PAPER ID-421094

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Subject Code: RCAI201

Roll No: 2 1 0 0 0 5 0 0 6 0 0 4 9

MCA(Integrated)
(SEM II) THEORY EXAMINATION 2021-22
ADVANCE PROGRAMMING IN C

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

a.	Define the function of:- (i) strnset (ii) strdup.
b.	Define and compare malloc and realloc library functions.
c.	What is the difference between structure and union?
d.	Define call by value and call by reference.
e.	Define void pointer and null pointer with example.
f.	What is an array? How do you declare an array?
g.	Explain graphics driver.

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

a.	Write a program to convert a string to lower case.
b.	Explain sorting? Also explain the working of selection sort with example?
c.	What is multidimensional array? Write a program to find the transpose of a given matrix?
d.	Explain file handling. Discuss any four functions used in file handling?
e.	Define macro and its application. Write macro definition with arguments of compound interest and amount.

SECTION C

3. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Write a program to perform multiplication of two matrices.
(b)	Define the two basic properties of array. Explain how one dimensional, two dimensional and multi-dimensional arrays are represented in memory.

4. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	What is pointer? How pointer variables are initialized. Write a program to perform pointer arithmetic operations.
(b)	What do you mean by function to pointer? Explain * and & operator in pointer.

5. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Explain nested structure and array structure. Explain with the help of program.
(b)	What do you mean by enumerated data type? Write a program to check whether given string is palindrome or not.

6. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Explain various file handling modes. Explain any one mode through program.
(b)	What is meant by bitwise operator? Discuss the three logical bit operators with example.

7. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	What do you mean by C Preprocessor? What are the two forms of #include directive? Distinguish between #ifdef and #if directive.
(b)	Explain any three functions used in drawing in C language.

PAPER ID-421609

Printed Page: 1 of 1
Subject Code: RCA1202

Roll No: 2 1 0 0 0 5 0 0 6 0 0 4 9

MCA(Integrated)
(SEM II) THEORY EXAMINATION 2021-22
COMPUTER ORGANIZATION

Time: 3 Hours *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.** 2x7 = 14

a.	Explain the difference between clock cycle and clock frequency.
b.	Explain about Arithmetic and Logic Unit
c.	What is bus arbitration?
d.	Define RISC.
e.	Discuss the principle operation of micro programmed control unit.
f.	What is the need for DMA transfer?
g.	Define HIT and MISS ratio in memory with an example?

SECTION B

2. **Attempt any *three* of the following:** 7x3 = 21

a.	With a general block diagram, explain the functions of the processor registers.
b.	Discuss various techniques used for Modes of Transfer?
c.	Draw the flowchart for Booth multiplication algorithm. And multiply (-16) X (-21) using Booth's algorithms.
d.	Differentiate synchronous and asynchronous communication?
e.	Explain 2D and 2-1/2 D organizations with their merits and demerits.

SECTION C

3. **Attempt any *one* part of the following:** 7x1 = 7

a.	What is bus arbitration problem? Explain the four schemes for bus master and slave.
b.	Design 4-bit combinational circuit using 4 full adders.

4. **Attempt any *one* part of the following:** 7x1 = 7

a.	Explain Micro instruction Format in detail.
b.	Explain about address sequencing in control memory with neat diagrams?

5. **Attempt any *one* part of the following:** 7x1 = 7

a.	Sketch the internal organization of CPU out with its functionalities and block diagram
b.	What do you mean instruction cycle? How is instruction executed? Explain the interrupt cycle with an example.

6. **Attempt any *one* part of the following:** 7x1 = 7

a.	Describe the Input-output subsystem organization and interfacing
b.	Give the block diagram of DMA controller? Why are the read and write control lines in a DMA controller bidirectional? Under what condition and for what purpose they are used as inputs? Under what conditions and for what purpose are they used as outputs?

7. **Attempt any *one* part of the following:** 7x1 = 7

a.	What are the different mapping schemes deployed in virtual memory and explain?
b.	A digital computer has a memory unit of 64K*16 and a cache memory of 1K words. the cache memory uses direct mapping with a block size of four words. i. How many bits are there in the tag, index, block and word field of the address format? ii. How many blocks cache can accommodate? iii. How many bits are there in each word of the cache? Include a valid bit.

