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Question Paper Code: 51251

B.E. / B.Tech. DEGREE EXAMINATION, JUNE 2016

Second Semester

Electronics and Instrumentation Engineering

15UEI209 - ELECTRONIC DEVICES AND CIRCUITS

(Regulation 2015)

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Duration: Three hours   Maximum: 100 Marks

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Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

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1. The heavier the current in a Zener diode in reverse bias, _____ dynamic resistance value.

    (a) the more the   (b) the less the
    (c) there is substantially more   (d) there is no change in the

2. The Quiescent point (Q-point) is defined by a (n) _____

    (a) AC network   (b) DC network
    (c) AC and DC network   (d) None of these

3. A BJT is a _____ controlled device. The JFET is a _____ controlled device.

    (a) voltage, voltage   (b) voltage, current
    (c) current, voltage   (d) current, current

4. The E-MOSFET is quite popular in _____ applications.

    (a) digital circuitry   (b) high-frequency
    (c) buffering   (d) All the above

5. In a common-emitter configuration _____ is the controlling current while _____ is the controlled current.

    (a) I_C, I_B (b) I_C, I_E (c) I_B, I_C (d) None of these

6. Class D operation can achieve power efficiency of over

    (a) 90%   (b) 78.5%   (c) 50%   (d) 25%

7. An amplifier with negative feedback has _____ bandwidth than (as) the amplifier without feedback.

    (a) the same   (b) less   (c) more   (d) None of these

8. In the Barkhausen criterion, the loop gain A is equal to

    (a) ∞ (b) 200,000   (c) 0   (d) 1

9. The output of a schmitt trigger is a _____

    (a) Pulse Waveform   (b) Saw tooth Waveform
    (c) Sinusoidal Waveform   (d) Triangle Waveform

10. In A positive clipper, the diode conducts when

    (a) $Vin < Vref$ (b) $Vin = Vref$ (c) $Vin > Vref$ (d) None of the above

PART - B (5 x 2 = 10 Marks)

11. What is thermal run away?

12. What is latching and holding current of SCR?

13. Draw the circuit of class – A amplifier.

14. State the frequency for RC phase shift oscillator.

15. Give two applications of bistable multivibrator.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain the working of PN junction diode under forward and reverse bias with relevant diagram.   (16)

Or

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(b) What is the need for biasing in BJT? With the help of a neat diagram explain the fixed biasing and collector to base biasing circuits. (16)

17. (a) Draw and explain the V-I characteristics of an N-channel JFET. (16)

Or

(b) Describe the construction and operation of UJT. And explain its emitter characteristics. (16)

18. (a) Draw the hybrid-π common emitter transistor model and derive the values of the various components in terms of the h-parameters. (16)

Or

(b) Explain the operation of Class-B push pull amplifier with neat circuit diagram and waveforms. (16)

19. (a) Explain the working principle of voltage series feedback amplifier with neat diagram. (16)

Or

(b) Describe Hartley oscillator with neat circuit diagram. Determine the frequency of oscillations and the oscillation conditions for it. (16)

20. (a) With circuit diagram and necessary waveforms, explain the operation of a collector coupled saturated monostable multivibrator. (16)

Or

(b) Describe with block diagram, the series and shunt voltage regulator and explain the operation of transistorized series voltage regulator. (16)

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