NRT/KS/19/2064

Bachelor of Science (B.Sc.) Semester–II Examination
ELECTRONICS (ADVANCED DIGITAL ELECTRONICS)
Optional Paper–2

Time : Three Hours]   [Maximum Marks : 50

N.B. :— (1)   **ALL** questions are compulsory and carry equal marks.

       (2)   Draw neat and well labelled diagrams wherever necessary.

EITHER

1.   (A)   Explain the working of CMOS NOR gate with the help of suitable circuit diagram. State its advantages and disadvantages.   6+4

OR

     (B)   Explain the working of TTL NAND gate with the help of suitable circuit diagram. State its merits and demerits.   8+2

EITHER

2.   (A)   Explain the construction and working of R-S Flip-Flop using NAND gates. Explain the working of clocked R-S Flip-Flop.   5+5

OR

     (B)   Explain the working of JKFF. What is Race around condition ? How it is avoided in JKMS flip-flop ?   7+3

EITHER

3.   (A)   Explain the working of 4-bit asynchronous counter with the help of timing diagram. Find the number of flip flops to construct :

       (i)   Mod 8

       (ii)   Mod 16 counters   8+2

OR

     (B)   Explain construction and working of 4 bit ring counter with the help of timing diagram. State its uses.   8+2

EITHER

4.   (A)   Explain construction and working of 4-bit SISO register. Explain construction and working of 4-bit PIPO register.   5+5

OR

     (B)   Explain the classification of memories on the basis of access time. Construct $4K \times 8$ memory using $4K \times 4$ memory using $4K \times 4$ modules.   4+6

5. Answer any **TEN** questions from the following :

   (A) Define 'noise immunity'

   (B) Define 'propagation delay'

   (C) In TTL NAND gate both the inputs are left open, state the output.

   (D) What is set up time ?

   (E) What is 'hold time' ?

   (F) Define 'Edge triggering'.

   (G) State the use of ring counter.

   (H) Define modulus of a counter.

   (I) If clock frequency is 16kHz, calculate the output frequency of the four bit counter.

   (J) What is PISO ?

   (K) State the number of 16×4 bits ICS required for its expansion to 32×4 bits

   (L) What is Buffer register ? $1\times10=10$