DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Winter 2018

Course: B. Tech. in Electronics and Telecommunication Engineering **Sem: III**

Subject Name: Digital Logic design **Subject Code: BTEXC305**

Max Marks: 60 **Date:10/12/2018** **Duration: 3 Hr.**

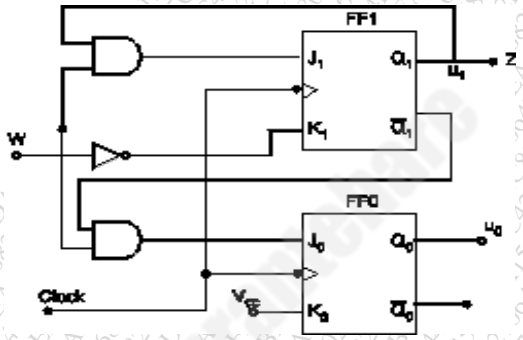
Instructions to the Students:

1. The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.

2. Use of non-programmable scientific calculators is allowed.

3. Assume suitable data wherever necessary and mention it clearly.

			(COs)	Marks
Q. 1	A)	Simplify following expression using K-Map $f(A,B,C,D) = \sum m(1,4,7,12,13,14,15) + d(0,5,8)$	(1,2)	06
	B)	Implement following using multiplexer (a) Half-adder (b) Half-subtractor	(1,2)	06
Q. 2	A)	Design 3-bit synchronous up counter using JK flip flop.	(2,3)	06
	B)	Draw and explain Universal shift Register.	(2,3)	06
Q. 3		Draw state diagram for given sequential circuit shown in figure 1.	(2,3)	12



Q.4	A)	Define and explain: i)Fan in and Fan out ii) Noise immunity iii) Propagation Delay	(2)	06
	B)	Explain in brief the operation of CMOS NAND Gate with schematic diagram.	(2)	06
Q5.	A)	Implement given Boolean functions using PLA, PAL and PROM F1 (A,B,C)= $\sum m(0,2,6,7)$ F2(A,B,C)= $\sum m(1,3,4,5,7)$	(2,3)	06
	B)	Write VHDL code for Mux 4:1 using dataflow and behavioural architecture style.	(4)	06
Q6.	A)	Draw combinational circuit for Binary Parallel Adder and Subtractor.	(3)	06
	B)	Draw Asynchronous 4 bit up counter with clock waveform.	(2,3)	06

****************************The End****************************

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Winter Semester Examination – December - 2018

Branch: B. Tech in Computer Science **Sem.:- III**
Subject with Subject Code: - Digital Electronics & Microprocessor (BTCOC305)
Date: 10/12/2018 **Marks: 60** **Duration: - 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
*2. Attempt **any five** questions of the following.*
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. Assume suitable data wherever necessary and mention it clearly.
5. Use of non-programmable scientific calculators is allowed.

		(Marks)
Q.1	**Solve Any Two of the following.**	**12**
A)	Design basic gates with the help of universal gates.	**06**
B)	Explain different types of Boolean algebra theorems.	**06**
C)	Explain different types of K-Map representation.	**06**
Q.2	**Solve Any Two of the following.**	**12**
A)	Calculate $F(A, B,C,D) = \sum m(0,1,2,3,7,8,9,10,11,12,13)$.	**06**
B)	Calculate $F(A,B,C,D) = \pi M(4,5,6,7,8,12) \cdot d(1,2,3,11,14)$.	**06**
C)	Compare Multiplexer and Demultiplexer with neat diagram.	**06**
Q.3	**Solve Any Two of the following.**	**12**
A)	Explain with neat diagram working of S-R Flip-Flop.	**06**
B)	Write a short note on shift registers and list down its applications.	**06**
C)	Write a short note on D Flip Flop and T Flip- Flop	**06**
Q.4	**Solve Any Two of the following.**	**12**
A)	Differentiate between 8085 and 8086 Microprocessors.	**06**
B)	Explain with neat diagram architecture of 8086.	**06**
C)	Explain the structure of 8086 PSW.	**06**
Q.5	**Solve Any Two of the following.**	**12**
A)	Differentiate between I/O mapped I/O and memory mapped I/O of 8086.	**06**
B)	Explain with neat diagram working of DMA controller.	**06**
C)	Explain different types of interrupts in 8086.	**06**
Q.6	**Solve Any Two of the following.**	**12**
A)	Explain with example different types of instruction set of 8086.	**06**
B)	Explain the various addressing modes of 8086.	**06**
C)	Write a short note on Procedure and Subroutine.	**06**

