UG/2nd Sem/ELEC/G/19(Pr)

2019

B.Sc. (General)

2nd Semester Examination

ELECTRONICS

Paper - DSC 1BP

[Practical]

Full Marks : 20 Time : 3 Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Linear & Digital Integrated Circuits (Lab)

Answer any *one* question : 1×15=15

1. Design a non-inverting amplifier of gain 10 using an OP-AMP. Draw the input-output graph.

2. Design an non-inverting amplifier using an OP-AMP. Study the frequency response and plot the response.

[Turn Over]

3. Use the given OP-AMP to design an adder circuit with suitable gain. Apply three input voltages (positive and negative). Take at least six different combination of input voltages. Compare the expected and experimental output voltages.

4. Construct a differentiator circuit using an OP-AMP. Apply a triangular wave to this circuit and observe the output using CRO and record the data and discuss it.

5. Design an integrator circuit using an OP-AMP taking input resistance $R_1 = 1k\Omega$, feedback resistor $R_2 = 6.8k\Omega$, feedback capacitor, C_2 = 0.1 μf and load resistance $R_3 = 16k\Omega$ on a breadboard. Record the results and plot the frequency response of the output voltage for a suitable input voltage.

6. Construct an astable multivibrator with IC555 Timer for a given frequency. Study the output waveform using a Cathode-Ray oscilloscope and measure its duty cycle.

7. Construct a half-adder circuit using NAND gates only and verify its truth table.

8. Construct a J-K flip-flop using NAND gates only and verify its truth-table.

9. Verify De-Morgan's theorem on the bread board. Record the data for different combination of input variables.

10. Realise an X-OR gate using minimum no. of NOR gates. Verify the truth table.

11. Using SPICE, simulate an integrator circuit using OP-AMP and verify the result.

12. Verify Thevenin's theorem through SPICE simulator.

13. Design an inverting amplifier using an OP-AMP using SPICE simulator and verify the result.

14. Verify Norton's theorem using SPICE simulator.

15. Design a JK flip-flop using NAND gates using SPICE simulator and verify the designed circuit.

Distribution of Marks

Experiment	:	15
Lab. Note Book	:	02
Viva-Voce	:	03
Total	:	**20 marks**