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**Time : 2 Hours****DIGITAL ELECTRONICS AND  
COMPUTERS****Subject Code**

V	4	3	3	1
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**Total No. of Questions : 23****(Printed Pages : 4)****Maximum Marks : 50**

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- INSTRUCTIONS :** (i) There are four sections in the question paper (A, B, C & D) consisting of 23 questions
- (ii) In Section A there are eight questions of which question Nos. 1 to 4 are Multiple Choice Questions, question Nos. 5 & 6 are to be answered in one word, phrase or figure and question Nos. 7 & 8 are to be answered in one sentence each.
- (iii) Attempt all the questions, however internal choice is given for question numbers 20 and 23.
- (iv) Figures to the right indicate marks allotted to each question.
- (v) Write the number of each question clearly on the answer book.

**Section A**

1. The radix of Octal number system is ..... . 1
- 2
  - 4
  - 8
  - 16

2. The Boolean equation of a 2 input X-OR gate is ..... . 1
- $Y = \overline{A \cdot B}$
  - $Y = A \oplus B$
  - $Y = A \cdot B$
  - $Y = A + B$
3. The IC number of quad two input NAND gate is ..... . 1
- IC 7402
  - IC 7404
  - IC 7400
  - IC 7408
4. Data of EPROM can be erased by using ..... . 1
- X-rays
  - Alpha rays
  - Ultraviolet rays
  - Gamma rays
5. Name the circuit used for regenerating distorted pulses. 1
6. What is the 2's complement of binary number  $(1000)_2$  ? 1
7. Define Demultiplexer. 1
8. What is the full form of ALU and CPU ? 1

### Section B

9. What is binary ladder ? Draw a neat logic diagram of 4 bit binary ladder. 2
10. Define modulus of a Counter. What is the modulus of a 3 bit synchronous counter ? 2
11. Draw the block diagram of computer system. 2
12. What is a ripple counter ? State any *two* advantages of it. 2
13. Draw a neat logic diagram of Half Adder and write its truth table. 2
14. What is 'Accuracy' and 'Resolution' in D to A Converter ? 2

### Section C

15. Draw the internal pin configuration diagram of IC 7402. Show how NOR gate can be converted to OR gate with the help of a neat logic diagram. 3
16. Distinguish between Astable Multivibrator and Bistable Multivibrator. State any *three* points. 3
17. Do as directed : 3
  - (i) Convert  $(349)_{10}$  to its binary equivalent.
  - (ii) Convert  $(7E)_{16}$  to its decimal equivalent.
  - (iii) Subtract  $(1010)_2$  from  $(1101)_2$ .
18. Explain the working of a 4-bit shift left register with the help of a neat logic diagram. 3

19. Give *three* points of difference between impact printers and non-impact printers. 3
20. State and verify De Morgan's second theorem with the help of logic diagram and truth table. 3

*Or*

With the help of a neat circuit diagram and truth table, explain the working of 2 input TRL AND gate.

#### **Section D**

21. Explain the following devices in brief : 4
- (i) Keyboard
- (ii) Optical Scanner.
22. State any *four* points of comparison between 8080A and 8085 micro-processor. 4
23. Explain the working of positive edge triggered J-K flip-flop with a neat circuit diagram. 4

*Or*

Explain the working of Schmitt Trigger with the help of a neat circuit diagram.