***** End *****

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2019

Branch: B. Tech. (E & TC Engineering/Electronics Engineering) **Sem.:- III**

Subject with Subject Code:- Digital Logic Design (BTEXC305) **Marks: 60**

Date:- 19/12/2019 **Time:- 3 Hr.**

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Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q. No. 1a) Design Four bit Binary to Gray Code Converter. **(06)**

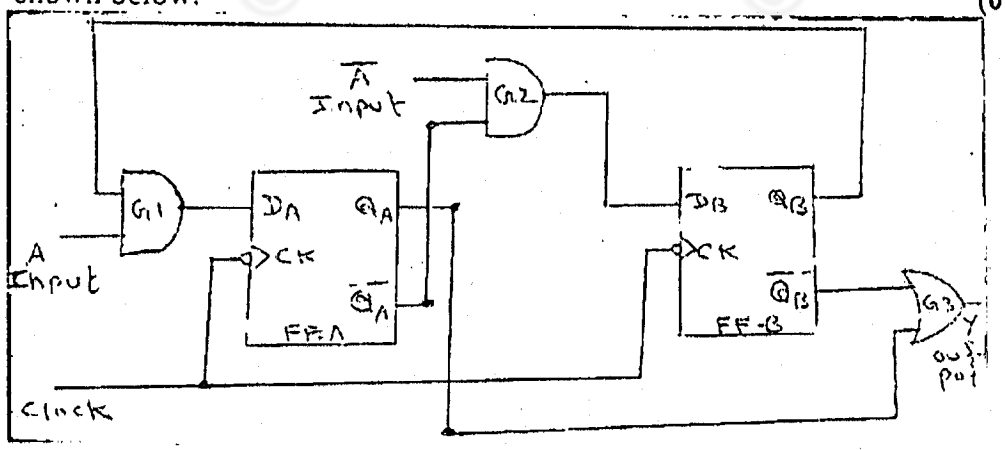
b) Implement the three-variable Boolean function:
$F(A, B, C) = \dot{A}.C+A.\dot{B}.C+A.B.\dot{C}$ using 8-to-1 multiplexer. **(06)**

Q. No. 2a) Convert T Flip-Flop to D Flip-Flop. **(06)**

b) Design a three bit synchronous Up/Down counter using JK Flip-Flop. **(06)**

Q. No. 3a) Design a sequence detector to detect the sequence .....110.....(Use Mealy Machine with JK FF). **(06)**

b) Derive the state table & state diagram for the sequential Moore circuit shown below. **(06)**



Q. No. 4a) Explain the various characteristics of Digital IC's. **(06)**

b) Draw the circuit diagram of two input TTL NAND gate with Totem pole output and explain its working. **(06)**

Q. No. 5a) Implement the following Boolean function using suitable PLA.
$F(A,B,C.D) = \sum m(3, 4, 5, 7, 10, 14, 15)$ **(06)**

b) Draw the interfacing diagram showing the interface of four memory

integrated circuits each of size 2K x 4 bits to get the desired memory size of 4K x 8 bits. **(06)**

Q. No. 6a) Write down VHDL code for full adder using Data flow model with necessary diagram. **(06)**

b) List the various advantages and features of VHDL. **(06)**

Paper End

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE-RAIGAD-402 103

Winter Semester Examination - 2019 SY

Branch: B. Tech **Sem:-I**

Subject:- Digital Electronics & Microprocessor (BTCOC305) **Marks: 60**

Date:-19/12/2019 **Time:- 3 Hrs**

Instructions:-

1) **Each Question carries 12 marks.**
2) **Attempt any 5 questions of the following.**
3) **Illustrate your answers with neat sketches, diagram etc, wherever necessary**
4) **Assume suitable data if necessary and mention it clearly**

