

S.No. 15012 T

RCCSPH 9

(For candidates admitted from 2008 – 2015 Batch)

B.Sc. DEGREE EXAMINATION, APRIL 2021

Part III — Physics – Major

**DIGITAL ELECTRONICS AND MICROPROCESSOR
FUNDAMENTALS**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL the questions.

1.

Find 2's complement of the given binary numbers :

(a) 1101_2 (b) 10011_2 .

2.

Give the logic symbol and truth table for AND gate.

3.

State the basic laws of Boolean algebra.

4.

What do you mean by K-map?

5.

Draw the logic circuit for half adder and give its truth table.

6.

What do you mean by encoder?

7.

What is a flip flop?

8.

What are counters?

9.

What are output devices?

10.

Mention the types of addressing modes.

SECTION B — (5 × 5 = 25)

Answer ALL the questions choosing either (a) or (b)

11.

a) Explain Excess-3 code with an example.

Or

b) Add and subtract the following :

(i) 11011_2 and 101_2

(ii) 10111_2 and 110_2 .

12.

a) Minimize the following Boolean function using sum of products (SOP)

$$f(a, b, c, d) = \sum m(3, 7, 11, 12, 13, 14, 15)$$

Or

b) Simplify the following Boolean expression to minimum number of literals.

(i) $(A'+C)(A'+C')(A+B+C'D)$ to four literals

(ii) $(x'y'+z') + z + zy + wz$ to three literals.

13.

a) Explain the function of full adder.

Or

b) Explain the working of demultiplexer.

14.

a) Explain the function of RS flip flop.

Or

4

S.No. 15012 T

b) Explain the function of ring counter.

15.

a) Write notes on address bus, data bus and control bus.

Or

b) Explain the pin configuration of 8085 microprocessor with necessary diagram.

SECTION C — (3 × 10 = 30)

Answer any THREE questions

16.

Explain the universality of NAND gates.

17.

State and prove De-Morgan's theorems.

18.

Explain the function of half and full subtractor.

19.

Explain the working of shift registers.

20.

Explain the following :

(a) Instruction format (b) Assembly language.
