SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

ROLL No: | | | | | | | | | | | |

Total number of pages:[ ]
Total number of questions: 06

B.Tech. || ECE || 3rd Sem

Digital Electronics

Subject Code: BTEC-303A

Paper ID:

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**

PART A (2×10)

Q. 1. Short-Answer Questions: All COs

(a Determine the value of base x if $(211)_x = (152)_8$

(b)How does a latch differ from a flip-flop?

(c) Convert $(6AC)_{16}$ into decimal and binary numbers?

(d) What do you mean by the terms Fan-in and Fan-out?

(e) Generate a four bit binary to gray code table?

f) Which is the fastest logic family and why?

(g) What is race around condition?

(h)What is multiplexer? Give advantages of multiplexers?

i) What is shift register? Which flip-flops are used to construct a shift register?

j) What do understand by the term resolution in DAC?

PART B (8×5)

Q. 2. Subtract the following numbers: COa

i) $(BC5)_{16} - (A2B)_{16} = (\quad)_{16}$

ii) Determine the decimal representation of a negative integer whose 8 bit two's complement code is 10010110

OR

i) Add the following BCD numbers: (89.6)+ (273.7) = (_____)

ii) Represent the decimal number 396 to Gray Code and Excess-3 Code?

Q. 3. State and Prove De-Morgan's Theorems with the help of Truth Tables? CO_b

OR

What are the limitations of K-MAP Technique? Simplify the following Boolean expression using K-Map: CO_b

$$F(w,x,y,z)=\sum m\,(0,4,5,7,8,9,13,15)$$

Q. 4. Differentiate between Combinational Logic circuits and sequential circuits? Design BCD to gray code converter? CO_c

OR

What is comparator? Design a comparator that should convert two bit number with another two bit number? CO_c

Q. 5. What is necessity of ADC and DAC? Explain successive approximation type of ADC in brief? CO_d

OR

How different logic families are classified? Explain DTL in detail? CO_d

Q. 6. Write short note on Flip-flop conversions? CO_c

OR

What is decade counter? Using T Flip-flops, design Asynchronous Decade Counter? CO_c