S.B. Roll No.....

BASIC ELECTRONICS

2nd Exam/ECE/ETV/ECEII/COMP/CSE/IT/EEE/0664/2661/Nov'17

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Fill in the blanks. **1.5x10=15**

a. The input impedance of a FET is _____than that of BJT.
b. I_{CEO} = _____I_{CBO}.
c. The process of adding impurities is called _____.
d. The turn on voltage in a silicon diode is _____.
e. A zener diode is always operated in _____region.
f. Holes are _____carriers in N-type semiconductors.
g. When the gate terminal of MOSFET is positive it is said to operate in _____.
h. The unit of h_{ie} is_____.
i. In a transistor there are_____ PN junctions.
j. The point of intersection of dc and ac load line is called_____.

SECTION-B

Q2. Attempt any five questions. **5x6=30**

i. What is ripple factor? How it can be minimized?
ii. Explain zener diode as a voltage regulator.
iii. Explain intrinsic and extrinsic semiconductors.
iv. Give construction and working of MOSFET.
v. Explain the working of half wave rectifier.
vi. Draw the circuit diagram of CE amplifier. Explain briefly.
vii. What do you mean by h parameters of a transistor? Explain briefly.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain construction of NPN transistor. Explain how it can be used as amplifier.
b. Discuss energy band structure for insulators, semiconductors and conductors.
c. Write a short note on **(any two)**
    i. Filter circuits
    ii. AC and DC load line
    iii. Avalanche breakdown
d. What are various transistor biasing circuits? Compare their advantages and disadvantages.
e. With the help of a diagram, explain the working of a bridge rectifier.

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BASIC ELECTRONICS

2ND Exam/ECE/ETV/ECEII/COMP/CSE/IT/EEE/0664/May'17

Duration: 3Hrs **M. Marks: 75**

SECTION A

Q.1 Fill in the blanks: **15x1=15**

a. N-type semiconductors are formed by adding _____ impurity to a pure semiconductor.
b. In Intrinsic semiconductors number of electrons are_____ to number of protons.
c. Conduction in P-type semiconductor is due to movement of _____
d. The value of knee voltage for silicon diode is _____ volt.
e. A Photodiode is optimised for its sensitivity to _____ .
f. Zener diode is made to operate in _____ region.
g. A transistor contains _____ PN junctions.
h. The emitter of a transistor is doped _____.
i. The value of collector current of a transistor is _____ to emitter current.
j. In transistor, leakage current mainly depends on _____.
k. The ideal value of stability factor is _____.
l. The gain stability of an amplifier circuit can be improved by using _____ feedback.
m. For a transistor to work as an amplifier, its operating point should lie in _____ region.
n. FET is a _____ terminal semiconductor device.
o. MOSFET stands for _____.

SECTION-B

Q.2. Attempt any five Questions. **6x5=30**

a. How N-type semiconductor is formed?
b. What are intrinsic and extrinsic semiconductors?
c. Write a note on PN junction.
d. What is Zener diode? Draw its symbol and explain its characteristics.
e. What is transistor? Draw and explain PNP transistor.
f. Differentiate between FET and BJT.
g. What do you mean by thermal runaway?

SECTION – C

Note: Attempt any three questions. **10x3=30**

Q3. What are needs of filter? Explain π (Pi) filter in detail.
Q4. Derive an expression for amplification factor (β) of common emitter configuration.
Q5. What is CMOS? Explain its advantages and application.
Q6. Explain the concept of bipolar transistor and draw symbol of NPN and PNP transistors.

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BASIC ELECTRONICS

2nd Exam/ECE/ECE-II/ETV/Comp/IT/CSc./EEE/0664/Nov'18

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Fill in the blanks. **15x1=15**

a. The value of knee voltage of a Germanium diode is _____volts.
b. The electrons in the outermost orbit are called_____.
c. Holes are_____ carriers in the p-type semiconductors.
d. MOSFET is a _____controlled device.
e. A zener diode is always operated in _____ region.
f. When pn junction is heavily doped, its breakdown voltage wills _____.
g. FET is _____polar device.
h. The smaller the stability factor, the _____ will be the thermal stability of the circuit.
i. If the arrow points outward, the transistor is an_____.
j. The best biasing method is achieved by adopting _____biasing circuit.
k. BJT stands for_____.
l. CMOS stands for_____.
m. Current amplification factor of CB is _____
n. The meaning of hybrid is_____.
o. Output signal frequency of full wave rectifier is _____of input signal.

