

TED (10)–3001

Reg. No.

(REVISION—2010)

Signature

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—MARCH, 2012

BASIC ELECTRONICS

(Common for EL, EC, EP, EA, TC, AE, BM, MD, CT, CM and IF)

[Time : 3 hours

(Maximum marks : 100)

PART—A

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. A resistor has a four band colour sequence of Yellow, Violet, Black and Gold. Determine the resistance and tolerance ratings.
2. Give two applications of a tunnel diode.
3. What are the majority carriers in N-type doped silicon? What constitute the minority carriers?
4. What is the maximum reverse voltage, PIV, across a diode in Half Wave Rectifier, Center Tapped Full Wave Rectifier and Bridge Full Wave Rectifier?
5. What do you mean by saturation of a transistor? (5×2=10)

PART—B

II Answer *any five* of the following. Each question carries 6 marks.

1. What are trimmers and padders?
2. What is a zener diode? Draw the equivalent circuit of an ideal zener diode in the breakdown region.
3. Draw the circuit diagram of Half Wave Rectifier. Explain its working. What is the frequency of its output waveform?
4. Show that the ripple factor of half wave rectifier is 1.21.
5. Compare H W R, Centre Tapped F W R and Bridge F W R in terms of Secondary voltage V_m , Number of diodes, Peak inverse voltage, No load DC output V_{dc} , Ripple factor, Rectification efficiency and Ripple frequency.
6. In a common emitter transistor circuit $I_E=5$ mA, $I_C=4.95$ mA and $I_{CEO}=100$ μ A. Calculate β and leakage current I_{CBO} .
7. With a neat diagram explain the structure of an unbiased PNP transistor. (5×6=30)

III Choose the right answer from those given :

1. What is the heart of the happy prince made of ?
 - (a) Ruby
 - (b) Gold
 - (c) Lead.
2. 'That woman died'. Who is the woman ?
 - (a) Mother
 - (b) Grand mother
 - (c) Kamala Das.
3. Whom did the sniper kill ?
 - (a) His brother
 - (b) Commander-in-Chief
 - (c) A stranger.
4. Which of the following would you choose to describe the poet's love in 'I shall not live in vain' ?
 - (a) Love for one's fellow men
 - (b) Love for birds and animals
 - (c) Love for all created beings.
5. According to Gandhiji, a man of truth must be a man of :
 - (a) Care
 - (b) Money
 - (c) Relationships.
6. Where did the two men in 'The man he killed' meet ?
 - (a) Old ancient inn
 - (b) War field
 - (c) Road.
7. 'They had the blush of an innocent girl, they had the rich tone of an Italian landscape.' What is the narrator referring to ?
 - (a) The waiters
 - (b) The restaurants in Paris
 - (c) Peaches.
8. The symbol and mystery of a door resides in its :
 - (a) Degree of transparency
 - (b) Quality of concealment
 - (c) Material used.
9. Oscar Wilde is an author.
 - (a) English
 - (b) American
 - (c) Irish.
10. Gandhiji abstained from physical exercise at school because of his :
 - (a) laziness
 - (b) shyness
 - (c) fear of physical strain.

(10×1=10)

PART—C

(Answer *one* full question from each unit. Each question carries 15 marks.)

UNIT—I

- III (a) Describe the working principle of transformer. 5
 (b) Explain different types of fixed capacitors and their basic construction. 10

OR

- IV (a) Describe the charging and discharging action of capacitor. 5
 (b) Give the constructional features of following resistors :
 (i) Carbon Composition Resistor (ii) Potentiometer 10

UNIT—II

- V (a) What are N-type and P-type of semiconductor ? 5
 (b) What is a varactor diode ? Explain briefly how it can be used in tuning circuits. 10

OR

- VI (a) Describe how the depletion region formation in PN junction prevents the total recombination of holes and electrons. 5
 (b) Describe the effect of adding a trivalent gallium impurity to silicon. How does this affect the electron-hole pairs ? What are the majority and minority carriers ? What other materials are used as acceptors ? 10

UNIT—III

- VII (a) What is the difference between positive and negative clippers ? Explain with the help of output waveforms. 5
 (b) Draw and explain the working of a voltage tripler. 10

OR

- VIII (a) Explain the working of series inductor filter circuit. 5
 (b) With the help of a circuit diagram describe the operation of a clipper that can clip at two independent levels. 10

UNIT—IV

- IX (a) Explain the working of transistor as a switch. 5
 (b) Describe the circuit arrangement for obtaining the output characteristic of CB transistor configuration. Indicate the active, cutoff and saturation regions. 10

OR

- X (a) Describe the term base-width modulation or early effect. 5
 (b) What are the three main regions in a UJT's static characteristics ? Which region is used in an oscillator application ? 10

