARKS)**

11. The input voltage Vi to the two-level clipper shown in figure varies linearly from 0 to 150 V. Sketch the output voltage Vo to the same time scale as the input voltage. Assume ideal diodes.

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+

+

+

D1

D2

100kΩ

200kΩ

25V

100V

12. Discuss the steps to improve the resolution of commutating capacitors.

13. List the advantages of emitter coupled astable multi-vibrator.

14. Derive the transmission error of the exponential sweep circuit in time base generator.

15. List the applications of blocking oscillators.

**PART – C (5 x 15 = 75 MARKS)**

16. a. Explain how the low-pass RC circuit acts as an integrator. (3)

b. Explain the working of a emitter-coupled clipper with help a neat diagram. (7)

c. A 100 V peak square wave with a period of 20 ms is to be positively clamped at 25 V.

Draw the circuit diagram necessary for this purpose. Draw the output waveform. (3 + 2)

(OR)

17. Derive an expression for the output of a high-pass circuit excited by

a. a sinusoidal input b. a ramp input c. an exponential input. (3 x 5)

[P.T.O]

18. What is a bistable multivibrator? Explain the fixed -bias bistable multivibrator with neat circuit diagram and also discuss the loading effects.

(OR)

19. Explain the Schmitt Trigger circuit with neat diagram. Also derive the expressions for UTP and LTP of Schmitt trigger.

20. Discuss the operation of the emitter-coupled monostable multivibrator with circuit diagram and waveforms. Derive the expression for gate width.

(OR)

21. With the help of circuit diagram and waveforms, explain the operation of collector –coupled astable multivibrator and derive the expression for the frequency of oscillation.

22. Explain the working of transistor miller time-base generator with circuit diagram.

(OR)

23. a. With the help of a neat circuit diagram, explain the working of a transistor current time- base generator. (8)

b. Discuss the Sweep circuit operation using UJT with neat sketches. (7)

24. Explain the working of a diode-controlled astable blocking oscillator with the help of a neat circuit diagram and waveforms. Derive an expression for the period.

(OR)

25. a. Explain the operation principle for unidirectional diode gate and give its advantages. (7)

b. Explain the operation of the four-diode sampling gate circuit and compare its advantages over two-diode sampling circuit (8)