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THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2017
(Regular/Supplementary/Improvement)
(CUCBCSS – UG)
CC15U BCS3 B04 - FUNDAMENTALS OF DIGITAL ELECTRONICS
(Computer Science – Core Course)
(2015 Admission Onwards)

Time: Three Hours   Maximum: 80 Marks

PART A
Answer *all* questions. Each question carries **1** mark.

1. The 2's complement of $(1000)_2$ is

2. Give an example of universal gate.

3. Define the base of a number system.

4. Convert $(1001)_2$ to its equivalent gray code.

5. The Simplified form of a Boolean equation is

6. An example of combinational circuit is

7. How many data select lines are required for selecting eight inputs?

8. The characteristic equation of D flip-flop is

9. On the fifth clock pulse, a 4-bit Johnson's counter sequence is $Q0 = 0$, $Q1 = 1$, $Q2 = 1$, and $Q3 = 1$. On the sixth clock pulse, the sequence is?

10. What do you mean by high impedance state?

(10 x 1 = 10 Marks)

PART B
Answer *all* questions. Each question carries **2** marks.

11. Discuss the correspondence between binary, octal and hexadecimal numbers with suitable examples.

12. What do you mean by error detection? Give an example of error detecting codes.

13. State and prove DeMorgan's theorem.

14. Explain the combinational circuit to add two single bit binary numbers.

15. What are the uses of A/D and D/A convertors?

(5 x 2 = 10 Marks)

PART C
Answer *any five* questions. Each question carries **4** marks.

16. Explain the following.

a) BCD   b) ASCII

17. Solve using K-Map,

18. Discuss parallel binary adders

19. Write short note on decoders.

20. Distinguish between combinational circuit and sequential circuit. Explain any one example of each.

21. Explain Asynchronous counters in detail.

22. Explain the working of Master slave flip flops.

23. Explain Weighted Register D/A convertor.

(5 x 4 = 20 Marks)

PART D
Answer *any five* questions. Each question carries **8** marks.

24. Perform the following operations.
    a) Convert $(153.56)_{10}$ to binary
    b) Convert $(10001100.101001)_2$ to decimal
    c) Find the 2's complement of $(10010111)_2$
    d) Subtract $(100110)_2$ from $(110000)_2$

25. What are the advantages of error correcting codes in data communication? Explain hamming codes in details.

26. Explain the laws and identities of Boolean algebra.

27. Explain the construction of SOP and POS forms in detail with suitable examples. What is the correspondence between minterms and maxterms?

28. Explain BCD to 7-segment decoder.

29. Explain various shift registers in detail.

30. Write notes on Johnson's counters and ring counters.

31. Discuss in detail, the different types of Digital to Analog converters with block diagram.

(5 x 8 = 40 Marks)

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