O.P.Code: 20HS0815	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
ENTREPRENEURSHIP DEVELOPMENT
(Common to CIC, CSM, CSE, CSIT, CAD & CCC)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

		UNIT-I			
1	a	What is meant by Entrepreneurship? Define the Functions of an entrepreneur.	CO1	L1	6M
	b	What are the qualities of Entrepreneurship?	CO1	L1	6M
		OR			
2	a	Identify the problems faced by an entrepreneur in India.	CO1	L2	6M
	b	Briefly explain various types of entrepreneurs.	CO1	L3	6M
		UNIT-II			
3	a	What is the Importance ofsmall business in a developing country?	CO2	L3	6M
	b	Briefly explain classification of MSMEs.	CO2	L3	6M
		OR			
4		Is the role of government in supporting MSMEs in India is sufficient? Analyze.	CO2	L4	12M
		UNIT-III			
5	a	Distinguish the concept of Invention and innovation.	CO3	L3	6M
	b	Examine the importance of Innovation in Entrepreneurship	CO3	L4	6M
		OR			
6	a	Write short note on Trademark and Trade Secrets.	CO3	L3	6M
	b	Brief about CopyRights and Patents.	CO3	L3	6M
		UNIT-IV			
7	a	What is meant by Motivation? Explain Maslow's Need Hierarchy Theory in detail.	CO4	L4	6M
	b	Relate the motivational factors influencing the entrepreneurs.	CO4	L3	6M
		OR			
8	a	What is meant by Motivation? What are various Motivational theories that help in explaining entrepreneurial motivation in detail?	CO4	L4	6M
	b	What is the scope of entrepreneurship development in India?	CO4	L1	6M
		UNIT-V			
9	a	What are the criteria for selecting a particular project? What are the subject matters behind preliminary project report preparation?	CO5	L5	6M
	b	Explain precautions taken while prepare a Project Report.	CO5	L2	6M
		OR			
10	a	Describe about Project post Feasibility analysis.	CO5	L2	6M
	b	How can a feasible about Economic and Industry analysis?	CO5	L2	6M

***** END *****

O.P.Code: 18HS0815	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June-2025
ENTREPRENEURSHIP DEVELOPMENT
(Open Elective-III)

Time: 3 Hours Max. Marks: 60

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Define Women Entrepreneurship.	CO1	L5	2M
	b	What are the Features of cooperative society?	CO2	L2	2M
	c	Write short noteson Trade mark.	CO3	L2	2M
	d	Identify the different phases of EDP.	CO4	L2	2M
	e	Define Project Life Cycle.	CO5	L2	2M

PART-B
(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	Define social entrepreneurship. What are the risks and challenges that are faced by social entrepreneurs?	CO1	L2	5M
	b	Do you think Arvind Kejriwal possesses entrepreneurial qualities?	CO1	L6	5M
		OR			
3		Why do many women nowadays prefer to start their own ventures rather than pursue traditional career paths?	CO1	L5	10M

UNIT-II

4		What are the salient features of a partnership firm?	CO2	L3	10M
		OR			
		Summarize Licensing, Leasing, and Franchising.	CO2	L3	10M

UNIT-III

6	a	Write short notes on Trademark and Trade Secrets.	CO3	L2	5M
	b	Write a short note on Copy Rights and Patents.	CO3	L2	5M
		OR			
7		What is intellectual property and its importance?	CO3	L1	10M

UNIT-IV

8	a	What is Venture Capital and its advantages?	CO4	L1	5M
	b	Examine about consultancy organization.	CO4	L4	5M
		OR			
9	a	List out the successful women entrepreneurs.	CO4	L4	5M
	b	What are the opportunities for entrepreneurs in the current scenario?	CO4	L5	5M

UNIT-V

10	a	Explain the role of project planning in entrepreneurship.	CO5	L2	5M
	b	Explain the steps involved in the preparation of the project feasibility report.	CO5	L3	5M
		OR			
11	a	How do you design a project? Explain its steps.	CO5	L3	5M
	b	What is the need of project designing?	CO5	L1	5M

