Question Tuper code: 2010/ATI 10.	Hall Ticket No:						Question Paper Code: 20MATP10
	Hall Ticket No:						Ouestion Paper Code: 20MATP10

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year I Semester (R22) Supplementary End Semester Examinations, August - 2023 MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

In Q. no 1 to 5 answer either A or B only

Question										CO	BL
Obtain the Disjunctive Normal Form for the following:									6M	1	1
$(a) \neg (P^Q) \longleftrightarrow (P^VQ)$											
(b) (P -> q) ^¬q										1	1
OR											
(a) Show t	6M	1	3								
(b)Show that (D \ O) and D(O are last all the second of									Cha	4	2
											3
						on or no	t.		6M	2	3
											
(D)HOW to	repres	ent the r	elations	explain		ampies.			61VI	2	2
(a)Draw_t	61/1	2	1								
							OIVI	2	1		
_			•	e.					6M	2	2
a) Define	Euler gr	aph and	Hamilto	nian gra	ph with	example	es.				3
				Ü	•	'					J
b) Complete graph is Hamiltonian? Justify.									6M	3	3
a) What is Graph colouring? Explain with Examples.								6M	3	3	
b) Explain the Tree terminologies in Detail.										3	3
Compute	Bowley	coefficie	ent of sk	ewness	for the f	ollowing	g data:		12M	4	3
Class	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89			
f	5	9	14	20	25	15	8	1			
34											
					OR						
Obtain the	e line of	regress	ion Y o	n X and	d estima	te Ywh	en Y-	45 for the	12M	4	3
following	J. 6-171	•	9								
	(a) ¬(P^Q (b) (P -&g (a) Show to (b) Show to a) Check to X= {1,2,3, (5,5),(2,6) (b) How to divides b} (b) Define a) Define b) Complet a) What is b) Explain Compute Class f	(a) ¬(P^Q) ↔ (P^Q) (b) (P -> q) ^¬q (a) Show that S^R (b) Show that ¬(P- a) Check the giver X= {1,2,3,4,5,6} R (5,5),(2,6),(2,2),(6 (b) How to Repress (a) Draw the Hass divides b} on {1,2, (b) Define the propant a) Define Euler graph b) Complete graph a) What is Graph of b) Explain the Tree Compute Bowley' Class 10-19 f 5	 (a) ¬(P^Q) ↔ (P^Q) (b) (P -> q) ^¬q (a) Show that S^R is tauto (b)Show that ¬(P→Q) and a) Check the given Relatio X= {1,2,3,4,5,6} R = { (1,1) (5,5),(2,6),(2,2),(6.6),(6,2), (b)How to Represent the relation (a)Draw the Hasse diagrative divides b} on {1,2,3,4,6,8,2,6} (b)Define the properties of a) Define Euler graph and b) Complete graph is Hamma) What is Graph colouring b) Explain the Tree terminal Compute Bowley' coefficient Class 10-19 20-29 f 5 9 Obtain the line of regress 	Obtain the Disjunctive Normal For (a) ¬(P^Q) ↔ (P^Q) (b) (P -> q) ^¬q (a) Show that S^R is tautologically (b) Show that ¬(P→Q) and P^¬ Q a a) Check the given Relation R is Eq X= {1,2,3,4,5,6} R = { (1,1) (1,3),(1,5), (5,5),(2,6),(2,2),(6.6),(6,2),(3.1),(5,6)) (b) How to Represent the relations (a) Draw the Hasse diagram repridivides b} on {1,2,3,4,6,8,12}. (b) Define the properties of a lattice a) Define Euler graph and Hamilto b) Complete graph is Hamiltonian a) What is Graph colouring? Explain b) Explain the Tree terminologies if Compute Bowley' coefficient of sk Class 10-19 20-29 30-39 f 5 9 14 Obtain the line of regression Y or	Obtain the Disjunctive Normal Form for the (a) $\neg (P \land Q) \leftrightarrow (P \lor Q)$ (b) $(P - \> q) \land \neg q$ (a) Show that $S \lor R$ is tautologically implied (b) Show that $\neg (P \rightarrow Q)$ and $P \land \neg Q$ are logically a) Check the given Relation R is Equivalent $X = \{1,2,3,4,5,6\}$ $R = \{(1,1)(1,3),(1,5),(3,5),(5,5),(2,6),(2,2),(6.6),(6,2),(3.1),(5,1),(5,3),(6)$ (b) How to Represent the relations explain divides b) on $\{1,2,3,4,6,8,12\}$. (b) Define the properties of a lattice. a) Define Euler graph and Hamiltonian graph b) Complete graph is Hamiltonian? Justify. a) What is Graph colouring? Explain with E b) Explain the Tree terminologies in Detail Compute Bowley' coefficient of skewness $Class 10-19 20-29 30-39 40-49 f 5 9 14 20$ Obtain the line of regression Y on X and	Obtain the Disjunctive Normal Form for the follow (a) ¬(P^Q)↔(P^Q) (b) (P -> q) ^¬q OR (a) Show that S^R is tautologically implied by (P^Q) (b)Show that ¬(P→Q) and P^¬ Q are logically equival a) Check the given Relation R is Equivalence relation X = {1,2,3,4,5,6} R = { (1,1) (1,3),(1,5),(3,5),(3.3), (5,5),(2,6),(2,2),(6.6),(6,2),(3.1),(5,1),(5,3)(4,4)}. (b)How to Represent the relations explain with explain with Examples b} on {1,2,3,4,6,8,12}. (b)Define the properties of a lattice. a) Define Euler graph and Hamiltonian graph with b) Complete graph is Hamiltonian? Justify. OR a) What is Graph colouring? Explain with Examples b) Explain the Tree terminologies in Detail. Compute Bowley' coefficient of skewness for the following properties of t	Obtain the Disjunctive Normal Form for the following: (a) $\neg (P^{\wedge}Q) \leftrightarrow (P^{\vee}Q)$ (b) $(P - \> q) \land \neg q$ OR (a) Show that $S^{\vee}R$ is tautologically implied by $(P^{\vee}Q)^{\wedge}(P \rightarrow R)$ (b) Show that $\neg (P \rightarrow Q)$ and $P^{\wedge} \neg Q$ are logically equivalent. a) Check the given Relation R is Equivalence relation or no $X = \{1,2,3,4,5,6\}$ R = $\{(1,1)(1,3),(1,5),(3,5),(3,3),(5,5),(2,6),(2,2),(6,6),(6,2),(3.1),(5,1),(5,3),(4,4)\}$. (b) How to Represent the relations explain with examples. OR (a) Draw the Hasse diagram representing the partial or divides b} on $\{1,2,3,4,6,8,12\}$. (b) Define the properties of a lattice. a) Define Euler graph and Hamiltonian graph with examples b) Complete graph is Hamiltonian? Justify. OR a) What is Graph colouring? Explain with Examples. b) Explain the Tree terminologies in Detail. Compute Bowley' coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following $C^{\vee}Q = (1,0,0)$ Coefficient of skewness for the following	Obtain the Disjunctive Normal Form for the following: (a) $\neg (P^{\wedge}Q) \leftrightarrow (P^{\vee}Q)$ (b) $(P - \> q) \land \neg q$ OR (a) Show that $S^{\vee}R$ is tautologically implied by $(P^{\vee}Q)^{\wedge}(P \rightarrow R) \land (Q \rightarrow Q)$ (b) Show that $\neg (P \rightarrow Q)$ and $P^{\wedge} \neg Q$ are logically equivalent. a) Check the given Relation R is Equivalence relation or not. $X = \{1,2,3,4,5,6\} R = \{(1,1)(1,3),(1,5),(3,5),(3,3),(5,5),(2,6),(2,2),(6,6),(6,2),(3,1),(5,1),(5,3)(4,4)\}.$ (b) How to Represent the relations explain with examples. OR (a) Draw the Hasse diagram representing the partial ordering divides b} on $\{1,2,3,4,6,8,12\}.$ (b) Define the properties of a lattice. a) Define Euler graph and Hamiltonian graph with examples. b) Complete graph is Hamiltonian? Justify. OR a) What is Graph colouring? Explain with Examples. b) Explain the Tree terminologies in Detail. Compute Bowley' coefficient of skewness for the following data: $Class 10-19 20-29 30-39 40-49 50-59 60-69 70-79 f 5 9 14 20 25 15 8$ OR Obtain the line of regression Y on X and estimate Y when $X = X$	Obtain the Disjunctive Normal Form for the following: (a) $\neg (P^{\Lambda}Q) \leftrightarrow (P^{V}Q)$ (b) $(P - \& gt; q) \land \neg q$ OR (a) Show that $S^{V}R$ is tautologically implied by $(P^{V}Q)^{\Lambda}(P \rightarrow R) \land (Q \rightarrow S)$. (b) Show that $\neg (P \rightarrow Q)$ and $P^{\Lambda} \rightarrow Q$ are logically equivalent. a) Check the given Relation R is Equivalence relation or not. $X = \{1,2,3,4,5,6\} R = \{(1,1)(1,3),(1,5),(3,5),(3,3),(5,5),(2,6),(2,2),(6,6),(6,2),(3,1),(5,1),(5,3),(4,4)\}$. (b) How to Represent the relations explain with examples. OR (a) Draw the Hasse diagram representing the partial ordering $\{(a,b) \mid a \text{ divides b}\}$ on $\{1,2,3,4,6,8,12\}$. (b) Define the properties of a lattice. a) Define Euler graph and Hamiltonian graph with examples. b) Complete graph is Hamiltonian? Justify. OR a) What is Graph colouring? Explain with Examples. b) Explain the Tree terminologies in Detail. Compute Bowley' coefficient of skewness for the following data: Class $10-19$ $20-29$ $30-39$ $40-49$ $50-59$ $60-69$ $70-79$ $80-89$ f 5 9 14 20 25 15 8 1 OR	Obtain the Disjunctive Normal Form for the following: (a) ¬(P^Q) ↔ (P^Q) (b) (P -> q) ^¬q OR (a) Show that S^R is tautologically implied by (P^Q)^(P → R) ^(Q → S). 6M (b)Show that ¬(P → Q) and P^¬ Q are logically equivalent. 6M (b)Show that ¬(P → Q) and P^¬ Q are logically equivalent. 6M (c) Check the given Relation R is Equivalence relation or not. (c) X = {1,2,3,4,5,6} R = {(1,1)(1,3),(1,5),(3,5),(3,3),(5,5),(2,6),(2,2),(6,6),(6,2),(3,1),(5,1),(5,3)(4,4)}. (b)How to Represent the relations explain with examples. OR (a)Draw the Hasse diagram representing the partial ordering {(a,b) a 6M divides b} on {1,2,3,4,6,8,12}. (b)Define the properties of a lattice. 6M a) Define Euler graph and Hamiltonian graph with examples. 6M b) Complete graph is Hamiltonian? Justify. OR a) What is Graph colouring? Explain with Examples. 6M Compute Bowley' coefficient of skewness for the following data: Class 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 for 59 9 14 20 25 15 8 1 OR OR OB Obtain the line of regression Y on X and estimate Y when X = 45 for the 12M	Obtain the Disjunctive Normal Form for the following: (a) $\neg (P \cap Q) \leftrightarrow (P \cap Q)$ (b) $(P - \> q) \land \neg q$ OR (a) Show that S^{\vee} R is tautologically implied by $(P^{\vee}Q) \land (P \rightarrow R) \land (Q \rightarrow S)$. 6M 1 (b) Show that S^{\vee} R is tautologically implied by $(P^{\vee}Q) \land (P \rightarrow R) \land (Q \rightarrow S)$. 6M 1 a) Check the given Relation R is Equivalence relation or not. $X = \{1,2,3,4,5,6\} R = \{(1,1)(1,3),(1,5),(3,5),(3,3),(5,5),(2,2),(6,6),(6,2),(3,1),(5,1),(5,3)(4,4)\}$. (b) How to Represent the relations explain with examples. OR (a) Draw the Hasse diagram representing the partial ordering $\{(a,b) \mid a \}$ 6M 2 divides b) on $\{1,2,3,4,6,8,12\}$. (b) Define the properties of a lattice. 6M 2 a) Define Euler graph and Hamiltonian graph with examples. 6M 3 b) Complete graph is Hamiltonian? Justify. OR a) What is Graph colouring? Explain with Examples. 6M 3 Compute Bowley' coefficient of skewness for the following data: Class $10-19$ $20-29$ $30-39$ $40-49$ $50-59$ $60-69$ $70-79$ $80-89$ f 5 9 14 20 25 15 8 1 OR

