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**DIPLOMA ELECTRONICS AND
COMMUNICATION ENGINEERING (DECVI)/
ADVANCED LEVEL CERTIFICATE COURSE IN
ELECTRONICS AND COMMUNICATION
ENGINEERING (ACECVI)**

Term-End Examination

December, 2012

BIEL-030 : DIGITAL ELECTRONICS

Time : 2 hours

Maximum Marks : 70

Note : Attempt any five questions. Question No. 1 is compulsory. Each question carry equal marks.

Attempt all the multiple choice and True/False questions :

2x7=14

1. (a) Excess - 3 code is :
- (i) Self complementary code
 - (ii) Sequential code
 - (iii) Non weighted code
 - (iv) All of the above
- (b) Flip flop is an example of sequential circuit. (T/F).
- (c) How many memory chips are required to obtain a memory of 16×8 using 2×4 memory IC.
- (i) 4 (ii) 8 (iii) 16 (iv) 32

- (d) Combinational circuit consist flip flop. (T/F).
- (e) If $(211)_x = (152)_8$ is true. What is the value of x .
 (i) 6 (ii) 8 (iii) 7 (iv) 9
- (f) 2's complement of $(10110010)_2$ is :
 (i) 01001010 (ii) 01001110
 (iii) 00100110 (iv) 01010111
- (g) ROM is nonvolatile memory. (T/F).

2. (a) Make a K-map for the function 7

$$f = (AB + A\bar{C} + C + AD + A\bar{B}C + ABC)$$

Minimize it and realize the minimized expression using NAND gate only.

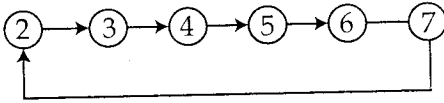
- (b) Design a combinational circuit that convert binary code into gray code for Binary input consider $(B_3 B_2 B_1 B_0)$ as input and for output consider $(G_3 G_2 G_1 G_0)$ as output variable. 7

3. (a) Write down the truth table of full Subtractor and Implement the circuit using multiplexer. 7

- (b) Design a 3 bit synchronous counter. Using JK flip flop. 7

4. Write merits and demerits of different logic families and also explain all the parameters used to characterize logic family. 14

5. Design and implement the following sequence generator using T flip flops. 14



Unused state are terminated to state 2.

6. What is counter ? Explain its types. What are the disadvantages of ripple counters ? Explain the designing of 3 bit up/down ripple counter. Draw the neat diagram. 14

7. Identify the type of circuit given in fig. 1, write the state table and draw the state diagram for the same. 14

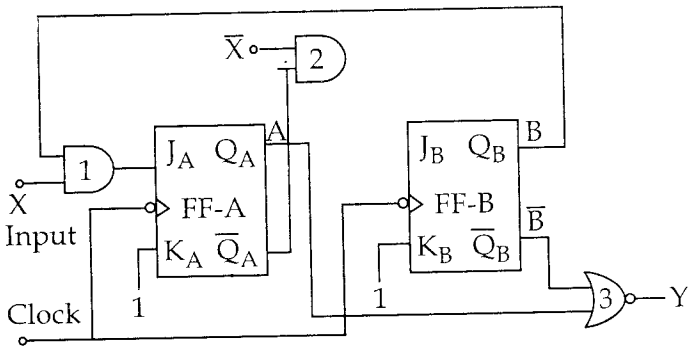


Fig. 1

8. Write short note on *any four* of the following :

- (a) Classification of memory **3.5x4=14**
 - (b) Realization of PMOS inverter
 - (c) Demultiplexer IC - 74154
 - (d) Comparison of combinational circuit and sequential circuit.
 - (e) Race around condition in JK flip flop
 - (f) Totem pole output.
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