C 80688

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FOURTH SEMESTER B.TECH. (ENGINEERING) (09 SCHEME) DEGREE EXAMINATION, APRIL 2015

EE 09 405/PTEE 09 404—DIGITAL ELECTRONICS

Time : Three Hours

Maximum : 70 Marks

Part A

*Answer **all** the questions.*

1. Explain about two types of bipolar logic families. Give example for each.

2. Which gates are known as universal gates? Why they arc called so ?

3. Write excitation table for JK flip-flop,

4. Perform subtraction for the following binary numbers using one's complement method and two's complement method. 11011 – 11001

5. Explain the function of program counter in 8085.

(5 × 2 = 10 marks)

Part B

*Answer any **four** questions.*

6. Draw the circuit of TTL NAND and explain its working.

7. F = $\sum$ (0, 1, 5, 7). Implement this with 4 × 1 Multiplexer.

8. Distinguish between sequential and combinational logic circuit.

9. Explain with necessary diagrams working of 3bit asynchronous up counter

10. Explain the function of any four control signals used in 8085.

11. What is flag ? Draw the bit positions reserved for these flags in flag register of 8085.

(4 × 5 = 20 marks)

Part C

12. With necessary diagrams explain mixed voltage interfacing.

Or

13. Draw and explain the working of CMOS NAND gate.

14. Minimize the following expression using K-Map :—

    F (A, B, C, D) = $\sum m$(1, 3, 5, 8, 9, 1 1, 15) + d (2, 13)

    (i) Realize using NAND Gates.

    (ii) Realize using NOR Gate.

Or

Turn over

15. Write the truth table of full subtractor. Implement it using half subtractor and gate. Also implement borrow and carry function using separate 8 × 1 multiplexer.

16. Draw and explain the working of 3-bit bidirectional shift register.

Or

17. Design a BCD up counter using T flip-flop. Draw necessary waveforms.

18. Draw and explain the architecture of 8085 microprocessor.

Or

19. Write short note on :

    (i)   Stack pointer ;

    (ii) Accumulator ;

    (iii) Instruction register.

(4 × 10 = 40 marks)