***** END *****

O.P.Code: 20CS0537	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
CLOUD COMPUTING
(Computer Science & Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12** = **60** Marks)

UNIT-I

1	a	What is SOA? Describe with its architecture.	CO1	L1	6M
	b	Explain the evolution of distributed computing and its role in scalable computing over the Internet.	CO1	L2	6M
		OR			
2	a	Explain the concept of the cloud computing stack and describe its fundamental layers.	CO1	L2	6M
	b	Discuss the following i) computational grid ii) data grid iii)network grid	CO1	L1	6M

UNIT-II

3	a	Analyze the Public Cloud and Private Cloud.	CO2	L4	6M
	b	Explain briefly about types of SLA.	CO2	L2	6M
		OR			
4	a	Explain the key features and use cases of the three primary cloud service models: IaaS, PaaS, and SaaS.	CO2	L3	6M
	b	Discuss the pros and cons of cloud computing for organizations of various sizes.	CO2	L2	6M

UNIT-III

5	a	Differentiate Full Virtualization and Para Virtualization.	CO3	L2	6M
	b	Summarize the Memory Virtualization concept.	CO3	L1	6M
		OR			
6	a	Explain the resource management in virtual clusters.	CO3	L2	6M
	b	Explain how virtualization acts as the foundation for cloud computing and enables scalability and flexibility.	CO3	L3	6M

UNIT-IV

7	a	Explain about Authentication Methods.	CO4	L2	6M
	b	Explain about provider data and its security.	CO4	L2	6M
		OR			
8	a	What are the primary privacy issues in the cloud, and how can they be mitigated?	CO4	L5	6M
	b	What are the main considerations for securing provider data in a multi-tenant cloud environment?	CO4	L1	6M

UNIT-V

9	a	Describe the architecture of Mobile Cloud Computing and its key components.	CO5	L2	6M
	b	Explain about general security in mobile cloud computing.	CO5	L2	6M
		OR			
10	a	List out the applications of mobile cloud computing.	CO6	L1	6M
	b	Discuss the context management architecture based on IRNA with neat Diagram.	CO6	L2	6M

***** END *****

O.P.Code: 20EE0232	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. IV Year I Semester Supplementary Examinations June/July-2025

POWER SYSTEMS PROTECTION

(Electrical & Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

		UNIT-I			
1	**a**	Explain the terms recovery voltage, restriking voltage and RRRV.	**CO1**	**L3**	**6M**
	b	Explain Sliepian's theory.	**CO1**	**L1**	**6M**
		OR			
2	**a**	Explain the principle of ARC extinction.	**CO1**	**L1**	**6M**
	b	Derive an expression for restriking voltage in terms of system capacitance and inductance.	**CO1**	**L3**	**6M**
		UNIT-II			
3	**a**	Explain the significance of primary and back up protection.	**CO3**	**L1**	**6M**
	b	What are the different types of distance relays? Compare their merits and demerits.	**CO3**	**L1**	**6M**
		OR			
4	**a**	Explain the need for static relays. Explain the basic units in a static relay	**CO3**	**L2**	**6M**
	b	Discuss the principle of operation of induction cup relay with relevant diagram.	**CO3**	**L1**	**6M**
		UNIT-III			
5	**a**	Describe the protection of the stator windings of 3-phase alternator against turn-to-turn faults.	**CO4**	**L1**	**6M**
	b	Discuss earth fault protection for transformers.	**CO4**	**L3**	**6M**
		OR			
6	**a**	The neutral point of a 3-phase, 20MVA, 11kV alternator is earthed through a resistance of 5 Ω, the relay is set to operate when there is an out of balance current of 1.5 A.The C.T.s has a ratio of 1000/5.What percentage of winding is protected against an earth fault and what should be the Minimum value of earthling resistance to protect 90% of the winding.	**CO4**	**L3**	**6M**
	b	Explain a scheme of protection for failure of alternator excitation.	**CO4**	**L1**	**6M**
		UNIT-IV			
7		Explain over-current protection of feeders. How is the protection system graded with respect to the time of operation of relays for a radial feeder.	**CO5**	**L1**	**12M**
		OR			
8	**a**	Explain the construction and principle of operation of a translay relay	**CO5**	**L1**	**6M**
	b	Describe in detail the protection of parallel feeder and ring mains.	**CO5**	**L1**	**6M**
		UNIT-V			
9	**a**	Write short notes on Basic impulse level and its significance.	**CO6**	**L1**	**6M**
	b	Briefly explain the various methods of overvoltage protection of overhead transmission line.	**CO6**	**L1**	**6M**
		OR			
10	**a**	List out the types of lightning arresters and write its advantages in a protection system. Explain, with a neat sketch, the working of Zinc-Oxide lightning arrester.	**CO6**	**L1**	**6M**
	b	Explain the differences between equipment grounding and system grounding?	**CO6**	**L1**	**6M**