Q.No.1 a) Explain the working of following gates with their truth table and logic symbol **6**

a. AND

b. EX-OR

c. NAND

b) Perform the following Conversions **6**

I. $(49.25)_{10} = (\ )_2$

II. $(4F7.A8)_{16} = (\ )_8$

III. $(111011)_2 = (\ )_{gray}$

Q.No.2 a) Minimize the following equation using k-map. **6**

I. $Y = \Sigma\, m(0, 1, 2, 4, 5, 6)$

II. $Y = \pi\, m\,(0, 2, 4, 5).$

b) Explain the working of Full Subtractor with Truth table. Implement it with half subtractors. **6**

Q.No.3	**a)**	What are the differences between combinational and sequential circuits? Explain gated S-R flip flop with logic diagram and truth table.	**6**
	b)	Draw and explain a 4 bit ring counter using D flip flops. Draw its state diagram and sequence table	**6**
Q.No.4	**a)**	Explain FLAG register of 8086	**6**
	b)	Compare features of 8085 with 8086	**6**
Q.No.5	**a)**	Draw and explain memory read timing diagram in Minimum Mode configuration of 8086	**6**
	b)	Explain hardware and software interrupts of 8086.	**6**
Q.No.6	**a)**	With instruction example explain addressing modes of 8086	**6**
	b)	Write a program for addition of two 16 bit numbers using 8086	**6**

----------END OF PAPER----------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination –MAY 2019

Course: B. Tech in Computer Engineering **Sem: III**

Subject Name: Digital Electronics and Microprocessor

Subject Code: (BTCOC305)

Max Marks: 60 **Date:01/06/2019** **Duration: 3 Hr.**

Instructions to the Students:

1. *Solve **ANY FIVE** questions out of the following.*
2. *The level question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

			(Level/CO)	Marks
Q. 1	**A)**	State and Explain De Morgan's theorem.		**04**
	B)	Conversion of Number System. i) Convert 1792.12 decimal to binary ii) Convert 338.025 decimal to octal		**04**
	C)	Using the rules of Boolean Algebra Simplify the following i) $BC + A\bar{C} + AB + BCD = BC + A\bar{C}$ ii) $XY + XYZ + XY\bar{Z} + \bar{X}YZ$		**04**
Q.2		**Solve Any Two of the following.**		
	A)	Implement single digit BCD adder using 4-bit binary adder IC7483. Show the design procedure & explain its operation.		**06**
	B)	Write short note on. i) Full subtractor ii) Parity Generator		**06**
	C)	Design 2 bit digital comparator using suitable logic gates.		**06**
Q. 3	**A)**	Compare Combinational circuit and Sequential circuit.		**03**
	B)	What is Flip flop? Explain clocked SR flip flop.		**04**
	C)	What is shift register? State and explain any two types of shift register.		**05**
Q.4	**A)**	Draw and explain block diagram of 8086 microprocessor.		**06**
	B)	What is memory segmentation of 8086 microprocessor ? What is the need of memory segmentation in 8086 microprocessor?		**06**

Q. 5 **Solve Any Two of the following.**

A) Draw and explain block diagram of 8257 DMA controller. **06**

B) What is the interrupt vector table? Draw and explain the interrupt vector table for 8086 microprocessor. **06**

C) Why 8086 memory is divided into banks? How are even and odd addressed bytes accessed in 8086 memory address space? **06**

Q. 6 **A)** State and explain with examples addressing modes of 8086 microprocessor. **06**

B) What is assembly language? Explain assembler, compiler and interpreter. **06**

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular End Semester Examination – Summer 2022

