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 **Reg. No. :**

**Question Paper Code: 52048**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Second Semester

Electronics and Communication Engineering

15UEC208 - ELECTRONIC DEVICES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. At room temperature the current in an intrinsic semiconductor is due to

(a) hole (b) ions (c) electrons (d) holes and electrons

2. A zener diode is used in

(a) voltage regulator circuit (b) amplifier circuits (c) both (a) and (b) (d) none of these

3. If for a silicon n-p-n transistor, the base to emitter voltage (VBE) is 0.7 V and the collector to base voltage VCB is 0.2 V, then the transistor is operating in the

 (a) inverse active mode (b) saturation mode (c) normal active mode (d) cut off mode

4. Which of the following FET amplifier configuration finds application because of low

 input resistance and high output resistance?

 (a) common-source (b) common-drain (c) source follower (d) common gate

5. You need to design a relaxation oscillator circuit. The most likely device to use might be

 (a) SCR (b) UJT (c) TRIAC (d) 4-layer diode

PART - B (5 x 3 = 15 Marks)

6. Define Mass action law.

7. List the advantages of bridge rectifier.

8. Calculate the collector and emitter current levels for a BJT with 𝜶dc=0.99andIB=20µA.

9. Compare MOSFET with JFET.

10. Construct two transistor model of SCR.

PART - C (5 x 16 = 80 Marks)

11. (a) Classify the semiconductors. Explain the formation of semiconductors. (16)

Or

 (b) What is energy band? On the basis of energy band diagrams, distinguish between metals, insulators and semiconductors. (16)

12. (a) Derive the diode current equation of a PN junction diode. (16)

Or

(b) Explain the operation of full wave rectifier and discuss about the different parameters. Also draw necessary input and output waveforms. (16)

13. (a) Explain how transistor acts as a Switch, with necessary diagrams. Write short notes

 on transistor switching times. (16)

Or

 (b) Draw the circuit of CE amplifier and explain its working. (16)

14. (a) Explain the constructional details, operation characteristics and advantages of JFET. (16)

Or

 (b) With the help of suitable diagrams explain the working of different types of

 MOSFET. (16)

15. (a) Construct and explain the operation of UJT with its equivalent circuit and emitter

 characteristics. (16)

Or

(b) Illustrate the construction, symbol and characteristics of photovoltaic cell. (16)