

- Q.30 Derive the relationship between alpha, beta & gamma of a transistor. (CO3)  
 Q.31 Describe potential divider method in detail. (CO4)  
 Q.32 What do you understand by loading effect in multistage transistor amplifier? (CO5)  
 Q.33 Explain the construction of Bipolar Transistor with characteristics. (CO3)  
 Q.34 Explain the phenomenon of current flow in Intrinsic Semiconductor. (CO2)  
 Q.35 Give advantages of FET over conventional transistor. (CO6)

#### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain the following terms:- (CO2)  
 a) Zener Breakdown  
 b) Ideal Diode  
 c) Avalanche Breakdown  
 d) Knee Voltage  
 Q.37 Draw the circuit diagram of single stage transistor amplifier. State function of each component used in this circuit. (CO5)  
 Q.38 Define doping thermal generation, acceptor impurity, donor impurity, p type semiconductor & recombination. (CO1)

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**2nd Sem / Comp, ECE, IT, I & Control, Mechatronics Med. Eltx, Eltx& Instr., Power Eltx, EEE**

**Subject:- Basic Electronics / Analog Eltx.**

Time : 3Hrs. M.M. : 100

#### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Donor type impurities (CO1)  
 a) Create excess holes  
 b) Can be added to Germanium but not to silicon  
 c) Must have only five valence electrons  
 d) Must have only three valence electrons  
 Q.2 The width of base region as compared to emitter region (CO1)  
 a) Small b) Large  
 c) Same d) Half  
 Q.3 The most heavily doped region in a transistor (CO3)  
 a) Emitter b) Base  
 c) Collector d) Both a &c  
 Q.4 A zener diode is used as (CO2)  
 a) An amplifier b) A voltage Regulator  
 c) A coupler d) A rectifier  
 Q.5 Acceptor type semi connector is formed by adding impurity of valency (CO1)

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|------|------|
| a) 3 | b) 4 |
| c) 5 | d) 6 |
- Q.6 A zener diode is operated in (CO2)
- a) Breakdown region
  - b) Forward characteristic region
  - c) Both a & b
  - d) None of these
- Q.7 The purpose of capacitor in an amplifier is to (CO3)
- a) Match the impedance
  - b) Control frequency
  - c) Prevent dc mixing with output
  - d) Limit the bandwidth
- Q.8 In N type semi connector there are (CO1)
- a) No majority carriers
  - b) Holes as majority carriers
  - c) Immobile - ve ions
  - d) Immobile +ve ions
- Q.9 The CE transistor circuit has (CO5)
- a) High Gain                  b) Low Gain
  - c) Zero Gain                  d) None of above
- Q.10 The most commonly used transistor configuration is (CO3)
- a) Common Emitter    b) Common Base
  - c) Common Collector    d) All equally used

### **SECTION-B**

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 In P type Semiconductor \_\_\_\_\_ are the minority carriers. (CO1)
- Q.12 The practical value of  $\alpha$  in a transistor is \_\_\_\_\_.(CO3)

- Q.13 The point of intersection of dc and ac load line is called \_\_\_\_\_. (CO4)
- Q.14 Define Voltage gain. (CO5)
- Q.15 If operating point changes, it results into \_\_\_\_\_. (CO4)
- Q.16 Define output impedance. (CO5)
- Q.17 Semiconductors have \_\_\_\_\_ bonds. (CO1)
- Q.18 Expand MOSFET. (CO6)
- Q.19 The dc load line is a plot of \_\_\_\_\_ & \_\_\_\_\_. (CO4)
- Q.20 What is transistor biasing? (CO3)

### **SECTION-C**

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
- Q.21 Draw the structure of p type semiconductor. (CO1)
- Q.22 Explain why temperature coefficient of resistance of a Semiconductor is negative. (CO1)
- Q.23 Explain center tap rectifier. (CO2)
- Q.24 Draw & explain circuit of NPN transistor in CE configuration. (CO3)
- Q.25 Discuss the behavior of P-N junction under forward & reverse biasing. (CO2)
- Q.26 Explain current flow through a n- type semiconductor. (CO1)
- Q.27 Explain why CE configuration is mostly used.(CO3)
- Q.28 Explain the function of Emitter, base & collector in the operation of a junction transistor. (CO3)
- Q.29 Compare JFET & MOSFET. (CO6)