Course: B. Tech. **Branch : COMPUTER ENGG/CSE** **Semester :IV**

Subject Code & Name: BTES405 Digital Logic Design & Microprocessor

Max Marks: 60 **Date: 27/08/2022** **Duration: 3.45 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**What is Signal? Write Characteristics of Digital Signals.**	**Analyzing**	
B)	**Explain Digital Gate with their types.**	**Understanding**	
C)	**Write short note on Error Detecting and Correcting Codes.**	**Applying**	
Q.2	**Solve Any Two of the following.**		**12**
A)	**Explain the working of Multiplexer and De-Multiplexer.**	**Understanding**	
B)	**Write and explain with example Don‘t care conditions.**	**Applying**	
C)	**Minimize the four-variable logic function using k-map. $f(A,B,C,D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$**	**Applying**	
Q. 3	**Solve Any Two of the following.**		**12**
A)	**Design 3-bit synchronous up counter using JK flip flops**	**Applying**	
B)	**Convert S-R FLIP-FLOP TO J-K FLIP-FLOP.**	**Applying**	
C)	**Write and explain any two applications of flip-flop.**	**Understanding**	
Q.4	**Solve Any Two of the following.**		**12**
A)	**Comparison of 8-bit, (8085) 16-bit (8086), and 32-bit microprocessors (80386)**	**Understanding**	
B)	**Draw and explain 8086 Internal Block Diagram.**	**Understanding**	
C)	**Write short note on Memory .**	**Understanding**	
Q. 5	**Solve Any Two of the following.**		**12**
A)	**Explain different type of Addressing modes of 8086.**	**Analyzing**	
B)	**Write different Data transfer instructions.**	**Analyzing**	
C)	**Write short note on Assemblers and compilers**	**Understanding**	

***** End *****

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE **Winter Examination – 2022** **Course: B. Tech. Branch : Computr Engg/ CSE** **Semester :IV** **Subject Code & Name: BTES405 Digital Logic Design & Microprocessor** **Max Marks: 60 Date: Duration: 3 Hr.**		
	Instructions to the Students: *1. All the questions are compulsory.* *2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.* *3. Use of non-programmable scientific calculators is allowed.* *4. Assume suitable data wherever necessary and mention it clearly.*		
		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Differentiate between analog vs digital signal.**	**Analyzing**	**6**
B)	**Which gates are known as universal gates? Justify using examples.**	**Understanding**	**6**
C)	**State and prove any two theorems of Boolean algebra.**	**Applying**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**How will you implement Full adder circuit? Draw the circuit diagram and derive equation for sum and carry.**	**Understanding**	**6**
B)	**Using K map, simplify Boolean equation for the following logic equation expressed by min terms? Y=F(A,B,C,D)=∑m(7,9, 10, 11, 12, 13, 14, 15)**	**Applying**	**6**
C)	**Differentiate between combinational and sequential logic circuit.**	**Analyzing**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**Differentiate between synchronous and asynchronous counter.**	**Analyzing**	**6**
B)	**Explain SR Flip flop in detail.**	**Understanding**	**6**
C)	**Draw and explain serial in serial out shift register in detal.**	**Understanding**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**Diffrentiate in between 8085 & 8086 microprocessors.**	**Analyzing**	**6**
B)	**Draw & explain architecture of DMA controller.**	**Understanding**	**6**
C)	**Draw & explain 8086 block diagram.**	**Understanding**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	**Classify different instruction set of 8086.**	**Analyzing**	**6**

B)	**Explain different addressing modes of 8086.**	**Understanding**	**6**
C)	**Explain assembly language programming tools.**	**Understanding**	**6**
	***** End *****		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer Supplementary 2022

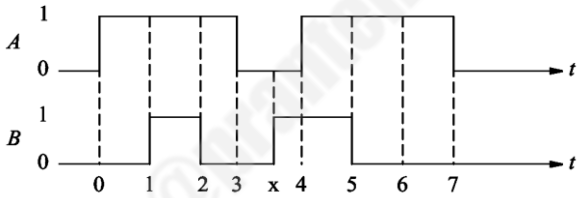
Course: B. Tech. **Branch: Computer** **Semester: IV**

Subject Code & Name: BTCOC305 Digital Electronics & Microprocessor

Max Marks: 60 **Date: - -2023** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected to answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level /CO)	Marks
Q. 1	**Solve any two of the following:**		
A)	**Write a short note on Binary Number System. Describe Binary-to-Decimal Conversion.**	**(L1/ CO1)**	**6 M**
B)	**Explain with an example NAND, NOR, EX-OR gate.**	**(L1/ CO1)**	**6 M**
C)	**If the waveforms of given figure are applied at the inputs of a 2-input OR gate, and applied at the input of a 2-input AND gate determine the output waveform.** 	**(L2/ CO2)**	**6 M**
Q. 2	**Solve any two of the following.**		
A)	**Explain in detail Karnaugh Map Representation of logic functions.** **Prepare the truth table for K-map of following:**	**(L2/ CO2)**	**6 M**

