B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Second Semester

Information technology

21UIT204- Object Oriented Programming in C++

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1.	List the types of number system by stating its base value	CO1- U
2.	Convert the following Binary numbers into Decimal numbers:	CO2- App

(i) 110101_2
(ii) 1100.1011_2

3.	Illustrate OR gate with its truth table and diagram	CO2- U
4.	Realize the logic expression $Y=\overline{BC} + \overline{AC} + \overline{AB}$ using basic gates	CO2- App
5.	Write short notes on Multiplexers and Demultiplexers.	CO1- U
6.	Outline on Encoder and Decoder	CO1- U
7.	Outline about sequential circuits	CO1- U
8.	Explain Latch	CO1- U
9.	Explain about race condition	CO1- U
10.	Explain about State Table	CO1- U

PART – B (5 x 16= 80Marks)

11. (a) Develop a truth table for BCD adder, retrieve the Cout expression using K-Map, construct a 4-bit BCD adder logic diagram and Analyse the circuit by passing input value 1010 and a carry '1'.   CO3-Ana   (16)

Or

(b) Convert the Binary inputs B0,B1,B2,B3 to its corresponding Gray code outputs G0,G1,G2,G3. Develop a truth table ,reterive the expressions using K-Map, construct a logic diagram and Analyse the circuit by passing input value 1001.   CO3-Ana   (16)

12. (a) Analyze and simplify the logical expression   CO3-Ana   (16)
ABCD + $\overline{A}$ $\overline{B}$ $\overline{C}$ D+$\overline{A}$ B C +AB and construct a 4-variable K-Map. Obtain the simplified expression from the map
Or

(b) Analyze and simplify the Boolean function using Quine-McMcluskey Method: CO3-Ana   (16)
F(a,b,c,d) =∑m(0,2,3,6,7,8,10,12,13)

13. (a) Construct the truth table and build a circuit diagram, Derive Boolean expression by applying the logic of Half adder and Full Adder   CO2-App   (16)
Or

(b) Construct the truth table with block diagram and build a circuit diagram for Octal to Binary Encoder   CO2-App   (16)

14. (a) Construct an S-R Latch with input values S,R,Qn that starts from 000 to 111 and retrieve the next state using NAND gate with its logic diagram and truth table   CO2-App   (16)
Or

(b) Construct a S-R Flip-Flop with 2-bit input values 00,01,10 & 11 and reclaim its states necessary logic diagram   CO2-App   (16)

15. (a) Summarize on Race free assignments in detail   CO1- U   (16)
Or

(b) Infer on Analysis and design procedures of synchronous sequential circuits   CO1- U   (16)

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