X	56	42	72	36	63	47	55	49	38	68
Y	147	125	160	118	149	128	150	145	115	152

Q.5(A) (i) In studying the causes of power failures, these data have been gathered: M8 5 2 5% are due to transformer damage, 80% are due to line damage, 1% involves both problems. Based on these percentages, approximate the probability that a given power failure involves: (a) Line damage given that there is a transformer damage (b) Transformer damage given that there is line damage (c) Transformer damage but not line damage (d) Transformer damage given that there is no line damage. (e) Transformer damage or line damage. (ii) Let X be a random variables with E(X) = 3, $E(X^2) = 25$, then find 4M 5 2 (a) E(5X+4) (b) Var(X)OR Q.5(B) (i) On a multiple-choice exam with three possible answers for each of the 5 6M five questions, what is the probability that a student would get four or more correct answers just by guessing? (ii) Define normal distribution and write its characteristics. 6M

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MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE (UGC-AUTONOMOUS)

MCAI Year I Semester (R22) Supplementary End Semester Examinations, August - 2023 COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either A or B only

Q.No	Question	Marks	СО	BL
Q.1(A)	Explain about number system with IEEE 754 format. With example.	12M	1	3
	OR			
Q.1(B)	Explain Multiplexers and De-multiplexers	12M	1	2
Q.2(A)	Describe the instruction life cycle with neat diagram.	12M	2	2
	OR			
Q.2(B)	What is addressing mode? Explain different addressing modes with example.	12M	2	3
Q.3(A)	What is Hazard? Explain how the hazards are influence on instruction	12M	3	2
	set			
	OR			
Q.3(B)	What is Pipelining? Explain the different hazards with suitable example.	12M	3	2
Q.4(A)	Explain the following	12M	4	3
	a. Paging			
	b. Swapping			
	c. Demand paging.			
	OR			
Q.4(B)	Explain the memory hierarchy with neat diagram? With their advantages and disadvantages.	12M	4	2
Q.5(A)	Explain I/O organization with neat diagram.	12M	5	2
	OR		9	-
Q.5(B)	Explain the following	12M	5	2
	a. Interrupts		-	_
	b. DMA			

*** END***