CD/AB	00	01	11	10
00	1		1	
01		1		1
11		1	1	
10			1	

B)	**Simplify the K–map of the following using POS method:** $f(A, B, C, D) = \Sigma m(4, 6, 10, 12, 13, 15)$	**(L2/ CO2)**	**6 M**
C)	**Explain in detail Multiplexer and De-Multiplexer.**	**(L2/ CO2)**	**6 M**
Q. 3	**Solve any two of the following.**		

A)	**Convert S-R Flip-Flop to a J-K Flip-Flop.**	**(L3/ CO3)**	**6 M**
B)	**Write any two application of Flip-Flops.**	**(L3/ CO3)**	**6 M**
C)	**Write a note on asynchronous sequential counter.**	**(L3/ CO3)**	**6 M**
Q. 4	**Solve all two of the following.**		
A)	**Draw and explain the architecture of 8086 microprocessor.**	**(L2/ CO4)**	**6 M**
B)	**Difference between 8085, 8086, & 80386 microprocessor.**	**(L2/ CO4)**	**6 M**
Q. 5	**Solve any Two of the following.**		
A)	**Describe Addressing modes of 8086.**	**(L3/ CO5)**	**6 M**
B)	**Difference between Compiler and Assembler.**	**(L2/ CO5)**	**6 M**
	***** End *****		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2023

Course: B. Tech. Branch :Computer Science & Engineering /Computer Engineering/Computer Science & Engineering (AI& ML)/ AIDS (2020-2021)/ Computer Science & Design **Semester : IV**

Subject Code & Name: BTES405 Digital Logic Design & Microprocessor

Max Marks: 60 **Date:25-01-24** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Explain error detecting and correcting codes.	Understand	**6**
B)	Define digital signals. Explain positive logic and negative logic.	Understand	**6**
C)	Explain types of Boolean postulates with example.	Understand	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Implement the expression using a multiplexer. $F(A,B,C,D) = \sum(0,2,3,6,8,9,12,14)$.	Analysis	**6**
B)	Design half adder and full adder circuit.	Synthesis	**6**
C)	$F(A,B,C,D) = \pi M\ (1,2,3,8,9,10,11,14).d(7,15)$.	Analysis	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	How do you eliminate the race around condition in a J-K Flip-Flop.	Remember	**6**
B)	What is meant by programmable counter? Mention its application.	Remember	**6**
C)	Write a short note on Parity Generator/ Checker.	Understand	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	What are the various registers of 8085 microprocessor. Discuss their function.	Remember	**6**
B)	Draw the block diagram of 8086 and explain its each block in brief.	Understand	**6**
C)	Explain different addressing modes of 8086.	Understand	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain DMA Controller with neat block diagram.	Understand	**6**
B)	Explain following instructions 1) CMP. 2) AAS. 3) IMUL. 4) CBW. 5) TEST. 6) RCR.	Analysis	**6**
C)	Explain with examples different types of arithmetic instructions.	Analysis	**6**

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Summer 2024

Course: B. Tech. **Branch : Computer and Allied** **Semester :IV**

Subject Code & Name: BTES405 Digital Logic Design & Microprocessor

Max Marks: 60 **Date: 24/06/2024** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Write Characteristics of Digital Signals.**	**Analyzing**	
B)	**Explain the working of Digital Gate with their types.**	**Understanding**	
C)	**State and prove any two theorem of Boolean algebra..**	**Applying**	
Q.2	**Solve Any Two of the following.**		**12**
A)	**Explain the working of Multiplexer and De-Multiplexer.**	**Understanding**	
B)	**Design a half-adder and full-adder circuits using k-map**	**Applying**	
C)	**Minimize the four-variable logic function using k-map.** **$f(A,B,C,D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$**	**Applying**	
Q. 3	**Solve Any Two of the following.**		**12**
A)	**Design 3-bit synchronous up counter using JK flip flops**	**Applying**	
B)	**Drew and explain serial in serial out shift register in detail.**	**Applying**	
C)	**Write and explain any two applications of flip-flop.**	**Understanding**	
Q.4	**Solve Any Two of the following.**		**12**
A)	**Comparison of 8-bit, 16-bit, and 32-bit microprocessors.**	**Understanding**	
B)	**Draw the pin diagram of 8086 and explain in brief.**	**Understanding**	
C)	**Write short note on Memory.**	**Understanding**	
Q. 5	**Solve Any Two of the following.**		**12**
A)	**Explain different type of Addressing modes of 8086.**	**Analyzing**	
B)	**Write short note on assembler and compiler.**	**Analyzing**	
C)	**Explain classification of instruction set.**	**Understanding**	

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination – 2024

Course:B.Tech. Branch : Computer Science & Engineering and Allied Semester :IV

Subject Code & Name: BTES405 Digital Logic Design & Microprocessors

Max Marks: 60 Date:31/12/2024 Duration: 3 Hr.

