NKT/KS/17/5097

Bachelor of Science (B.Sc.) Semester—II (C.B.S.) Examination

ELECTRONICS (Advanced Digital Electronics)

Compulsory Paper—2

Time : Three Hours] [Maximum Marks : 50

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

(2) Draw neat and labelled diagrams wherever necessary.

EITHER

1. (A) Explain the construction and working of 2-input :

(i) CMOS NAND-gate and

(ii) CMOS NOR-gate. 5+5

OR

(B) Explain the following terms, w.r. to Digital IC's :

(i) Speed of Operation

(ii) Fan-In

(iii) Fan-out

(iv) Noise Immunity

(v) Power Dissipation. 2+2+2+2+2

EITHER

2. (A) Explain the limitations of RS Flip-Flop. Draw and explain with logic diagram, the clocked RS Flip-Flop using NAND-gates and write its Truth Table. 2+8

OR

(B) What is Race-Around-Condition in a JKFF ? List different methods for avoiding Race-Around-Condition. Draw the logic diagram of JKMS flip-flop and explain its working in brief. 2+2+6

EITHER

3. (A) Draw the logic diagram of 4-bit ring counter and explain its working.

List the point of differences between ring counter and Johnson counter. 6+4

OR

(B) What is down counter ? Draw the logic diagram of 3-bit ripple down counter and explain its working with truth table and timing diagrams. List any two applications of down counter. 1+8+1

EITHER

4. (A) Explain the necessity of memory organization. Explain in brief, the expansion of 16×4 memory to 16×8 bit memory. 2+8

OR

(B) Draw the logic diagram of 4-bit SIPO shift register and explain its working. Explain the significance of shifting of data either to the left or to the right by 1-bit position. 8+2

5. Solve any ***ten*** :

(i) What is tri-state logic ?

(ii) Write any two features of CMOS logic.

(iii) Define propagation delay.

(iv) Explain the forbidden state in RSFF.

(v) Draw the logic symbol of DFF.

(vi) Why PRESET and CLEAR terminals are called asynchronous inputs ?

(vii) On what factor, does the modulus of a counter depend ?

(viii) Which condition of flip-flop is used in the construction of counter ?

(ix) What will be the modulus of 3-bit ring counter ?

(x) What is RAM ?

(xi) How many IC chip of 16×4 memory is required for the construction of 32×4 memory chips ?

(xii) List the advantages of bipolar memory. 1×10