***** END *****

O.P.Code: 20CS1020	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
DIGITAL WATERMARKING
CSE (Internet of Things and Cyber security Including Block Chain Technology)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Explain about history of watermarking.	CO1	L2	6M
	b	Explain briefly how digital watermarking is used in owner identification.	CO1	L3	6M
		OR			
2	a	Explain the concept of Geometric models of watermarking.	CO1	L3	6M
	b	What is Multi-symbol Message Coding? Discuss in brief.	CO1	L2	6M
		UNIT-II			
3	a	Explain briefly watermarking with blind embedders.	CO2	L3	6M
	b	Describe Signal and Channel Models in side channel watermarking.	CO2	L2	6M
		OR			
4	a	Explain the concept of Costa's writing on Dirty Paper?.	CO2	L3	6M
	b	Differentiate informed embedding and informed coding in detail.	CO2	L2	6M
		UNIT-III			
5	a	Describe General form of a perceptual model.	CO3	L2	6M
	b	How to evaluate Perceptual impact of Watermarks.	CO3	L3	6M
		OR			
6	a	Explain about Perceptual Human Evaluation Measurement Techniques.	CO3	L3	6M
	b	Describe Robust Watermarking Approaches.	CO3	L2	6M
		UNIT-IV			
7	a	Describe Block-Wise Content Authentication.	CO4	L2	6M
	b	Explain Fragile Watermarks and Telltale Watermarks.	CO4	L3	6M
		OR			
8	a	Define Embedded Redundancy? Briefly explain.	CO4	L2	6M
	b	Explain about Sample-Wise Content Authentication.	CO4	L3	6M
		UNIT-V			
9	a	Define Model-Based Steganography? Briefly explain.	CO5	L2	6M
	b	Describe Steganography for Criminals.	CO5	L2	6M
		OR			
10	a	Explain Forensic Steganalysis.	CO5	L2	6M
	b	Explain about Statistics Preserving Steganography.	CO5	L3	6M

*** END ***

O.P.Code: 20CS1021	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
CLOUD SERVICES AND VIRTUALIZATION
(Common to CIC & CSM)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Define and explain Infrastructure as a Service Cloud model.	CO1	L1	6M
	b	Identify the role of Platform as a Service Cloud model.	CO1	L3	6M
		OR			
2		Explain clearly about Public cloud and private cloud.	CO1	L2	12M

UNIT-II

3	a	How does CPU virtualization work?	CO2	L1	6M
	b	Describe the process of memory virtualization.	CO2	L2	6M
		OR			
4	a	Describe the Virtual clusters and resource management.	CO2	L2	6M
	b	Briefly explain the different types of virtualization.	CO2	L2	6M

UNIT-III

5	a	What are the challenges of implementing storage virtualization.	CO3	L1	6M
	b	How does storage virtualization improve data redundancy and availability?	CO3	L1	6M
		OR			
6	a	What is operating system-level virtualization? Describe its advantages.	CO3	L2	6M
	b	Clearly explain OS-level virtualization.	CO3	L2	6M