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. Explain the need for Stabilization of the Operating Point.
ii. Discuss the advantages of FET over Conventional transistor.
iii. Explain the effect of temperature on conductivity of intrinsic semiconductor.
iv. Write a note on tunnel diode.
v. Draw circuit of half wave Rectifier and explain its working. Draw the output waveform.
vi. What do you mean by thermal runaway?
vii. Draw and explain Filter Circuits.
viii. What is Zener Diode? Explain its Applications.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Draw and Explain the Common emitter Configurations Characteristics.
b. Explain construction and working principle of FET. Draw the neat diagram.
c. Write note on PN Junction and its biasing. Difference between the n-type and p-type semiconductor.
d. Explain in detail different types of biasing.
e. Write short notes on the following. **(any two)**
    i. LED
    ii. Avalanche breakdown
    iii. Schottky Diode

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BASIC ELECTRONICS

2nd Exam/ECE/ETV/ECE-II/COMP/CSE/IT/EEE/0664/May'18

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Do as directed. **15x1=15**

a. N-type semiconductors are formed by adding ..... impurities to a pure semiconductor.
b. Efficiency of half wave rectifier is .....
c. Center-Tap transformer is used in ..... Wave rectifier.
d. Filter circuits are used to reduce .....
e. The value of knee voltage for silicon diode is ..... Volt.
f. Zener diode is made to operate in ..... Region.
g. In BJT, leakage current mainly depends on .....
h. The point of intersection of dc and ac load line is called .....
i. A.C. load line of a transistor is steeper than its D.C. load line. (T/F)
j. The best biasing method is achieved by adopting ..... biasing circuit.
k. JFET stands for .....
l. MOSFET is a ..... Controlled device.
m. The emitter and collector regions of BJT is ..... and ..... Doped.
n. Free electrons exists in ..... band.
o. When both the junctions of a transistor are forward biased, it is said to be in ..... region.

SECTION-B

Q2. Attempt any five questions. **5x6=30**

i. Explain with suitable diagram Intrinsic and Extrinsic semiconductors.
ii. What is Zener diode? Draw its symbol and explain its characteristics.
iii. Explain the working of half wave rectifier.
iv. Explain the working of NPN transistor.
v. Explain the difference between FET and BJT.
vi. What do you mean by h parameters of transistors?
vii. In what way the temperature variations affect the operating point of a transistor?
viii. Explain the phase reversal of output voltage with respect to input voltage in an amplifier.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain conductors, insulators and semiconductors on the basis of their energy band diagram.
b. Draw circuit of a full wave bridge rectifier and explain its working. Draw the output waveform.
c. Explain PN junction and draw the V-I characteristics of PN junction.
d. Explain the input and output characteristics of CE configuration. Derive the relation between α and β.
e. Write a short note on **(any two)**
    i. Light Emitting Diode
    ii. Drift and Diffusion current
    iii. Filter circuits.

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BASIC ELECTRONICS

2nd Exam/ECE/ETV/ECE-II/COMP/CSE/IT/EEE/0664/May'19

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Fill in the blanks. **10x1.5=15**

a. The larger the orbit, the_____ is the energy of electrons.
b. Semiconductor material doped by _____impurities is termed as n-type.
c. The point of intersection of DC and AC load line is called_____.
d. CMOS stands for_____
e. Transistor is a _____terminal semiconductor device.
f. Zener diode is made to operate in _____region.
g. MOSFET stands for_____.
h. The process by which an impurity is added to semiconductor is called_____.
i. The potential barrier voltage for Silicon is _____.
j. The value of resistance of pn junction, when it is forward biased is _____.

SECTION-B

Q2. Attempt any five questions. **5x6=30**

i. What do you mean by Zener Breakdown?
ii. Explain functioning of Half Wave Rectifier?
iii. Explain working of Transistors as an amplifier?
iv. What is the need of Stabilization of operating point?
v. Explain working of LC Capacitor input filter?
vi. Explain p- type and n-type semiconductors?
vii. What is FET? Explain its working?

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. With the help of diagram, explain forward and reverse biased PN junction?
b. Explain Bridge wave rectifier with circuit diagram?
c. Differentiate between conductors, insulators and semiconductors on the basis of energy levels diagrams?
d. Explain working of transistor with circuit diagram?

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BASIC ELECTRONICS

2nd Exam/ECE/CSE/IT/MECHATRONIC/0190/May'19

(FOR 2018 BATCH)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Do as directed. **15x1=15**

a. Under normal operating voltages the reverse current in a silicon junction diode is in_____
b. Ripple factor in full wave rectifier is_____
c. CMOS means_____
d. Write the relation between α and β.
e. Biasing in transistor is done to stabilize the_____
f. At absolute zero temperature an intrinsic semiconductor behaves like_____
g. In saturation region both junctions of transistors are _____Biased.
h. When a P-N junction is heavily doped its breakdown voltage will _____
i. Operation of JFET involves _____carriers.
j. Boron has _____valence electrons.
k. An ideal diode has _____forward resistance.
l. The ideal value of stability factor is_____
m. The communication path in an FET through which the carriers flow between drain and source is called_____
n. A capacitor circuit does not allow passing _____component.
o. The material used for the construction of LED is _____band gap.