PAPER ID-421852

Printed Page: 1 of 2
Subject Code: RAS204

Roll No: 2 1 0 0 0 5 0 0 6 0 0 9

BTECH
(SEM II) THEORY EXAMINATION 2021-22
PROFESSIONAL COMMUNICATION

Time: 3 Hours *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2*7 = 14**

a.	Identify different directions in which communication flows in formal environment.
b.	Defiine grapevine. State its positive and negative aspects.
c.	i. Write the synonym of: **Authentic** ii. Write the anonym of: **Barren**
d.	Transform the sentence: i. The man was so tired that he could not climb the hill.***(Rewrite using 'too')*** ii. No other poet is as great as Kalidas.***(Transform from positive to superlative.)***
e.	State different types of proposal.
f.	Define syllable with the help of examples.
g.	Why is philosophy said to be a comprehensive science?

SECTION B

2. Attempt any *three* of the following: **7*3 = 21**

a.	State ten differences between general and technical communication.
b.	List some of the methods used to form new words.
c.	Discuss advantages and disadvantages of different nuances of speech delivery.
d.	'The way a team plays as a whole determines its success.' Analyze the steps involed in forming a team.
e.	Differentiate between the Language of Science and Literature according to the Essay *The Language of Literature and Science.*

SECTION C

3. Attempt any *one* part of the following: **7*1 = 7**

a.	***Language is the blood of the soul into which thoughts run and out of which they grow.*** Discuss the characteristics of Language which makes it a tool of communication.
b.	Classify the barriers to communication. Identify vivid reason due to which barriers in communication occurs at different level.

4. Attempt any *one* part of the following: **7*1 = 7**

a.	Define all parts of speech used in grammar with the help of examples.
b.	Examine Paragraph. Highlight the pre requisites of paragraph development giving details of methods used in developing a paragraph .

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BTECH
(SEM II) THEORY EXAMINATION 2021-22
PROFESSIONAL COMMUNICATION

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5. Attempt any *one* part of the following: 7*1 = 7

a.	Identify the basic concept used for writing a sales letter. Draft a letter to promote the sale of newly launched mobile phone. Invent the necessary details by your own.
b.	Differentiate between report and proposal. Explain the elements used in structure of a project report.

6. Attempt any *one* part of the following: 7*1 = 7

a.	Define Kinesics and its element with respect to communication.
b.	**Paraliguistics are the aspects of spoken communication that do not involve words**. Explain various features of voice.

7. Attempt any *one* part of the following: 7*1 = 7

a.	'*There has always been relation between Man and Nature since time Immemorial.*' Explain with reference to the essay by J. Bronowski.
b.	Examine how science and literature share the capacity to formulate concepts.

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PAPER ID 421466

Roll No: 2 1 0 0 0 5 0 0 6 0 0 8 3

MCA(Integrated)
(SEM II) THEORY EXAMINATION 2021-22
DISCRETE MATHEMATICS FOR MCA

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a.	Let A and B be two finite sets such that $n(A) = 20, n(B) = 28$ and $n(A \cup B) = 36$, find $n(A \cap B)$.
b.	What do you mean by Identity Relation? Write down the Identity Relation for the Set $A = \{1, 2, 3\}$.
c.	What do you mean by Non-homogeneous recurrence relation?
d.	Define the Commutative group.
e.	What is the difference between Tautology and Contradiction?
f.	State the De-Morgan's Law of Propositional Logic.
g.	What do you mean by Complemented Lattice?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a.	Define the function and Relation. Explain the difference between function and Relation with example.
b.	Define the Permutation group. If A= {1,2,3,4,5} then: find (1 3) 0 (2 4 5) 0 (2 3)
c.	If p, q and r are any three statements, then using the truth table prove that: i) $p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$. ii) $p \wedge (q \vee r) \equiv (p \wedge q) \vee (p \wedge r)$
d.	Solve the following: $a_n - 5a_{n-1} + 6a_{n-2} = 7^n$.
e.	If set A = {1,2,3,6,12} and R be the relation in set A which is defined by " a divides b " then show that R is a Poset in set A and also draw the Hasse diagram.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a)	In a group of 100 persons, 72 people can speak English and 43 can speak French. How many can speak English only? How many can speak French only and how many can speak both English and French?
(b)	Consider the following relation on set $A = \{1,2,3,4,5,6,7\}$, given by :$R = \{(i, j): \lvert i - j \rvert = 2\}$ on set A.Determine whether R is reflexive, symmetric and transitive.

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MCA(Integrated)
(SEM II) THEORY EXAMINATION 2021-22
DISCRETE MATHEMATICS FOR MCA

4. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Prove by Mathematical Induction: $n^3 - 4n + 6$ is divisible by 3 for all n≥1.
(b)	Solve the following Recurrence Relation Using Generating Functions: $a_n - 9a_{n-1} + 20a_{n-2} = 0$ *with initial conditions* $a_0 = -3$ *and* $a_1 = -10$.

5. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Prove that the inverse of the product of two element of a group is the product of the inverse taken in the reverse order.
(b)	Show that the set of Fourth root of unity form an abelian group under the binary operation multiplication.

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Using truth table, show that: $p \rightarrow (q \vee r) \equiv (p \rightarrow q) \vee (p \rightarrow r)$.
(b)	Represent the following argument symbolically and determine whether the argument is valid: Either Ram is not guilty or Shyam is telling the truth. Shyam is not telling the truth. ..... Therefore, Ram is not guilty.

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

(a)	Define the Distributive Lattice and Modular Lattice with example. Also prove that every Distributive Lattice is Modular.
(b)	Define the Poset and draw the Hasse diagram for the Partial ordering $\{(A, B): A \subseteq B\}$ on the power set P(S) where S = {a,b,c}.

PAPER ID 421211

Subject Code: REC202

Roll No: 2 1 0 0 0 5 0 0 6 0 0 9 9

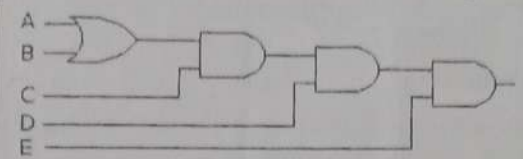
MCA(Integrated)
(SEM II) THEORY EXAMINATION 2021-22
DIGITAL ELECTRONICS

Time: 3 Hours *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2*7 = 14**

a.	convert a) $(0110)_{BCD}$ to Excess-3. b) convert $(10011010)_{XS-3}$ to BCD.
b.	Define the difference between canonical form and standard form.
c.	Define the following terms by giving suitable example (a) POS (b) SOP.
d.	Draw three variable K-map format.
e.	Derive the Boolean expression for the logic circuit shown below: 
f.	Differentiate between sequential circuit and combinational circuit.
g.	Define modulus of a counter? Write down the number of flip flops required for mod-5 counter?

SECTION B

2. Attempt any *three* of the following: **7*3 = 21**

a.	Convert the following: i) $(5C7)_{16} = (?)_{10}$ ii) ii) $(2598)_{10} = (?)_{16}$ iii) iii) $(10110)_2 = (?)_{10} = (?)_{16}$
b.	Explain the Basic theorems and Properties of Boolean algebra in detail.
c.	Simplify the Boolean function by means of Tabulation method: $F(A, B, C, D) = \sum m(9,12,13,15) + \sum d(1,4,5,7,8,11,14)$
d.	Define Decimal Adder with truth table and logic diagram.
e.	Discuss the features of ripple counter in detail and design a 3-bit Ripple counter using a JK flip-flop along with its truth table.

SECTION C

3. Attempt any *one* part of the following: **7*1 = 7**

a.	Define digital computer. Draw the functional parts of a digital computer and explain its block.
b.	If X= 1010100 and Y=1000011, Compute X-Y and Y - X using 1's complement and 2's complement.

PAPER ID-421211

Subject Code: REC202

Roll No: 2 1 0 0 0 5 0 0 6 0 0 4 9

MCA(Integrated)
(SEM II) THEORY EXAMINATION 2021-22
DIGITAL ELECTRONICS

4. **Attempt any *one* part of the following:** 7*1 = 7

a.	Realize the Boolean expression Z=ABC + AD + CD' using NAND gates only.
b.	For the Boolean function F = xy'z + x'y'z + w'xy + wx'y + wxy a. Obtain the truth table of F. b. Draw the logic diagram, using the original Boolean expression. c. Use Boolean algebra to simplify the function to a minimum number of literals.

5. **Attempt any *one* part of the following:** 7*1 = 7

a.	Minimise the following function in SOP minimal form using K-Maps: F(A, B, C, D) = m(1, 2, 6, 7, 8, 13, 14, 15) + d(0, 3, 5, 12)
b.	Reduce the expression f = ∑ m (0,1,2,3,5,7,8,9,10,12,13) using K-maps and implement the real minimal expression using NAND logic.

6. **Attempt any *one* part of the following:** 7*1 = 7

a.	Differentiate between full adder and half adder. Implement a full adder with two half adders and an OR gate.
b.	Realize the following function F(A, B,C,D) = ∑m(1,3,4,10,11,12,13) using a) 4 X 1 MUX b) 8 X 1 MUX

7. **Attempt any *one* part of the following:** 7*1 = 7

a.	Describe the working of Master-Slave JK Flip-Flop with Truth Table and Logic diagram.
b.	Discuss the different types of shift registers with their block diagram.

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