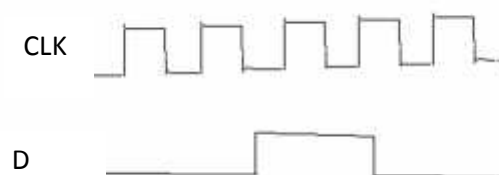


**B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2016****SEMESTER V - CORE COURSE ( PHYSICS)****PHY5DE - DIGITAL ELECTRONICS****Time: Three Hours****Maximum Marks: 60****PART A****Short answer questions****I. Answer all questions. Each question carries 1 mark.**

1. Convert Hexa decimal 5A to decimal.
2. What is Karnaugh map? Draw a 4 variable Karnaugh map.
3. Give laws of Boolean algebra.
4. Distinguish between Pairs and Quads.
5. What is a quad bistable latch?
6. What does an X entry mean in a flip flop truth table?
7. What is a decade counter?
8. Distinguish between decoders and multiplexer.

**(8x1=8)****PART B****Brief answer questions****II. Answer any six questions. Each question carries 2 marks.**

9. Describe ASCII code.
10. Draw the equivalent circuit of AND gate using diodes. Explain its working.
11. Explain Duality Theorem. Give two examples.
12. Reduce the Boolean expression  $AB + \bar{A}\bar{B}C + A\bar{B}C[AB + C]$ .
13. Draw logic symbol, truth table and Boolean expression for XOR and XNOR gate.
14. Draw the block diagram of half adder.
15. Distinguish between multiplexers and demultiplexers.
16. Draw the logical diagram for an Edge triggered D flip flop substantiate with relevant truth table.
17. Name the four basic types of shift registers and draw a block diagram for each.
18. The wave for driving a D latch as shown in the fig. What is the value of D stored in the flip flop after the clock pulse is over also draw its output wave form.

**(6x2=12)**

## **PART C**

### **Short essay questions**

**III . Answer any four questions. Each question carries 4 marks.**

19. Convert the followings (i) octal number 45 to hexadecimal and (ii) binary 110011011 to hexadecimal.
20. Explain why NAND and NOR gates are universal gates.
21. A three variable truth table has a high output for the input conditions, 000, 010, 100 and 110. Draw the equivalent circuit.
22. With a neat diagram, explain the working of four bit subtractor.
23. Explain modulus 8 asynchronous counter with necessary truth table and wave form.
24. Explain a Four-bit D/A ladder type converter?

**(4x4=16)**

## **PART D**

### **Long essay type questions**

**IV . Answer any two questions. Each question carries 12 marks.**

25. Discuss the methods for circuit analysis and design with the aid of examples.
26. Explain different methods of simplification of k map.
27. With a neat diagram, explain the function of decoders. Explain also different types of seven segment decoders.
28. (a) Draw the logic circuit of a positive edge triggered D flip-flop including the asynchronous inputs and explain its operation in brief.  
(b) What are the primary difference between a JK and an RS Flip-flop?

**(2x12=24)**