GIET UNIVERSITY, GUNUPUR – 765022
B. Tech (Fourth Semester – Regular) Examinations, June – 2021
BPCEC4010 – DIGITAL ELECTRONICS
(E.C.E)

Time: 2 hrs   Maximum: 50 Marks
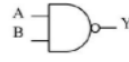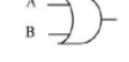
Answer ALL Questions
The figures in the right hand margin indicate marks.

**PART – A: (Multiple Choice Questions)**   **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions   [CO#]   [PO#]

a. Convert decimal number 255 to octal and choose the below options for appropriate answer?   CO1   PO2

(i) 263   (ii) 377

(iii) 155   (iv) 473

b. Convert decimal number $(0.6875)10$ to binary and choose the below options for appropriate answer?   CO1   PO3

(i) $(0.1011)2$ (ii) $(0.1001)2$

(iii) $(0.1010)2$ (iv) $(0.1111)2$

c. Find the AND gate from the following?   CO1   PO1

(i)   (ii)

(iii)   (iv)

d. How many 3-line-to-8-line decoders are required for a 1-of-32 decoder?   CO2   PO2

(i) 0   (ii) 2

(iii) 4   (iv) 6

e. Which of the figures in figure (a to d) is equivalent to figure shown below?   CO2   PO3
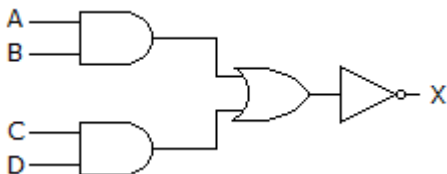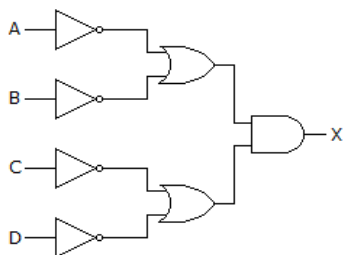
(i)   (ii)
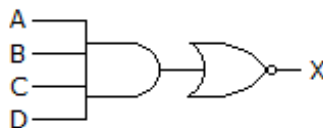
(iii)   (iv)

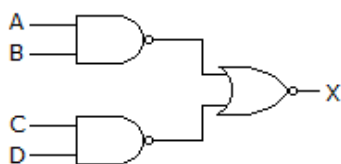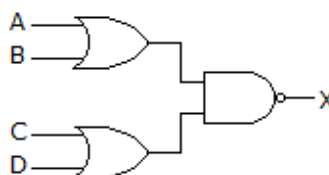
f. Which gate is best used as a basic comparator in combinational desig?   CO2   PO1

(i) AND   (ii) NAND

(iii) NOR   (iv) XOR

g. The simplest register only consists of?   CO3   PO1

   (i) Counter   (ii) RAM

   (iii) EPROM   (iv) Flip-Flop

h. A decimal counter has?   CO3   PO2

   (i) 5 stages   (ii) 15 stages

   (iii) 10 stages   (iv) 0 stages

i. RTL consists of?   CO4   PO2

   (i) Resistor, transistor and inductors   (ii) Resistor, diodes and BJTs

   (iii) Resistor and transistor   (iv) Resistor, capacitors and diodes

j. Which of the following logic family has the least propagation delay?   CO4   PO1

   (i) RTL   (ii) DTL

   (iii) I^2L (iv) CMOS

PART – B: (Short Answer Questions)   (2 x 5 = 10 Marks)

Q.2. Answer *ALL* questions   [CO#]   [PO#]

a. If x = 1000 and y = 0101, then perform x-y using 2's complement subtraction?   CO1   PO3

b. State and prove the associative law of Boolean algebra?   CO1   PO2

c. Define the Finite State Machine in logic design?   CO2   PO1

d. Explain the functioning of PIPO and PISO registers?   CO3   PO1

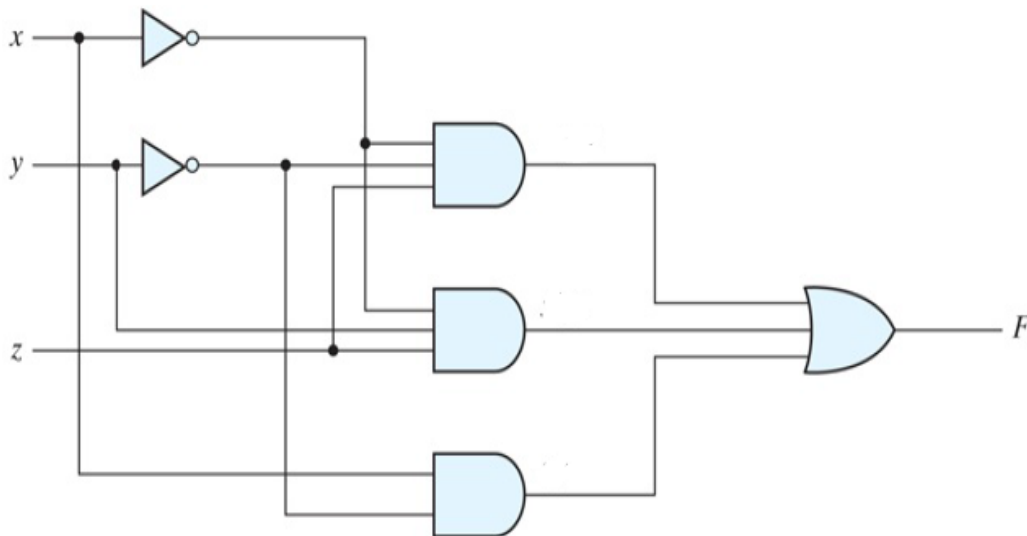e. What is the importance of ADC in electronics?   CO4   PO1

PART – C: (Long Answer Questions)   (6 x 5 = 30 Marks)

Answer *ANY FIVE* questions   Marks   [CO#]   [PO#]

3. Solve the below circuit for the function F2? And find for what values of x, y and z does the value of the function will be 1?   (6)   CO1   PO3

4. Simplify the Boolean function F using K-Map and implement to the minimum logic possible? Further verify the circuit with random samples?   (6)   CO1   PO2

   F (x, y, z)=Σ(2, 3, 4, 5)

5. With a neat sketch explain how 3:8 decoder will operate?   (6)   CO2   PO1

6. Illustrate the functioning of Magnitude Comparator with a suitable diagram and explain its functioning? (6) CO2 PO2

7. Design a 4 bit Universal Shift Register and explain its functioning? (6) CO3 PO3

8. Design 1kB ROM and explain its internal logic? (6) CO3 PO2

9. "Interfacing a digital computer to the analog world", Evaluate the statement? (6) CO4 PO3

10. Explain about DTL logic family in brief? (6) CO4 PO2

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