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Question Paper Code: 42507

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Second Semester

Electronics and Instrumentation Engineering

14UEI207 - ELECTRONIC DEVICES AND CIRCUITS

(Common to Instrumentation and Control Engineering)

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- When a reverse bias is applied to a PN junction, the width of the depletion layer
 - remains the same
 - is increased
 - is decreased
 - may decrease or increase
- Which of the following is a unipolar device?
 - PN junction diode
 - Zener diode
 - Tunnel diode
 - Schottky diode
- The SCR can be triggered on by a pulse at the
 - gate
 - anode
 - cathode
 - none of the above
- UJT is known as
 - voltage controlled device
 - current controlled device
 - relaxation oscillator
 - none of the above

5. The input and output signals for CE amplifier are always
- (a) Equal (b) in phase
(c) out of phase (d) complementary to each other
6. The common emitter amplifier is characterized by
- (a) very high input impedance (b) signal phase reversal
(c) low voltage gain (d) very small leakage current
7. Oscillator use following feedback
- (a) negative (b) positive (c) both negative and positive (d) none of the above
8. Feedback in an amplifier always helps to
- (a) control its output (b) increase its gain
(c) decrease its input impedance (d) stabilize its gain
9. An op-amp clamper circuit is also referred as
- (a) DC cutter (b) DC inserter (c) DC lifter (d) DC leveller
10. The _____ is(are) an adjustable voltage regulator.
- (a) Series 7800 ICs (b) series 7900 ICs
(c) LM317 (d) none of these

PART - B (5 x 2 = 10 Marks)

11. What is thermal runaway? How can it be avoided?
12. Compare JFET with BJT.
13. Define hybrid parameters.
14. State Barkhausen criterion for oscillation.
15. List any four applications of Schmitt trigger circuit.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain in detail about junction capacitance. (8)
(ii) Draw the equivalent circuit of a tunnel diode and explain its characteristics. (8)

Or

(b) Explain in detail about different types of biasing circuits for BJT. (16)

17. (a) Explain the working of D-MOSFET, With the help of suitable diagrams, (16)

Or

(b) Explain the structure, working and characteristics of N channel enhancement type MOSFET. (16)

18. (a) Draw the h-parameter equivalent circuit for a typical common emitter amplifier and derive the expression for A_i , R_i , A_v and R_o . (16)

Or

(b) Develop the expressions for input resistance, output resistance, current gain, voltage gain and power gain of CE and CB amplifiers. (16)

19. (a) Explain voltage series feedback amplifier and derive the expression for input and output resistance. (16)

Or

(b) Explain RC phase oscillator and derive its frequency of oscillation. (16)

20. (a) Explain with the circuit diagram, the operation of Astable multivibrator using c transistors. Sketch input and output waveforms. (16)

Or

(b) (i) Draw the equivalent circuit of UJT and explain its operation with the help of emitter characteristics (10)

(ii) Explain “ Lower” and “ Upper” threshold voltages in Schmitt trigger. (6)

