Register Number:……..

B.E., DEGREE EXAMINATIONS: JUNE 2013

Second Semester

MECHATRONICS ENGINEERING

ECE280: Electronic Devices and Circuits

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. In a Thevenin's equivalent circuit the voltage source will be _____ .
   a) Parallel with R_{th} b) Series with R_{th}
   c) Short circuited d) Open circuited
2. In any two port network
   a) AD-BC = 1 b) AC –BD=1
   c) AD + BC = 1 d) AC +BD =1
3. Under normal operating conditions the diode conducts current when it is_____.
   a) Forward biased b) Reverse biased
   c) saturated d) avalanched
4. The input impedance of a JFET is_____ and the input impedance of a MOSFET is _____.
   a) High & low b) Low & high
   c) Zero & infinity d) Infinity & zero
5. The efficiency of a full wave rectifier is _____ that of the efficiency of a half wave rectifier
   a) One third b) Half c) double d) square
6. A clipper can also be called as _____.
   a) a limiter b) A dc restorer
   c) Half wave rectifier d) Full wave rectifier
7. An amplifier is classified as small signal & large signal based on the _____.
   a) Base current b) Emitter current
   c) Collector current d) Emitter voltage
8. The resonant circuit oscillators have a frequency range of
   a) 20 Hz to 20 kHz b) 20 kHz to 3 MHz
   c) Above 3 MHz d) Above 3 GHz.

9. The input to and output from a Schmitt trigger is _____ & _____ wave respectively.

a) Sinusoidal & triangular b) Triangular & sinusoidal

c) Sinusoidal & square d) Square & sinusoidal

10. A multi vibrator is also known as

a) Relaxation oscillator b) Sinusoidal oscillator

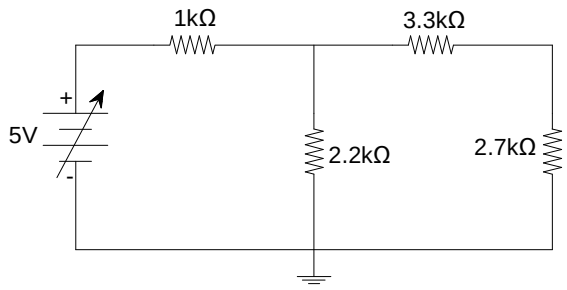
c) Colpitt oscillator d) Hartley oscillator

PART B (10 x 2 = 20 Marks)

11. State Norton's Theorem.
12. What is a two port network? Give some real time examples.
13. Define forward static and dynamic resistance of a diode.
14. List the applications of JFET.
15. Differentiate positive and negative clipper.
16. Draw the block diagram of a series voltage regulator.
17. What are sustained oscillators?
18. What is differential amplifier?
19. How a Schmitt trigger is different from a multivibrator?
20. Define CMRR.

PART C (5 x 14 = 70 Marks)

21. a) Find the Thevenin's equivalent circuit for the network shown below.



(OR)

b) Derive the open circuit impedance parameters of a general linear two port network without independent sources.

22. a) Explain the operation of forward biased and reverse biased PN junction diode.

(OR)

b) Explain with neat diagrams the working of an N channel FET and also its volt- ampere characteristics.

23. a) What is a rectifier? Differentiate half wave and full wave rectifiers.

(OR)

b) Compare series and shunt type of voltage regulators with respect to its construction, operation and applications.

24. a) Draw and explain the small signal model of common drain amplifier in detail.

(OR)

b) Discuss the operation of Colpitt's oscillator and also explain how it differs from Hartley oscillator.

25. a) What is an operational amplifier? Explain any four applications in detail.

(OR)

b) Explain the operation of Schmitt trigger with circuit diagram and waveforms.

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