

Total No. of Questions: [2]
Total No. of Pages: [1]

SEAT NO. :

Progressive Education Society's
Modern College of Engineering
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)
F.Y.MCA (2024 Pattern) (Semester - I)

Cumulative Internal Examinations (CIE-I): T1 Subjective Test
Elective – I Internet of Things (Course Code: MCA10501B)

Time: 45 Minutes

Max. Marks: 20

Instructions to the candidate:

- 1) All Questions are compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Justify your answer with an example wherever necessary.

Q. No.		Marks	CO	BTL
Q.1.	A) Explain any five characteristics of IoT in detail. Attempt Any one of the following	[5]	1	2
	B) Apply most suitable IoT communication model where multiple IoT devices need to communicate synchronously.	[5]	1	3
	C) Identify the primary functional blocks of an IoT system.	[5]	1	3
Q.2.	A) Explain the importance of protocol standardization for IoT devices. Attempt Any one of the following	[5]	2	2
	B) Analyze the performance of IEEE 802.15.4 in terms of energy efficiency and data throughput for large-scale IoT networks.	[5]	2	4
	C) Analyze the effectiveness of QoS (Quality of Service) levels in MQTT for a use case healthcare monitoring, which QoS level (0, 1, or 2) would you recommend, and why?	[5]	2	4

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Modern College of Engineering
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F.Y. MCA (2024 Pattern) (Semester - I)

Cumulative Internal Examinations (CIE-I): T1 Subjective Test
Software Development Methodologies (Course Code: MCA01502)

Time: 45 Minutes

Max. Marks: 20

Instructions to the candidate:

- 1) All Questions are compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Justify your answer with an example wherever necessary.

Q. No.		Marks	CO	BTL
Q.1.	A) List and briefly describe the phases of the V-Model	[5]	1	1
	Attempt Any one of the following			
	B) Suppose you're developing a simple library management system. Identify an appropriate software development life cycle model and justify your choice.	[5]	1	3
	C) How does the Evolutionary process model handle changing requirements?	[5]	1	3
Q.2.	A) Describe Software Requirements Specification (SRS) and its need in detail.	[5]	2	1
	Attempt Any one of the following			
	B) Write a sample SRS document for a Healthcare Management System.	[5]	2	3
	C) Draw ERD for Banking System	[5]	2	3

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F.Y. MBA&MCA (2024 Pattern) (Semester - I)
Cumulative Internal Examinations (CIE-I): T1 Subjective Test
Research Methodology (Course Code: RMT06501)

Time: 45 Minutes

Max. Marks: 20

Instructions to the candidate:

- 1) All Questions are compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Justify your answer with an example wherever necessary.

Q. No.		Marks	CO	BTL
Q.1.	A) Define research and explain any two types of research with examples. Attempt Any one of the following	[5]	1	2
	B) Develop a research problem based on a study of employee motivation and formulate a hypothesis.	[5]	1	3
	C) Illustrate the process of selecting a research problem from an area of interest.	[5]	1	3
Q.2.	A) Explain the differences between a sample survey and a census survey.	[5]	2	2
	B) A researcher wants to study consumer preferences for online shopping, suggest an appropriate sampling design and justify your choice.	[5]	2	3
	C) If you were to conduct a survey on social media usage among teenagers, what data collection method would you choose? Justify your choice.	[5]	2	3

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Modern College of Engineering
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)
FYMCA (2024 Pattern) (Semester-I)
Cumulative Internal Examinations (CIE-I): T1 Subjective Test
Mathematical Foundations (Course Code:MCA01500)

Time: 45 Minutes

Max. Marks: 20

Instructions to the candidate:

- 1) All Questions are compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Justify your answer with an example wherever necessary.

Q. No.

		Marks	CO	BTL
Q.1.	A) Explain following set operations with a suitable example. 1) Complement of a set 2) Union of Sets 3) Intersection of Sets Attempt Any one of the following	[5]	1	2
	B) In a survey, 4000 students were asked whether they read Digit magazine or Chip or Computers Today. It was found that 2400 read Digit, 1800 read Chip and 800 read both. Find How many read at least one magazine and how many read neither.	[5]	1	3
	C) Identify whether following propositions are tautologies or contradictions. $(p \wedge \sim(p \vee q))$	[5]	1	3
Q.2.	A) Explain the concept of equivalence relation with a suitable example. Attempt Any one of the following	[5]	2	1
	B) Develop a composition relation SoR and RoS using following data. Let $A=\{1,2,3,4\}$, and the Relation $R=\{(1,2),(1,1),(1,3),(2,4),(3,2)\}$ and $S=\{(1,4),(1,3),(2,3),(3,1),(4,1)\}$.	[5]	2	3
	C) Assume that $A= \{1,2,3,4\}$ and $R=\{(1,1),(1,2),(2,2),(2,4),(1,3),(3,3),(3,4),(1,4),(4,4)\}$ then show that R is Partial order and Draw its Hasse Diagram.	[5]	2	3

Total No. of Questions: [2]
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SEAT NO. : 5042

2762

Progressive Education Society's
Modern College of Engineering
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)
F.Y. MCA (2024 Pattern) (Semester - I)
Cumulative Internal Examinations (CIE-I): T1 Subjective Test
Data Structures and Algorithms (MCA01503)

Time: 45 Minutes

Max. Marks: 20

Instructions to the candidate:

- 1) All Questions are compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Justify your answer with an example wherever necessary.

Q. No.		Marks	CO	BTL
Q.1.	A) Differentiate between primitive and non-primitive data structures. Provide examples for each category. Attempt Any one of the following	[5]	1	2
	B) Analyze time and space complexity for linear search and binary search also calculate performance efficiency.	[5]	1	4
	C) Construct the sparse matrix for given 3×3 matrix by showing the steps also perform the transpose	[5]	1	3
	$\begin{bmatrix} 0 & 0 & 5 \\ 0 & 3 & 0 \\ 8 & 0 & 0 \end{bmatrix}$			
Q.2.	A) Explain linked list data structure and describe the functions with suitable diagram. Attempt Any one of the following	[5]	2	3
	B) Write an algorithm to delete first node from Doubly Linked List with suitable diagram.	[5]	2	3
	C) Write algorithm for polynomial addition using Linked List with suitable diagram.	[5]	2	3

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