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**Bachelor of Science in Information Technology (BScIT) – Semester 1/
Diploma in Information Technology (DIT) – Semester 1
BT0064 – Logic Design – 4 Credits
(Book ID: B0948)
Assignment Set – 1 (60 Marks)**

Answer all questions

10 x 6 = 60

1. Convert the following octal numbers to base 10.
 - a. 273
 - b. 1021
2. What is a logic gate?
3. Minimize the following functions using Quine-McCluskey tabular method:
 - a. $f(A, B, C, D) = \sum 0,1,3,6,9,10,11,12,14,15$
 - b. $f(A, B, C, D, E) = \sum 0,1,5,8,11,12,14,16,20,21,25,27,28,30,31$
(with don't care terms 2,7,13,22,23)
4. Design 2-bit comparator using gates.
5. Define Sequential Circuits.
6. Draw and explain the operation of 4-bit serial-in parallel-out shift register.
7. Explain the working of 8-bit ring counter. Draw the timing diagram.
8. Explain traffic light signaling with a neat circuit diagram.
9. Write a short note on Digital Versatile Disk.
10. Explain practical concepts and applications of DAC.

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Directorate of Distance Education



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Assignment Set – 2 (60 Marks)**

Answer all questions

10 x 6 = 60

1. Convert the following hexadecimal numbers to base 10:
 - a. 145
 - b. A2C1
2. What are universal gates? Why they are called so?
3. Expand the following Boolean functions into their canonical form:
 - a. $f(A, B, C) = \bar{A}B + C$
 - b. $f(A, B, C) = AB + \bar{A}C + A\bar{B}C$
4. Implement a 8:1 MUX using 4:1 MUX.
5. Draw and explain the working of JK, S-R, and D flip flops.
6. Give any two applications of shift register.
7. Explain the working principle of 4 bit Johnson counter with a neat diagram.
8. Explain temperature and weather forecast system with a neat circuit diagram.
9. Explain the functioning of digital multimeter.
10. Write a short note on ADC.

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