Total No. of Questions—4]   [Total No. of Printed Pages—3

Seat
No.

[5116]-105

S.Y. B.Sc. (Computer Science) (Sem. I) EXAMINATION, 2017

ELECTRONICS

Paper I

(ELC-211 : Digital System Hardware)

(2013 PATTERN)

Time : Two Hours   **Maximum Marks : 40**

N.B. :— (*i*)   *All* questions are compulsory.

(*ii*)   Figures to the right indicate full marks.

(*iii*)   Neat diagram must be drawn whenever necessary.

1.   Answer the following in *one* or *two* sentences each :   [10×1=10]

(*a*)   State the size of instruction queue in 8086 microprocessor.

(*b*)   How many minimum number of flip-flops are required to generate the sequence of 0, 2, 5, 4, 8, 7, 0 ...... ?

(*c*)   Define 'Storage Capacity' of memory.

(*d*)   Draw frame structure of Serial Asynchronous data transfer.

(*e*)   Convert the Binary number (1010) to Gray Code.

(*f*)   What is data bus width size of 80486 microprocessor ?

(*g*)   Name any *two* cache memory mapping techniques.

(*h*)   What is UART ?

P.T.O.

(i) What is need of interface unit in input/output (I/O) organization ?

(j) State seven segment decoder output for segments (*a* to *g*) to represent decimal number 2 on common cathode seven segment display.

2. Attempt any *two* of the following : [2×5=10]

(a) Explain paging technique of virtual memory mapping.

(b) Draw and explain the internal block diagram of DMA controller.

(c) Differentiate between Von-Neumann and Harvard Architecture.

3. Attempt any *two* of the following : [2×5=10]

(a) Design the Random sequence generator for given state diagram using JK flip-flop.
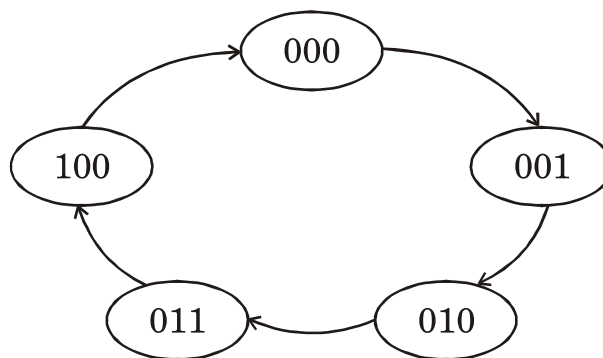
(b) Explain RS-232 serial communication interface.

(c) What is need of cache memory ? Also calculate the average access time if bit ratio is 95%, cache memory access time is 200 n sec and main memory access time is 1000 n sec.

4. Attempt any *one* of the following : [1×10=10]

(a) (i) Design ROM memory of (4K × 8) using available ROM memory chip of (1K × 8).

(ii) What is priority interrupt ? Explain parallel priority interrupt.

Or

(b) (i) Draw the circuit diagram of Decimal to BCD encoder (converter) and explain its working.

(ii) Explain the function of flags in the flag register of 8086 microprocessor.

[5116]-105 3