Q.29 What is the effect of temperature on the operating point of transistors?

Q.30 What is a dc load line? What its importance?

Q.31 Discuss the working of single stage amplifier in CE configuration.

Q.32 What is the need of multistage amplifiers?

Q.33 Deduce the relation for calculating voltage gain of a 3 stages multistage amplifier.

Q.34 Explain the working ofJFET

Q.35 Compare BJT and JFET.

**SECTION-D**

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

Q.36 Explain the working principle of 2 stage RC coupled amplifiers. Also draw its frequency response.

Q.37 Explain with diagram the working of full wave bridge rectifier.

Q.38 Write short note on any two of the following:-

a) Tunnel Diode

b) Clipper Circuits

c) Rectifier Efficiency



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Roll No. .....

**3rd Sem / Electrical, GE, Power Station Engg. Elect. & Elxt. Engg., Fire Tech & Safety**

**Subject:- Electronics I/Basic Electronics**

Time : 3Hrs. M.M. : 100

**SECTION-A**

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

Q.1 At absolute zero temperature, an intrinsic semiconductor .....

a) Has excess of holes

b) Has few electrons and holes

c) Behaves like a conductor

d) Behaves like an insulator

Q.2 The value of forbidden energy gap in semiconductors is of the order of.....

a) 1 eV b) 5eV

c) 0 eV d) More than 5 eV

Q.3 The number of diodes required in a bridge rectifier circuit ia/are

a) one b) two

c) three d) four

Q.4 The value of ripple factor for half wave rectifier is.....

a) 1.21 b) 1.12

c) 0.48 d) None of these

Q.5 The most heavily doped region in a transistor is.....

a) Emitter b) base

c) collector d) bath a) and b)

Q.6 The advantage of selecting the Q-point in the middle of active region is that.....
a) It gives better stability
b) The circuit needs a small dc voltage
c) The biasing circuit then needs less components
d) It gives distortion less output

Q.7 The gain stability of an amplifier circuit can be improved by using .....
a) Positive feedback
b) Negative feedback
c) Both positive and negative feedback
d) None of these

Q.8 The purpose of coupling capacitor in an amplifier is to.....
a) Match the impedance
b) Control frequency
c) Prevent dc mixing with output
d) Limit the bandwidth

Q.9 The operations of JFET involves.....
a) A flow of minority carriers
b) A flow of majority carriers
c) Recombination
d) Negative Resistance

Q.10 What is the full form of MOSFET?
a) Metal dioxide semiconductor field effect transistor
b) None of these
c) Metal oxide semiconductor field effect transformer
d) Metal oxide semiconductor field effect transistor



## SECTION-B

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

Q.11 What is active component? Name any two active components.

Q.12 What is drift current?

Q.13 How an extrinsic semiconductor is made?

Q.14 What is a filter circuit?

Q.15 What is the value of knee voltage of silicon diode?

Q.16 Define the term "current gain".

Q.17 What is the value of ripple factor of full wave rectifier?

Q.18 What is the principle of Photodiode?

Q.19 Why the stabilization of operating point is needed?

Q.20 What is JFET?

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Draw and explain the atomic structure of P-type Semiconductor.

Q.22 Discuss the energy band diagram of semiconductor material.

Q.23 Explain V-I characteristics of P-N junction diode?

Q.24 Write a short note of Varactor diode.

Q.25 Explain the working of half wave rectifier with suitable waveforms.

Q.26 Discuss how PNP transistor works in Active Region?

Q.27 Deduce the relation between a, $\beta$ and $\gamma$.

Q.28 Explain the various mechanism of achieving breakdown in a diode.