

2017

ELECTRONICS

*(Electronic Circuits and PCB
Designing Lab)*

[Gen. Elective]

(CBCS)

(Practical)

PAPER – GE1P

Full Marks : 20

Time : 2 hours

The figures in the right-hand margin indicate marks

Answer any one question, selecting it by a lucky draw

1. Verify Thevenin's theorem by using a resistive Wheatstone bridge network :
- (a) Theory and schematic circuit diagram. 2 + 1
- (b) Circuit implementation. 1
- (c) Data for load voltage (V_L) and load current (I_L). 5
- (d) Draw I_L - V_L graph. 2
- (e) Determine V_{TH} and R_{TH} from I_L - V_L graph. $1\frac{1}{2} + 1\frac{1}{2}$
- (f) Accuracy. 1
2. Verify Superposition theorem (using at least two sources).
- (a) Theory and schematic circuit diagram. 2 + 1
- (b) Circuit implementation. 1
- (c) Data for verification. 3 + 3 + 3
- (d) Accuracy and discussion. 1 + 1

3. Verify Maximum power transfer theorem by using resistive Wheatstone bridge network :
- (a) Theory and schematic circuit diagram. 2 + 1
 - (b) Circuit implementation. 1
 - (c) Data for load voltage (V_L) and load current (I_L). 5
 - (d) Verification of Maximum Power Transfer theorem from R_L - P graph. 3
 - (e) Calculate the value of R_L at which P is maximum. 2
 - (f) Accuracy. 1
4. Construct full wave rectifier and study load regulation with and without shunt capacitance filter :
- (a) Working formula and circuit diagram. 2 + 1
 - (b) Circuit implementation. 1
 - (c) Data for load voltage (V_L) - load current (I_L) characteristics. 3 + 3
 - (d) Draw the graphs. $2\frac{1}{2} + 2\frac{1}{2}$

5. Construct half wave rectifier and study load regulation with and without shunt capacitance filter :
- (a) Working formula and circuit diagram. 2 + 1
 - (b) Circuit implementation. 1
 - (c) Data for I_L - V_L characteristics. 3 + 3
 - (d) Draw the graphs. $2\frac{1}{2} + 2\frac{1}{2}$
6. Study the load regulation of a Zener diode
- (a) Theory and circuit diagram. 2 + 1
 - (b) Calculation of limiting resistance. 2
 - (c) Data for V_L - I_L characteristics. 4
 - (d) Draw the graph. 2
 - (e) Calculate the percentages of regulation for two different I_L . 2 + 2

7. To draw the static characteristics curves of a transistor in CE configuration for three different base currents :
- (a) Theory and circuit diagram. 2 + 1
 - (b) Circuit implementation. 1
 - (c) Data for output characteristics. 6
 - (d) Draw the graph. 3
 - (e) Calculate the h_{fe} . 2
8. Study the CE amplifier with a given transistor :
- (a) Theory and circuit diagram. 2 + 1
 - (b) Circuit implementation. 1
 - (c) Data for linear characteristics. 2
 - (d) Data for frequency response. 4
 - (e) Draw the curve for linear characteristics. 2
 - (f) Draw the curve for frequency response and find the bandwidth of the circuit. 2 + 1

9. Study of 9 volt, 100 mA power supply with Zener regulation :
- (a) Theory and circuit diagram. 2 +
 - (b) Circuit implementation.
 - (c) Data for V_L - I_L characteristics.
 - (d) Draw the graph for load regulation.
 - (e) Calculate the load regulation with two specified load current. 2 +
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