

Exam. Code : 105702

Subject Code : 1424

B.Sc. (Information Technology) 2nd Semester
PRINCIPLES OF DIGITAL ELECTRONICS
Paper—I

Time Allowed—3 Hours] [Maximum Marks—75

Note :— Attempt *five* questions in all selecting at least *one* question from each section. All questions carry equal marks.

SECTION—A

- (i) Describe Gray code. Convert 7AC into Octal.
(ii) Convert the following :
 - Convert $(26.3)_8$ into binary
 - Convert 11010110010 into BCD.
- Do the following :
 - Find 1's and 2's complement of 27.
 - Write the excess-three codes for decimal numbers 5 and 219.

SECTION—B

- (i) Simplify $F = \Sigma(1, 2, 4, 6, 8)$ using Boolean algebra.
(ii) Write the steps of K-map simplification and simplify $\Sigma(1, 2, 4, 6, 8, 11, 13, 14)$ using K-map.
- (i) Simplify $F = \Sigma(1, 2, 4, 6, 13)$ using Boolean algebra and design the circuit using NAND gates only.
(ii) Convert $(A + \bar{B} + C)(\bar{A} + B)(B + C)$ into SOP form.

SECTION—C

5. (i) Explain the working of master-slave flip-flop.
(ii) Explain the working of serial in serial out shift register.
6. (i) Design and explain the working of a 1 to 4 de-multiplexer.
(ii) Explain the working of 3-bit ripple counter and explain its working.

SECTION—D

7. (i) Write a note on PROMs. Describe how to use address selection logic used to select a device out of a 04 devices connected.
(ii) Differentiate EPROM and PROM.
8. (i) Differentiate between static and dynamic memory.
(ii) Draw read and write control timing diagrams for accessing and writing to a memory location.