BIEL-001

B.Tech. (BTCSVI / BTECVI / BTELVI)
Term-End Examination
June, 2017

00504

BIEL-001 : BASICS OF ELECTRONICS ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is allowed.*

1. (a) What do you understand by barrier potential ? Also explain biasing in p-n junction.   7

    (b) Draw and explain the V – I characteristics of a p-n junction diode.   7

2. (a) What do you understand by semiconductor ? Explain the properties of semiconductor materials, using energy band diagram.   7

    (b) What do you understand by excess carriers in semiconductors ? Also explain the continuity equation.   7

3. (a) Explain with a neat diagram, the Ebers-Moll model for BJT. 7

   (b) Explain the construction and working of n-channel depletion type MOSFET. 7

4. (a) Derive the relation between α and β of BJT. 7

   (b) Calculate the Q-point for the voltage divider bias circuit shown in Figure 1. Assume that the transistor is a Silicon transistor with $\beta = 100$. 7
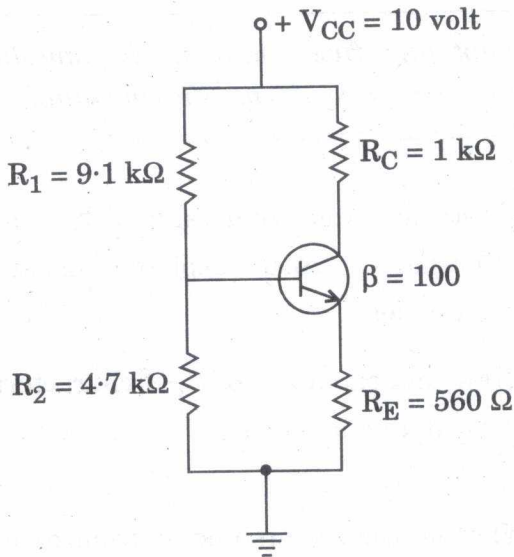

Figure 1

5. (a) Explain the functions of capacitors and inductors as Filters. 7

   (b) Explain the working of a full wave bridge rectifier with its output waveforms. 7

6. (a) What is meant by Ripple factor ? What is its significance ? How will you obtain Ripple factor for a half wave rectifier ? 7

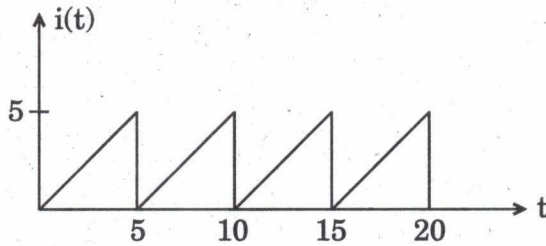(b) Calculate the rms value and average value of the current waveform shown in Figure 2. 7

Figure 2

7. Write short notes on any *two* of the following :

2×7=14

(a) Phototransistors

(b) LC Filters

(c) Voltage Multipliers

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