

TED (10)-3001

(REVISION-2010)

Reg. No.

Signature

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY - OCTOBER, 2011

BASIC ELECTRONICS

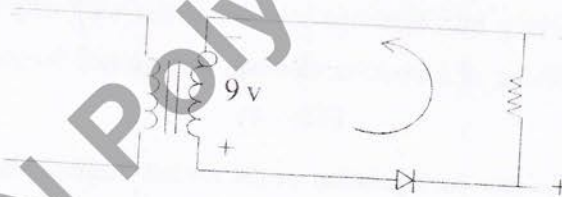
(Common for EL, EC, EP, EA, TC, AE, BM, MD, CT, CM & IF)

(Maximum marks : 100)

[Time : 3 hours

PART-A

- I Answer the following questions in one or two sentences. Each question carries 2 marks. Marks
1. What is an inductor? What is the unit of inductance?
 2. Explain why the temperature coefficient of resistance of a semi conductor is negative.
 3. What is peak inverse voltage of a diode?
 4. Explain the reason why the base current in a transistor is usually much smaller than emitter current or collector current.
 5. Find the values of V_m and V_{dc} for the given circuit.



(5×2=10)

PART-B

- II Answer any five of the following. Each question carries 6 marks.
1. (a) What forms the dielectric of an electrolytic capacitor? Why is the electrolytic capacitor polarized? 3
 - (b) For what purpose can a transformer be used in an electronic circuit? 3
 2. Explain how holes are created in a p-type semi conductor. 3
 3. Which carriers conduct forward current in a diode? Draw the symbol for a PN junction diode showing the direction of forward current. 6
 4. Draw a NPN transistor in CE configuration biased for operation in active region. 6
 5. Sketch the typical output characteristics curves for an NPN transistor, in CB configuration and mark the active, saturation and cut off regions. 6
 6. Explain the working of half wave voltage doubler with circuit diagram. 6
 7. (a) Name three primary uses of capacitors. 3
 - (b) While tuning your radio receiver to a desired station, which component inside the set are you varying? 3

(5×6=30)

PART—C

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

UNIT—I

- III (a) Explain the colour coding of resistors. 8
 (b) We need a resistor of value $47\text{ K}\Omega$ with $\pm 5\%$ tolerance. Specify the sequence of colour bands on this resistor. 7

OR

- IV (a) Define self and mutual inductance. 6
 (b) List the different types of transformers and their applications. 9

UNIT—II

- V (a) What is doping? Explain the formation of p-type semiconductor by doping. 9
 (b) Describe Avalanche breakdown. 6

OR

- VI (a) Explain the working of a zener diode and draw its V-I characteristics. 9
 (b) Draw the symbol of varactor diode and list its applications. 6

UNIT—III

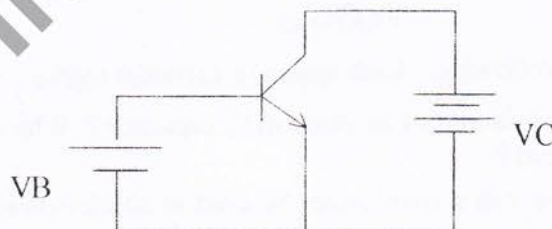
- VII (a) Explain the working of a centre tapped fullwave rectifier with circuit diagram and waveforms. 9
 (b) List the different types of filter circuits. 6

OR

- VIII (a) Explain the working of a halfwave rectifier with circuit diagram and waveforms. 9
 (b) Explain the working of a positive clamper with circuit diagram. 6

UNIT—IV

- IX (a) Identify the transistor configuration of the circuit diagram shown below :



- (b) Draw its output characteristics and mark the different regions. 6
 (c) α of the above transistor is 0.98 and input current (I_B) is $10\ \mu\text{A}$. Calculate the value of β and o/p current (I_C). 7

OR

- X (a) Explain the working of an NPN transistor with diagram. 9
 (b) Draw the VI characteristics of VJT. 6