Paper id: 252677

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM IV) THEORY EXAMINATION 2024-25
DIGITAL ELECTRONICS

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **02 x 7 = 14**

Q no.	Question	CO	Level
a.	Convert the following binary number into grey code. 1. $(110111)_2$ 2. $(100110)_2$	1	K3
b.	Perform the subtraction using 2's complement method of the following $(1100)_2$-$(11101)_2$	1	K3
c.	Implement a 4:1 multiplexer using 2:1 multiplexer.	2	K3
d.	Elucidate the race around condition in sequential circuit.	3	K2
e.	Discuss the R-S flip flop in detail.	3	K2
f.	Enlist the advantages of EEPROM.	4	K2
g.	Explain the flash type ADC.	5	K2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

Q no.	Question	CO	Level
a.	Simplify the Boolean expression using K-map F (A, B, C, D) = ∏ M (4,5,6,7,8,12)**.** d (0, 1, 2, 3, 9, 11, 14)	1	K3
b.	Design a full adder using a ROM.	2	K2
c.	Define bi-directional shift register. Draw and explain 3-bit bi-directional shift register using D flip-flop.	3	K2
d.	Elaborate a comparison of CMOS, TTL and RTL logic families.	4	K2
e.	Explain the working of dual slope ADC with neat diagram.	5	K2

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

Q no.	Question	CO	Level
a.	Simplify and minimize the following four variable switching function using Quine-Mc McCluskey tabulation method. *f(A,B, C, D)*=∑m(0,1,2,3, 4, 6,8, 9, 10, 11)	1	K2
b.	Implement the Boolean expression using only NAND gate. Y=$\overline{((A+B)C)}D$	1	K2

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4. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain the look ahead carry generator with neat diagram.	2	K2
b.	Implement the following function. F (A, B, C, D) = ∑m (0, 1, 3, 4, 7, 8, 9, 11, 14, 15) using 1. 8:1 MUX 2. 4:1 MUX	2	K2

5. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Design a synchronous binary MOD-6 counter.	3	K3
b.	Explain Melay machine and Moore machine. Also state the differences between Melay and Moore machine.	3	K2

6. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Draw the circuit of an ECL gate and explain its operation.	4	K2
b.	Elaborate the term PAL, PLA and FPGA with neat diagram.	4	K2

7. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	What do you mean by R-2R ladder DAC? Explain working operation od R-2R Ladder DAC.	5	K2
b.	Enlist the different types of ADC. Alsoexplain operation of successive approximation type ADC.	5	K2