

U.G. 3rd Semester Examination – 2020

PHYSICS[HONOURS]

Course Code : PHY(H)-H-CC-07/PR

Digital Systems and Applications (PRACTICAL)

Full Marks : 20

Time : 2 Hours

The figures in the right-hand margin indicate marks.

Answer any five questions

(5×4=20)

1. Describe a technique to measure the voltage and time period of a periodic waveform using a cathode ray oscilloscope.
2. How can a diode and a transistor be tested with a multimeter?
3. Design a switch (NOT GATE) using a transistor.
4. Design circuits to explain how AND, OR, NOT, XOR and NAND gate truth tables can be verified.
5. Describe the principle of operation of a half adder, full adder and 4-bit binary adder with suitable circuit diagrams.
6. Design a half subtractor, full subtractor, adder-subtractor using a full adder integrated circuit.
7. Design RS, Clocked RS, D-type and JK flip-flop circuits using NAND gates.
8. Design a JK Master-slave flip-flop using suitable Flip-Flop ICs.
9. Design a 4-bit Counter using D-type or JK Flip-Flop ICs and sketch the timing diagram.
10. Design a 4-bit Shift Register (serial and parallel) using either D-type or JK Flip-Flop ICs.
11. Describe the principle of operation of an astable multivibrator using 555 timer with a suitable circuit diagram
12. Describe the principle of operation of monostable multivibrator using 555 timer with a suitable circuit diagram
13. Write a program to add two numbers at two different memory locations using 8085 microprocessor.
14. Write a program to multiply two numbers at two different memory locations using 8085 microprocessor

