TED (10)–3001

(REVISION—2010)

Reg. No.....

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# SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/ TECHNOLOGY—MARCH, 2011

## BASIC ELECTRONICS

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

[*Time* : 3 hours

(Maximum marks : 100)



## PART—A

(Answer all questions in one or two sentences. Each question carries 2 marks)

Marks

I 1. State the term color coding in resistors.

2. Define capacitance.

3. What is the frequency of capacitor ripple voltage in a full wave rectifier, if the frequency of transformer secondary voltage is 60 Hz ?

4. Define extrinsic semiconductor.

5. State saturation region of a transistor operation. (5x2=10)

## PART—B

(Answer any *five* questions. Each question carries 6 marks)

II 1. Define self and mutual inductance.

2. State the majority and minority carriers in N-type materials, represent an N-type semiconductor.

3. Distinguish between zener breakdown and avalanche breakdown.

4. Define the terms rectification efficiency and ripple factor.

5. Explain the working of shunt capacitor filter circuit.

6. Explain the construction of UJT.

7. Sketch the input and output characteristics of CE configuration. (5x6=30)

## PART—C

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

### UNIT—I

III 1. Explain the working principle of a transformer. 10

2. Describe different types of fixed capacitors. 5

OR

IV 1. Explain the color coding of resistors with example and figure. 10

2. Write the unit of resistance. If a resistor is rated at 1000 Ω and 10 w, what is the maximum current it can carry ? 5

Marks

UNIT—II

V 1. Sketch and explain the V-I characteristics of zener diode. 10

2. Describe potential barrier in P-N junction with figure of depletion region. 5

OR

VI 1. Explain current flow in a forward biased P-N junction. 10

2. Briefly explain varactor diode with curve between reverse voltage and junction capacitance. Draw the symbol. 5

UNIT—III

VII 1. Explain the working of full wave centre tapped rectifier with waveforms. 10

2. Show that the maximum rectification efficiency of a full wave rectifier is 81.2%. 5

OR

VIII 1. Explain the working of a voltage doubler, with circuit diagram. 10

2. Explain the working of a negative clamper. 5

UNIT—IV

IX 1. Explain the working of NPN transistor with suitable figure. 10

2. A transistor has $\alpha_{dc}$ of 0.98 and collector leakage current Ico of 1μA. Calculate the collector current, when $I_E$ = 1 mA. 5

OR

X 1. Mark three regions of operation on output characteristic of transistor in CE configuration. 10

2. Draw the equivalent circuit of UJT. 5