Reg. No. : | | | | | | | | | | |

Question Paper Code: 42507

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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)

1. When used in a circuit, a Zener diode is always

   (a) forward-biased (b) connected in series

   (c) troubled by overheating (d) reverse-biased

2. A semiconductor devices that resembles a voltage variable capacitor is called diode

   (a) tunnel (b) PIN (c) schottky (d) varactor

3. A D-MOSFET differs from a JFET in the sense that it has no

   (a) channel (b) gate (c) P-N junctions (d) substrate

4. Other name for UJT

   (a) double based diode (b) triple based diode

   (c) Single diode (d) None of the above

5. At high frequencies coupling capacitors act as

(a) Open circuit (b) Short circuit (c) load (d) none of the above

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. Negative feedback in an amplifier

(a) lowers its lower 3*dB* frequency (b) raises its upper 3 *dB* frequency

(c) increases its band width (d) all of the above

9. A square pulse has a mark-to-space ratio of

(a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) 1 : 4

10. An electronic oscillator is

(a) just like an alternator (b) nothing but an amplifier

(c) an amplifier with feedback (d) a converter of ac to dc energy

PART - B (5 x 2 = 10 Marks)

11. What is doping?

12. Explain the terms knee voltage and breakdown voltage.

13. Why do the output characteristics of Common Base transistor have a slight upward slope?

14. Draw the hybrid model of Common Emitter amplifier.

15. State the Bharkausen's criterion for oscillation.

PART - C (5 x 16 = 80 Marks)

16. (a) Draw the V-I characteristics of Zener diode and explain the phenomenon of Zener breakdown and avalanche breakdown. (16)

Or

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

17. (a) With a neat sketch explain the construction and characteristics of enhancement MOSFET. (16)

Or

(b) Discuss the construction, working, characteristics and applications of Silicon Controlled Rectifier. (16)

18. (a) Explain about Common Emitter amplifier and derive the expression for h parameters of the same. Also derive the expression for gain, input impedance and output impedance of Common Emitter amplifier. (16)

Or

(b) A class B push-pull amplifier gives crossover distortion. Explain and suggest a circuit to eliminate it. (16)

19. (a) Explain the working of Hartley Oscillator with neat circuit diagram and derive the expression for its frequency of oscillation. (16)

Or

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

20. (a) Draw the circuit diagram of monostable multivibrator. Explain its operation with proper waveform. (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)