UNIT-IV

7	a	Infer how Azure can be used for cloud-based application development.	CO4	L4	6M
	b	Discuss the advantages of using Azure for enterprise solutions.	CO4	L2	6M
		OR			
8	a	How can relational operations be implemented using Map-Reduce?	CO4	L2	6M
	b	Give examples of common relational operations that benefit from the Map-Reduce approach.	CO4	L2	6M

UNIT-V

9	a	Compare the architectural design of public and private compute clouds.	CO5	L2	6M
	b	Explain the role of virtualization in storage cloud architectures.	CO5	L2	6M
		OR			
10		Discuss the global exchange of cloud resources and its impact on cloud scalability.	CO5	L2	12M

***** END *****

O.P.Code: 20CS0544	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
SOFTWARE PROJECT MANAGEMENT
(Common to CSE, CAD & CCC)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

	UNIT-I			
1	What is the importance of software project management and explain different activities methodologies, setting objectives covered by software project management?	**CO1**	**L2**	**12M**
	OR			
2	Outline the Evaluation of the Risk Process in detail.	**CO1**	**L2**	**12M**
	UNIT-II			
3	Explain various approaches involved in Agile Methods of process model.	**CO2**	**L2**	**12M**
	OR			
4	Explain in brief bottom-up and top-down approaches in software effort estimation.	**CO2**	**L2**	**12M**
	UNIT-III			
5	Illustrate different activity based approaches involved in Activity Planning.	**CO3**	**L2**	**12M**
	OR			
6	Summarize the following: i)Risk Identification ii) Risk Assessment	**CO3**	**L2**	**12M**
	UNIT-IV			
7	Explain Creation of Framework for Project Management and Control.	**CO5**	**L2**	**12M**
	OR			
8	Explain about Software Configuration Management Control in detail.	**CO5**	**L2**	**12M**
	UNIT-V			
9	Explain in detail the Old Hackman Job Characteristic Model in software projects?	**CO6**	**L2**	**12M**
	OR			
10	Define Communication Plan. Write down the results of communication plan in projects.	**CO6**	**L1**	**12M**

***** END *****

Q.P.Code:20EE0234 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
UTILIZATION OF ELECTRICAL ENERGY
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

		UNIT-I			
1		State the laws of illumination. Explain the laws with the help of suitable diagrams and derive an equation of the same.	CO1	L1	12M
		OR			
2	a	If a lamp of 200 cp is placed 1m below a plane mirror which reflects 90% of light falling on it,determine illumination at a point 3m away from the foot of the lamp which is hung 4m above ground.	CO1	L3	6M
	b	Explain with sketch the principle and operation of incandescent lamp and enumerates its advantages and disadvantages.	CO1	L2	6M
		UNIT-II			
3		Explain the different methods of electric welding and their relative advantages.	CO2	L2	12M
		OR			
4	a	Briefly discuss the method of Dielectric heating used in the electric heating.	CO2	L1	6M
	b	Briefly discuss the applications of resistance heating.	CO2	L1	6M
		UNIT-III			
5		What is individual drive, group drive and multi motor drive? Explain with suitable examples.	CO3	L1	12M
		OR			
6		What are the starting and running characteristics of electric drives?	CO3	L1	12M
		UNIT-IV			
7		Discuss the characteristic features of a traction motor for effective traction systems.	CO4	L3	12M
		OR			
8		A train is to run between two stations 1.6 km apart at an average speed of 40 kmph, the run is to be made to a quadrilateral N-T curve. Maximum speed is to be limited to 64 kmph, acceleration, to 2 kmph/s, coasting retardation to 0.16, and braking retardation to 3.2, Determine the duration of a acceleration, coasting and braking periods.	CO4	L4	12M
		UNIT-V			
9		Explain the calculations of tractive effort required for train propulsion.	CO5	L2	12M
		OR			
10		A train is to run between two stations 1.6 km apart at an average speed of 40 kmph, the run is to be made to a quadrilateral N-T curve. Maximum speed is to be limited to 64 kmph, acceleration, to 2 kmphps, coasting retardation to 0.16, and braking retardation to 3.2, determine the duration of a acceleration, coasting and braking periods.	CO5	L3	12M

