PG/IIIS/ELC/304/23
(CBCS)

M. Sc. 3rd Semester Examination, 2023

ELECTRONICS

(Introduction to Electronics)

PAPER – ELC-304 (CBCS)

Full Marks : 50

Time : 2 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

GROUP–A

Answer any **four** questions : 4×2

1. Find the value of $(1100)_2 - (0011)_2$. 2

2. What are simplex & full duplex communication system? 1 + 1

3. What are set up time & holding time in connection with cellular communication system? 1 + 1

4. Write the truth table of NOR & NAND gates. Why are they called universal gates? $(\frac{1}{2} + \frac{1}{2}) + 1$

5. What are pure & impure semiconductors? 1 + 1

6. Find the value of $(356)_8 + (123)_8$. 2

GROUP – B

Answer any **four** questions : 4×4

7. Why do modulation is required & what are the advantages of modulation ? Draw the envelopes of FM & AM modulated wave. 1+1+1+1

8. Draw the output characteristics of BJT in CE mode. Show its different regions. 2 + 2

9. Draw the circuit diagram of a full wave rectifier & explain its operation. 1 + 3

10. Design a full adder cincuit. 4

11. What is Morr's law with reference to IC design. What are SSI, MSI, LSI, VLSI & SLSI ? $2+(\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2})$

12. Write down De Morgan's theorem. 4

GROUP – C

Answer any **two** questions : 2×8

13. Design a MOD-8 Counter. 8

14. Draw the circuit diagram of a J-K flip flop & write down the truth table. What is race around condition & how it can be overcome ? 2+2+2+2

15. What is hands off process in celluler communication system? Describe the hands off process briefly. 2 + 6

16. What is doping? Draw the forward bias and reverse bias characteristics of a p-n Junction diode. What is knee voltage? 2 + 2 + 2 + 2

[Internal Assessment — 10 Marks]