

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL
(An Autonomous Institute under Kakatiya University, Warangal)
FACULTY OF ENGINEERING AND TECHNOLOGY
B.Tech. I Semester Examination, January 2015
U14EI105: Basic Electronics Engineering
(Common to Stream-I)

Time: 3 Hours]

[Max. Marks : 60

Note: Answer all the questions.

1. a. Explain the formation of depletion region in a PN Junction. [2]
 b. State Mass-Action Law. [2]
 c. Define Regulation with reference to a Voltage Regulator. [2]
 d. An NPN transistor is used in CE circuit with $V_{cc}=12V$ and $R_c=4k\Omega$. The bias is obtained by connecting $100k\Omega$ resistor from collector to base. Find the Stability factor, S (Assume $\beta=50$). [2]
 e. Compare BJT and JFET. [2]
 f. Discuss Ideal Characteristics of a Measurement System. [2]
2. a. Explain clearly Avalanche breakdown and Zener breakdown mechanisms. [6]
 b. Explain drift and diffusion currents in an intrinsic semiconductor. [6]
 (OR)
 c. Define Hall Effect. Also explain the experimental determination of mobility. [6]
 d. Discuss the operation of PN Junction diode and also draw its V-I characteristics. [6]
3. a. Explain the operation of Full wave rectifier. Derive the expression for efficiency and ripple factor. [6]
 b. With neat sketches describe the operation of a Photodiode. [6]
 (OR)
 c. Draw and explain the input-output characteristics of BJT in CE Configuration. [6]
 d. Explain the operation of LED. Mention its Advantages and Applications. [6]
4. a. Explain collector to base biasing method and derive its stability factor. [6]
 b. Explain JFET Drain characteristics. [6]
 (OR)
 c. Draw the physical structure of P-channel JFET and explain its operation [6]
 d. With Suitable diagrams, explain the basic transistor applications: Switch and Amplifier. [6]
5. a. Draw the block diagram of CRO and explain measurement of the time period and amplitude. [6]
 b. Draw the block diagram and explain working principle of Digital Multimeter. [6]
 (OR)
 c. State the principle of PMMC and briefly discuss how it can be used as Ammeter and Voltmeter. [6]
 d. Derive the expression for deflection sensitivity of a CRT. [6]

---Question Paper Ends---

14BT315/3

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL
(An Autonomous Institute under Kakatiya University, Warangal)
FACULTY OF ENGINEERING AND TECHNOLOGY
B.Tech. I Semester Regular & II Semester Supplementary Examination, January 2016
U14EI105: Basic Electronics Engineering

Time: 3 Hours]

Note: Answer all the questions.

[Max. Marks : 60

1. ☒ a. Differentiate between analog and digital signals. [2]
☒ b. What is forbidden gap? [2]
☒ c. Illustrate any one application of a LED. [2]
☒ d. Explain how transistor acts as a switch. [2]
☒ e. Write the advantages of FET over BJT. [2]
☒ f. Write the working principle of a DMM. [2]
2. ☒ a. Define the following (i) Mobility and Conductivity (ii) Intrinsic and Extrinsic semiconductors (iii) Drift and diffusion currents. [6]
☒ b. Explain the forward and reverse bias operations of a P-N diode with diagrams and give equation for diode current. [6]
(OR)
☒ c. Explain in detail the Hall effect. [6]
☒ d. Explain in detail the junction breakdown mechanisms in a P-N diode. [6]
3. ☒ a. Draw the circuit diagram of a Bridge rectifier with capacitor filter and explain with waveforms. [6]
☒ b. Explain with circuit diagram the operation of Zener diode as voltage regulator. [6]
(OR)
☒ c. Show the physical structure of transistor and discuss on various current components. [6]
☒ d. Explain the input and output characteristics of transistor in its CE configuration. [6]
4. ☒ a. What is the significance of DC load line? Explain the self-bias technique with circuit diagram. [6]
☒ b. What is meant by stability of operating point? Explain the factors which effect the stability. [6]
(OR)
☒ c. Explain how transistor acts as an amplifier. Describe one practical application of transistor amplifier. [6]
☒ d. Show the constructional features of JFET and explain the drain characteristics. [6]
5. ☒ a. Explain the measurement system with a block diagram and describe the errors that are encountered. [6]
☒ b. Show the basic circuit of PMMC and explain how it can work as an Ammeter and Voltmeter. [6]
(OR)
☒ c. Derive the expression for the deflection sensitivity of a CRT and explain how time period and amplitude are measured. [6]
☒ d. Write the specifications of an Ammeter and voltmeter. Explain the loading effect with examples. [6]

---Question Paper Ends---

14BT315/2

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL
(An Autonomous Institute under Kakatiya University, Warangal)
FACULTY OF ENGINEERING AND TECHNOLOGY

B.Tech. I Semester Supplementary & II Semester Regular Examination

U14EI105: Basic Electronics Engineering

(Common to All Branches)

Time: 3 Hours]

[Max. Marks : 60

Note: Answer all the questions.

1. a. Explain how barrier potential is developed in a PN Junction. [2]
b. Define Hall effect. Mention its applications. [2]
c. Draw the block diagram of regulated power supply. [2]
d. What is thermal runaway? [2]
e. An NPN silicon transistor with $\beta=50$ is used in CE circuit with $V_{cc}=10V$ and $R_c=2k\Omega$. The bias is obtained by connecting $50k\Omega$ resistor from collector to base. Find the Quiescent Point. [2]
f. List out errors in a Measurement System. [2]
2. a. Explain how barrier potential is developed in a PN Junction. [6]
b. Define Hall effect. Mention its applications. [6]

(OR)

- c. Explain the forward and reverse characteristics of PN junction diode. [6]
d. Explain the formation of and conductivity in N-type semiconductors. [6]
3. a. Explain the operation of Half wave rectifier and derive the expression for ripple factor and efficiency. [6]
b. With neat sketches describe the operation of Light Emitting Diode. [6]

(OR)

- c. Explain the input-output characteristics of BJT in CB Configuration. [6]
d. Explain the operation of Bridge rectifier. Also Compare Half wave, Full wave and Bridge rectifiers. [6]
4. a. Explain self biasing method and derive the expression for its stability factor. [6]
b. What are the features of JFET? Explain its Drain characteristics. [6]

(OR)

- c. Draw the physical structure of N-channel JFET and explain its operation [6]
d. Justify the need for biasing. Compare all the biasing techniques in detail. [6]
5. a. Explain the how PMMC mechanism is used to measure current. [6]
b. Derive the expression for deflection sensitivity of a CRT. [6]

(OR)

- c. Discuss the loading effects of Voltmeter. [6]
d. Explain the functional blocks of a measurement system. Mention its ideal requirements and performance characteristics. [6]