*** END ***

O.P.Code: 20ME0339	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. IV Year I Semester Supplementary Examinations June/July-2025

POWER PLANT ENGINEERING

(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

		UNIT-I			
1	a	Discuss about the sources of energy.	CO1	L2	6M
	b	Discuss about the harmful effects of greenhouse gases.	CO1	L2	6M
		OR			
2		Explain the layout of steam power plant with neat sketch.	CO2	L3	12M
		UNIT-II			
3	a	What are the requirements of pulverized mill?	CO1	L2	6M
	b	Illustrate the working of a chain grate stoker.	CO2	L2	6M
		OR			
4	a	What are the properties of coal?	CO2	L1	6M
	b	What are the requirements of pulverized mill?	CO2	L1	6M
		UNIT-III			
5		Explain the working of a diesel power plant with a neat sketch.	CO2	L3	12M
		OR			
6	a	How would you classify IC engines? Brief them.	CO2	L3	6M
	b	Describe a simple open cycle gas turbine plant with a simple line diagram.	CO2	L3	6M
		UNIT-IV			
7		What is meant by Hydropower? Explain Hydrological cycle with a neat sketch.	CO4	L1	12M
		OR			
8	a	Discuss about Storage and Pondage in hydro power plant.	CO2	L4	6M
	b	Illustrate high head power plant with a neat sketch.	CO2	L4	6M
		UNIT-V			
9	a	Explain nuclear fission process.	CO5	L2	6M
	b	Draw a fast breeder reactor and explain	CO5	L1	6M
		OR			
10	a	Describe radioactive waste disposal methods	CO6	L2	6M
	b	Describe boiling water reactor with neat diagram	CO5	L2	6M

***** END *****

O.P.Code: 20CS0540	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
MOBILE APPLICATION DEVELOPMENT
(Common to CSE & CSM)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Define Android. Create a android application to display "Hello World".	CO1	L1	6M
	b	Define MAD. Explain mobile devices with its pros and cons.	CO1	L2	6M
		OR			
2		Describe the life cycle of an Android activity with neat sketch.	CO1	L3	12M

UNIT-II

3	a	Identify the views Time Picker in android.	CO2	L3	6M
	b	Explain the Following Date Picker.	CO2	L2	6M
		OR			
4	a	Explain in detail about the Progress Bar.	CO2	L2	6M
	b	Explain in detail about the Spinner.	CO2	L2	6M

UNIT-III

5		Demonstrate use of Toggle Button class with example. Play Music on toggle on and music off on toggle off.	CO3	L2	12M
		OR			
6		Develop an android application for login & registration using SQLite database connectivity.	CO3	L6	12M

UNIT-IV

7	a	Explain the following terms: i) Broadcast Receiver ii)SMS	CO4	L2	6M
	b	What is the purpose of the Image Switcher?	CO4	L1	6M
		OR			
8		Analyze how to Publishing your application on the Android Market.	CO4	L4	12M

UNIT-V

9		Discuss the Sockets support and its communication for Windows Phone 8.	CO5	L2	12M
		OR			
10		Design and Illustrate the display of maps with landmarks and location.	CO5	L6	12M