SECTION-B

Q2. Attempt any five questions. **5x6=30**

i. Compare the MOSFET and BJT.
ii. Explain the behavior of P-N junction under different bias conditions.
iii. Draw h- model of CE amplifier.
iv. Describe the importance of load line with suitable diagrams.
v. Explain the terms avalanche and zener breakdown.
vi. Give advantages and applications of CMOS.
vii. Derive the relation $Ic = \alpha I_E + I_{CBO}$ and explain different terms used in them.
viii. Write a note on drift and diffusion currents.
ix. What is a filter circuit? Explain the working of LC filter.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Compare CB, CE and CC Configurations with at least five parameters.
b. With the help of diagram and waveforms, Explain working of Center tap full wave rectifier.
c. Explain the divider method of biasing for transistor (CE).
d. Write a short note on any two of the following:
    i. Thermal Runaway
    ii. Varactor diode (Symbol, operation, application)
    iii. BJT as an amplifier.
e. Explain Construction, operation and characteristics of a MOSFET in depletion and enhancement modes.

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BASIC ELECTRONICS

2nd Exam/ECE/ETV/ECE-II/COMP/CSE/IT/EEE/0664/Sep'2020

Duration: 1.15 Hrs. **M.Marks:25**

SECTION-A

Q1. Attempt any three questions. **3x5=15**

a. Classify different types of solids based on energy band diagrams.
b. Discuss the advantages of FET over Conventional transistor.
c. Explain single stage transistor amplifier in detail.
d. Write a note on light emitting diode.
e. Draw circuit of full wave Rectifier and explain its working. Draw the output waveform.
f. What do you mean by thermal runaway?
g. Draw and explain series inductor Filter Circuits.
h. What is Zener Diode? Explain its Application as a voltage regulator.

SECTION-B

Q2. Attempt any one question. **1x10=10**

i. Draw and Explain the Common base Configuration Characteristics.
ii. Explain construction and working principle of MOSFET. Draw the neat diagram.
iii. Write note on PN Junction and its biasing. Difference between the n-type and p-type semiconductor.
iv. Define biasing? Explain in detail any one type of biasing circuits.
v. Write note on any two
   a) Photo diodes b) Zener breakdown c) Faithful amplification

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BASIC ELECTRONICS

2nd Exam/ECE/CSE/IT/MECHATRONICS/0190/Jun'2021

(For 2018 Batch Onwards)

Duration: 1.15Hrs. **M.Marks:25**

SECTION-A

Q1. Attempt any three questions. **3x5=15**

i. Explain the types of Extrinsic Semiconductor.
ii. Classify the solids on the basis of Energy band Diagram.
iii. Draw the circuit diagram and explain the working of Half wave rectifier
iv. Draw and explain the VI Characteristics of Zener Diode and its applications.
v. Explain the functions of components used in the Filter circuits.
vi. How transistor can work as an amplifier
vii. What do you mean by (a) Saturation region (b) Cut off (c) Active Region?

SECTION-B

Q2. Attempt any one question. **1x10=10**

a. Draw and explain the input and output characteristics of Common Base. Derive the relation between alpha and beta.
b. What is the various method of transistor biasing? Draw and explain the circuit diagram of base resistor biasing.
c. Define operating point of a transistor. What do you mean by stabilization of operating point?
d. Explain the working principle of FET Amplifier. How will you determine the drain characteristics of a FET?

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BASIC ELECTRONICS

2nd Exam/ECE/ETV/ECE-II/COMP/CSE/IT/EEE/0664/Jun'2021

Duration: 1.15Hrs. **M.Marks:25**

SECTION-A

Q1. Attempt any three questions. **3x5=15**

i. Write a short note on Avalanche Breakdown.
ii. What are advantages and disadvantages of full-wave rectifiers?
iii. Define Drift and Diffusion currents.
iv. What is stabilization and its need.
v. Define DC and AC Load Lines.
vi. What are advantages and disadvantages of FET's over BJT's?
vii. Define H-Parameters and its significance.
viii. Define P and N type semiconductor.

SECTION-B

Q2. Attempt any one question. **1x10=10**

a. Explain the circuit diagram of Single Stage Transistor Amplifier.
b. Compare CC, CB and CE configurations.
c. Draw and explain energy level diagram of conductors, insulators and semiconductors.
d. Explain voltage divider biasing circuit.
e. Explain working of NPN transistor.