

B.Tech. / B.E. Mechanical Engineering (Model Curriculum) Semester-IV
ESC-201 - Basic Electronics Engineering

P. Pages : 2

Time : Three Hours



GUG/W/24/14061

Max. Marks : 80

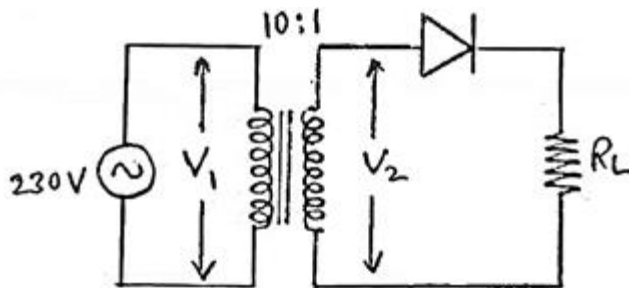
- Notes :
1. All questions carry marks as indicated.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain in detail block diagram of DC power supply system. 8
- b) What is filter? Describe capacitor filter with its output waveform and show the expression for Ripple factor. 8

OR

2. a) Explain the current gain of BJT in common base and common emitter configuration? Derive the relationship between them. 8

- b) 8



For the given half wave rectifier with transformer of turn ratio 10:1.
Determine the-

- i) DC output voltage
- ii) PIV (Assume Ideal diode and $R_L = 200 \Omega$)

3. a) Explain the ideal characteristic of an OP-Amp. 6
- b) Explain Op-Amp as- 10
- i) Inverting summing amplifier
 - ii) Non-Inverting summing amplifier

OR

4. a) Explain the block diagram of Op-Amp. State advantages and application of Op-Amp. 8
- b) Define the following for an OP-Amp- 8

- | | |
|---------------|--------------------------|
| i) CMRR | ii) Skew Rate |
| iii) SVRR and | iv) Input offset Voltage |

5. a) Draw the pin diagram of IC555 and explain each pin. 8
- b) Derive an expression for charge on a capacitor at any time during charging in a RC timing circuit. 8

OR

6. a) Demonstrate the operation of Monostable Multivibrator. 8
- b) Derive the expression for the frequency of Wein bridge oscillator. 8
7. a) State and Prove Distributive Law. 4
- b) $Y = (A+B) (A'+C) (B+C)$ For the given Boolean expression draw the logic diagram, Minimize the expression using Boolean algebra and draw the modified logic diagram. 6
- c) Differentiate between Analog Signal and Digital Signal? State the advantages of Digital Circuit. 6

OR

8. a) What is Full adder? Construct Full adder using two Half Adder and state its truth table and output logic expression. 8
- b) Explain the architecture of microprocessor 8085. 8
9. a) Describe the working of Global system for mobile system. 8
- b) What is Amplitude modulation? Derive an expression for total power in Amplitude modulation. 8

OR

10. a) Explain different types of guided transmission media along with its advantages and disadvantages. 8
- b) Draw and explain block diagram of communication system. 8
