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Question Paper Code: U2F05

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

Second Semester

Computer science and Design

21UCD205- Digital and Computer Organization

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

- BCD Code is also called as _____. CO1- U
(a) 8421 (b) 2421 (c) 6231 (d) 8521
- Full adder is constructed by using _____. CO1- U
(a) Two Half Adder & one OR gate (b) two OR gate & one HA
(c) One HA & two OR gate (d) One OR gate & one HA
- CPU does not perform the operation _____. CO1- U
(a) data transfer (b) logic operation (c) arithmetic operation (d) all of the above
- The status bit is also called as _____. CO1- U
(a) Unsigned bit (b) Signed bit (c) Flag bit (d) None of the above
- The performance of cache memory is frequently measured in terms of a _____ quantity called _____. CO1- U
(a) Miss ratio (b) Hit ratio (c) Latency ratio (d) Read ratio

PART – B (5 x 3 = 15 Marks)

- What is the base or radix of a number system? CO1- U
- Construct 2:1 multiplexer. CO1- U
- Draw the block diagram of computer. CO1- U

9. Give the booth's recoding and bit-pair recoding of the computer.
1000111101000101 CO2- App

10. What is the role of MAR and MDR? CO1- U

PART – C (5 x 16= 80Marks)

11. (a) Describe 1's complement and 2's complement method of subtraction. Subtraction of 1010 from 1111 using two's complement method CO2-App (16)

Or

(b) Simplify the following Boolean function CO2-App (16)
 $f(W,X,Y,Z)=\sum m(2,6,8,9,10,11,14,15)$ using Quine Mccluskey Method.

12. (a) Implement the following function using DEMUX. CO2-App (16)
 $F1(A,B,C)=\sum(0,3,7)$ $F2(A,B,C)=\sum(1,2,5)$. Explain in detail.

Or

(b) Implement the following Boolean function using 4 X 1 MUX CO2-App (16)
 $F(a, b, c, d) = \sum m(0,1, 3, 4, 8, 9, 15)$. Explain in detail.

13. (a) Explain basic operational concepts of a computer system. CO1-U (16)

Or

(b) What do you mean by addressing modes? Explain various addressing modes with the help of examples. CO1-U (16)

14. (a) Explain the design of Addition/Subtraction logic unit. CO1-U (16)

Or

(b) Explain restoring and non-restoring division technique. CO1-U (16)

15. (a) Explain the need for cache memory and discuss the different types of mapping functions with necessary block diagram. CO1-U (16)

Or

(b) Explain in detail about input and output system. CO1-U (16)