Roll No……..….. **Total No. of Printed Pages: [01]**
Total No. of Questions: [09]

B.Sc. (IT) (Semester – 2nd)
FUNDAMENTAL OF DIGITAL ELECTRONICS
Subject Code: BITE1206
Paper ID: [130409]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:
   a. What are universal gates?
   b. Define number system.
   c. Give an example of SOP form.
   d. What is a parallel binary adder?
   e. List two applications of Flip- flops.
   f. What is the role of a multiplexer?
   g. Differentiate between register and counter.
   h. Define Up-down counter.
   i. What is Latch?
   j. Define 2's complement.

Section – B **(5 marks each)**

Q2. Explain the design of MOD- N counter.
Q3. Discuss the conversion from binary to octal number system with the help of a suitable example.
Q4. How Boolean expressions can be simplified using K-maps?
Q5. Explain how a J-K Flip flop can be converted into a D-flip flop?
Q6. Differentiate between half subtractor and full subtractor.

Section – C **(10 marks each)**

Q7. Explain the concept of synchronous counter with suitable block diagram. What are the advantages of synchronous counters over asynchronous counters?
Q8. What is demultiplexer? Explain how 3:8 decoder function can be obtained from a demultiplexer?
Q9. Write short notes on the following: (5 x 2 = 10)
   a) Combinational logic circuits
   b) Logic gates applications