

SHRI T P BHATIA JUNIOR COLLEGE OF SCIENCE
FIRST SEMESTER EXAM 2024 -2025
ELECTRONICS PAPER II

DATE:- 26/10/24
TIME:- 3 HOURS
MARKS 50

CLASS:- XII
MAX

Instructions :

- (1) All questions are compulsory
- (2) Figures to the right indicate full marks.
- (3) Draw neat labelled diagram wherever necessary.
- (4) Use of log table is allowed.

QIA. Select the correct alternative and rewrite the sentences 4 Marks

1. In a combinational logic circuit strobe signal is used for ____
i. Buffering ii. Impedance matching iii. Cascading iv. Resetting
2. A ring counter is _____ type of counter.
i. Synchronous ii. Asynchronous iii. Up iv. Down
3. Hex equivalent of binary number 0.11 is ____
i. 0.3 ii. 0.6 iii. 0.C iv. 0.D
4. _____ is also called a Data Selector.
i. Demux ii. Mux iii. Encoder iv. Decoder

QIB. Answer any two of the following. 6 Marks

1. Add and subtract 26 and 32 after converting them into Binary . Use ones complement method for Subtraction
2. Draw the logic diagram of clocked RS flip flop using NOR gates and write its truth table
3. Do the following conversion
 $(2BAD.A)_{16} = (?)_2 = (?)_{10} = (?)_{BCD}$

QII A. Answer any two of the following 6 Marks

1. Draw the logic diagram for the Boolean Equation and write its truth table
$$Y = A.B + B.C + \bar{A}.B + A.\bar{B}.C$$
2. Explain Ex OR gate with its definition, logic diagram and truth table.
3. With the help of a neat diagram explain the working of J-K flip-flop

QII B. Answer any one of the following 4 Marks

1. Explain the working of a 4-bit binary ripple counter with diagram , waveform and truth table.
2. Write a note on BCD and ASCII code.

QIII A. Answer any two of the following 6 marks

1. What is a De-Multiplexer ? Explain using its block diagram and truth table.
2. What is a logic gate ? Explain basic gates .
3. Explain the working of EX-OR gate as a 4 bit parity tester.

QIII B. Answer any one of the following

4 Marks

1. Explain the following terms :

i. Clock ii. Edge triggering iii. Racing iv. Toggling

2. What is a Full Adder ? Explain its working with truth table and logic diagram.

QIV A. Answer any two of the following

6 Marks

1. Draw a logic diagram of 1:8 Demultiplexer using two 1:4 Multiplexers.

2. With the help of a neat diagram explain working of clocked D- type flip flop.

3. Implement the following Logic expression using Multiplexer.

$$f(A,B,C,D) = \sum m(1,2,3,6,7,10,14)$$

QIV B. Answer any one of the following

4 Marks

1. Explain the working of BCD to Decimal Decoder with logic diagram and truth table.

2. Explain the procedure of combinational logic design using Multiplexer and state its advantages.

QV A. Answer any two of the following

6 Marks

1. Explain the working of right shift register using D flip flop. Draw the necessary waveforms.

2. Write the difference between synchronous and Asynchronous counter.

3. Explain with block diagram four-bit binary adder subtractor.

QV B. Answer any one of the following

4 Marks

1. What is a counter? Explain the working of a decade counter with necessary block diagram and waveforms.

2. Perform the following subtraction 1's complement method of subtraction

a. $(11011)_2 - (1011)_2$

b. $(11011)_2 - (1011)_2$