PSMCAT105.1 - Elective-I : Digital Electronics Paper-V

P. Pages : 2

Time : Three Hours

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3041

Max. Marks : 80

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Notes : 1. All questions are compulsory and carry equal marks.
2. Draw neat and labelled diagram and use supporting data wherever necessary.
3. Avoid vague answers and write specific answers related to questions.

1. Either.

a) Explain about the Binary number system. Convert the following. **8**
   1) $(1011101)_2 = (?)_{10}$ 2) $(0.001)_2 = (?)_{10}$

b) Explain Advantages and Disadvantages of following Binary codes: **8**
   1) Excess 3 code.   2) EBCDIC code

OR

c) What do you mean by Data Representation. Explain how positive number and negative numbers are represented in binary number system. **8**

d) Explain following in detail: **8**
   1) Range and Accuracy.   2) Underflow and overflow.

2. Either.

a) Explain about the Binary Multiplication and Binary Division by giving sample example of each. **8**

b) What are the different basic logic gates? Explain it's different types in detail. **8**

OR

c) Explain 2's complement and solve: **8**
   1) 20-15 using 2's complement.

d) Construct basic gates using NOR and NAND gates. Also construct equality and inequality gate with NAND and NOR gates. **8**

3. Either.

a) What is K-Map? Explain different terms associated with K-map. **8**

b) Prove the following: **8**
   1) $A + \overline{A} \cdot B = A + B$ 2) $(A+B)(A+\overline{B})(\overline{A}+C) = AC$

OR

c)	What is Multivibrators? Explain it's different types in detail.		**8**

d) What is Half adder? Explain the working of Half adder with it's truth table. **8**

4. Either.

a) What is the function of Flip-Flop. Explain the clocked RS Flip-Flop with preset and clear inputs using NAND gate. **8**

b) Explain following: **8**
   1) D Flip-Flop.   2) Edge triggered Flip-Flop.

OR

c) Explain following: **8**
   1) Ripple counter   2) UP counter
   3) Synchronous counter   4) Down counter

d) Describe Asynchronous mod-6, mod-7 and mod-10 counter in detail. **8**

5. Solve all the questions.

a) Write a note on octal and Hexa-Decimal number system. **4**

b) Write a note on Derived logic gates. **4**

c) Differentiate between MUX and DEMUX. **4**

d) Explain in short about set-up time, hold time and propagation delay of flip-flop. **4**

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