Instructions to the Students:

1. *Each question carries 12 marks.*
2. *Question No. 1 will be compulsory and include objective-type questions.*
3. *Candidates are required to attempt any four questions from Question No. 2 to Question No. 6.*
4. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
5. *Use of non-programmable scientific calculators is allowed.*
6. *Assume suitable data wherever necessary and mention it clearly.*

					(Level/CO)	Marks
Q. 1	**Objective type questions. (Compulsory Question)**					12
1	Which of the following is a type of digital logic circuit?					1
	a) Combinational logic circuits	b) Sequential logic circuits	c) Both Combinational & Sequential logic circuits	d) None of the mentioned		
2	Which of the following options represent the synchronous control inputs in an S – R flip flop?					1
	a) S	b) R	c) Clock	d) Both S and R		
3	What are the basic gates in MOS logic family?					1
	a) NAND and NOR	b) AND and OR	c) NAND and OR	d) AND and NOR		
4	Which of the following options represent the correct reduction of XYZ + XYZ ?					1
	a) 0	b) YZ	c) X + X	b) 2YZ		
5	Which of these pins will allow to activate and deactivate a multiplexer?					1
	a) Enable pin	b) Selection pin	c) Logic pin	d) Preset pin		
6	The total amount of memory is depends upon _____					1
	A. The organization of	B. The size of the address bus of the	C. The size of the decoding	D. The structure of memory		

	memory	microprocessor	unit			
7	_____ can be determined the Instability condition.					1
	A. table	B. logic diagram	C. map	D. graph		
8	If we add an inverter at the output of AND gate, what function is produced?					1
	A. NAND	B. XOR	C. OR	D. NOR		
9	What is a characteristic feature of synchronous counters?					1
	A) They have asynchronous clock inputs.	B) They use flip-flops with feedback connections.	C) They change their states simultaneously in response to a clock signal.	D) They have variable count modes.		
10	What is the primary function of a multiplexer (MUX) in digital circuits?					1
	A) Combine multiple signals into one	B) Split a signal into multiple outputs	C) Perform arithmetic operations	D) Store data temporarily		
11	What is the primary function of a demultiplexer (DEMUX) in digital circuits?					1
	A) Combine multiple signals into one	B) Split a signal into multiple outputs	C) Perform arithmetic operations	D) Store data temporarily		
12	What are the two inputs of a D flip-flop?					1
	A) Data and Enable	B) Set and Reset	C) Clock and Data	D) Data and Clock		
Q. 2	**Solve the following.**					12
A)	What is Signal? Write Characteristics of Digital Signals.				Analyzing	6
B)	Explain the working of Digital Gate with their types.				Understanding	6
Q.3	**Solve the following.**					12
A)	Explain the working of Multiplexer and De-Multiplexer.				Understanding	6
B)	Write and explain with example Don‘t care conditions.				Applying	

Q. 4	**Solve Any Two of the following.**		12
A)	Drew and explain serial in serial out shift register in detal.	Applying	6
B)	Convert S-R FLIP-FLOP TO J-K FLIP-FLOP.	Applying	6
C)	Design 3-bit synchronous up counter using JK flip flops	Applying	6
Q.5	**Solve Any Two of the following.**		12
A)	Draw and explain 8086 Internal Block Diagram.	Understanding	6
B)	Write short note on different type Memory.	Understanding	6
C)	Comparison of 16-bit (8086), and 32-bit microprocessors (80386)	Understanding	6
Q. 6	**Solve Any Two of the following.**		12
A)	Explain classification of instruction set.	Understanding	6
B)	Write short note on Assemblers and compilers	Understanding	6
C)	Write different Data transfer instructions.	Analyzing	6
	*** End ***		