**2020/TDC/ODD/SEM/**
**BCSP–101/197**

**TDC Odd Semester Exam., 2020**
**held in July, 2021**

# COMPUTER SCIENCE

## ( Pass )

**( 1st Semester )**

Course No. : BCSP–101

**( Digital Electronics, Computer Fundamentals and Computer System Architecture )**

*Full Marks* : 35
*Pass Marks* : 12

*Time* : 2 hours

*The figures in the margin indicate full marks for the questions*

Answer **five** questions, taking **one** from each Unit

### UNIT—I

**1.** Explain the characteristics of digital integrated circuits. 7

**2.** Given the following Boolean function :

$F \quad ABC \quad B\overline{C}D \quad \overline{A}BC$

*(a)* Obtain the truth table of the function.





*(b)* Simplify the function to a minimum number of literals.

*(c)* Realize the function $F$ using NAND gate. 2+2+3=7

### UNIT—II

**3.** *(a)* Write short notes on the following : 1½×2=3

*(i)* Shift register

*(ii)* Ripple counter

*(b)* Explain *R-S* flip-flop. Compare it with *J-K* flip-flop. 4

**4.** *(a)* What is multiplexer? 2

*(b)* Implement the following Boolean function by using an 8 1 multiplexer : 5

$F(A, B, C, D)$ : $m(0, 3, 5, 6, 9, 10, 12, 15)$

### UNIT—III

**5.** *(a)* What is register transfer language? 3

*(b)* Explain an ALU. 4

**6.** *(a)* What are interrupts? 3

*(b)* What are program counters, instruction register, address register and data register? 4

UNIT—IV

**7.** Explain CPU organization with example. 7

**8.** *(a)* Explain the functions of CPU registers. 4

*(b)* What are the major attributes of RISC computers? 3

UNIT—V

**9.** Explain with neat diagram the functions of a DNA controller. 7

**10.** *(a)* What is priority interrupt? 2

*(b)* Explain cache memory and virtual memory. 5

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