

BT-4/M11**8406****Digital Electronics****Paper—ECE-204E**

Time : Three Hours]

[Maximum Marks : 100

Note :—Attempt **FIVE** questions in all, selecting at least **ONE** from each section.

SECTION—I

1. (a) What is a Universal Gate ? Why is it so called ? 5
(b) Subtract octal no. 374·86 from 4122·97. 5
(c) Design all gates using only NAND gates. 10
2. (a) Write 4 bit grey codes. 8
(b) Minimise $y = \Sigma m(0, 1, 4, 8) + d(9, 10, 12, 14)$ using K map. 12

SECTION—II

3. (a) Design a half adder using multiplexers. 10
(b) Discuss the structure and working of a 2 to 4 decoder. 10
4. (a) What is a seven segment display ? Discuss the circuit and working of a seven segment decoder. 12
(b) Design a 4 bit ring counter circuit and discuss its working. 8

SECTION—III

5. (a) Draw and discuss the switching characteristics of a p-n junction diode. Can this diode be used in forming a logic gate ? How ? 10
(b) Design and discuss the working of a TTL NOR gate. 10

6. (a) Discuss the design and working of a ECL type of NAND gate. 10
(b) What is a tristate logic gate ? Discuss its working. What are its uses ? 10

SECTION—IV

7. (a) Design a R-2R ladder DAC and discuss its working. 10
(b) What is a PAL ? What are its applications ? Discuss the design and working of a PAL. 10
8. (a) Using its circuit discuss how does a Sample and Hold circuit work. 12
(b) What is a comparator ? Discuss the circuit and working of a 2 bit comparator. 8