TED (15) – 2041

(REVISION — 2015)

Reg. No.....

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2019

BASIC ELECTRONICS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What is the difference between Active and Passive components ? Name at least two in each category.
2. A carbon resistor has the colour bands : green, blue, red and gold. What is the resistance value ? Also write the colour band sequence for 390 ± 20% Ω.
3. Draw the energy band diagram of a semiconductor.
4. Define ripple factor and write ripple factor for full wave rectifier.
5. Why ordinary transistors are called bipolar transistors ? (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Describe the working principle of Transformer with suitable diagram.
2. Three capacitors having 10F, 20F and 30F are connected in series. Calculate the effective capacitance.
3. Draw the symbol of a Zener diode. Also plot the V-I characteristics.
4. With relevant sketches discuss the working of half wave rectifier with capacitor filter.
5. Illustrate the working of negative diode clamper with necessary diagram.
6. Write the difference between Drift Current and Diffusion Current in a PN junction. And also draw the circuit symbol of PN junction diode.
7. Draw the common base configuration of NPN transistor. Also draw its output characteristics. (5×6 = 30)

Marks

PART — C

(Maximum marks : 60)

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

Unit — I

III (a) Explain constructional features of a Wire Wound Resistor. What is the range of wattage of wire wound resistors. 9

(b) Enumerate different types of Capacitors and its specifications. 6

Or

IV (a) Explain Colour Coding of Carbon Resistors with suitable example. 10

(b) Define Inductance and enumerate the classifications of Inductors. 5

Unit — II

V (a) Draw V-I characteristics of Tunnel Diode and write its applications. 9

(b) Differentiate between Zener and Avalanche Breakdown. 6

Or

VI (a) Explain the formation of Potential Barrier and establishment of current flow in forward biased PN junction diode. 10

(b) Explain the working of Varactor and write applications. 5

Unit — III

VII (a) Analyse the working of π section filter with the help of neat figure. 9

(b) Describe the working of Full Wave Voltage Doubler with relevant sketches. 6

Or

VIII (a) With neat circuit diagram and wave forms explain the working of a centre taped full wave rectifier with capacitor filter. 10

(b) Compare the performance of half wave, centre taped and bridge rectifiers. 5

Unit — IV

IX (a) Identify Cut off, Active and Saturation Regions in characteristic curve of CE Configuration and also explain these regions. 9

(b) With the help of diagrams, describe the principle of operation of PNP transistor. 6

Or

X (a) Derive the relation between α and β of a Transistor. 9

(b) Compare the three transistor configurations and write the applications of each. 6