***** END *****

O.P.Code: 20CS1214	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
BIG DATA ESSENTIALS
(CSE with Specialization in Cloud Computing)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Examine the different types of digital data with examples.	CO1	L4	6M
	b	Summarize Big Data in terms of three dimensions, volume, variety and velocity.	CO1	L2	6M
		OR			
2		Discuss about the Analysis of data through Unix tools and Hadoop.	CO1	L2	12M
		UNIT-II			
3		Illustrate the concepts of HDFS.	CO2	L3	12M
		OR			
4		Elaborate the AVRO file format with diagram.	CO2	L6	12M
		UNIT-III			
5		Sketch neatly and Explain MapReduce Architecture in detail.	CO3	L3	12M
		OR			
6	a	Summarize Task Execution Environment Properties.	CO4	L2	6M
	b	Discuss about Speculative Execution and its Properties.	CO4	L2	6M
		UNIT-IV			
7		What is Pig? How to Install and execute PIG on Hadoop Cluster.	CO5	L2	12M
		OR			
8	a	Explain about Arithmetic Operators in Pig Latin .	CO3	L2	6M
	b	Find the Grouping and Joining Data in Pig Latin.	CO3	L3	6M
		UNIT-V			
9	a	Draw a neat sketch of Hive architecture.	CO2	L3	6M
	b	Explain about components of Hive architecture.	CO2	L2	6M
		OR			
10		Differentiate Hbase over RDBMS.	CO1	L4	12M

*** END ***

O.P.Code: 20EC0442	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. IV Year I Semester Supplementary Examinations June/July-2025

VLSI DESIGN

(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Summarize the evolution of microelectronics.	CO1	L2	6M
	b	Explain working of the NMOS transistor	CO1	L2	6M
		OR			
2	a	What are the different forms of Pull Up Loads? Which is the best choice For realization.	CO2	L1	6M
	b	Derive the expression for threshold voltage for MOS transistors.	CO2	L3	6M

UNIT-II

3	a	Explain the steps involved in VLSI Design flow.	CO3	L2	6M
	b	Construct the stick diagram of a 2-input CMOS NAND gate.	CO3	L3	6M
		OR			
4	a	Construct the stick diagram for 2-input CMOS XOR gate.	CO3	L3	6M
	b	Explain different types of MOS layers used in VLSI circuits.	CO1	L2	6M

UNIT-III

5	a	Draw the CMOS implementation of 4X1 mux using transmission gates.	CO4	L1	6M
	b	Explain pseudo NMOS logic gate?	CO4	L2	6M
		OR			
6	a	Discuss about the Power Estimation in CMOS circuit.	CO5	L2	6M
	b	Explain about Power delay estimation in VLSI circuits.	CO5	L2	6M

UNIT-IV

7	a	Define the Counters in the digital circuit. Design 4-bit Asynchronous counter.	CO6	L1	6M
	b	Define Parity generator logic circuits. Design 4-bit Parity generator using EX-OR gate.	CO6	L3	6M
		OR			
8	a	Explain the working of Zero/one detector implemented with adder circuit.	CO4	L2	6M
	b	List the advantages and applications of Zero/one detector.	CO4	L1	6M

UNIT-V

9	a	Compare PROM, PAL, and PLA with an example.	CO5	L2	6M
	b	Design the PAL Structure for the Boolean function **f1(a,b,c,d)=ab+bc & f2(a,b,c,d)=ab+cd**.	CO5	L3	6M
		OR			
10	a	What is the need for testing? Explain about Fault simulation.	CO5	L1	6M
	b	Give a logic circuit example in which stuck-at-1 fault and stuck-at-0 fault are indistinguishable.	CO5	L2	6M

***** END *****

O.P.Code: 20EE0239	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
NEURAL NETWORKS AND FUZZY LOGIC
(Electrical & Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	What is generalization? Explain.	CO1	L2	6M
	b	Explain characteristics of Artificial neural network.	CO1	L2	6M
		OR			
2		Explain types of activation functions used in artificial neural network	CO1	L2	12M

UNIT-II

3	a	Explain Supervised learning in detail with block diagram.	CO2	L1	6M
	b	Give the perceptron weight updating rule and the learning algorithm.	CO2	L3	6M
		OR			
4		Define Learning factors. Explain the learning factors in Backpropagation Algorithm.	CO2	L2	12M

UNIT-III

5	a	What is Associative Memory? Explain it in detail.	CO3	L1	6M
	b	Train auto-associative memory network to find optimal weight matrix using outer product rule to store input row vector [1 1 1 1] and [-1 1 1 -1]. Find the weight matrix and check with test vector using [1 1 1 1] and [-1 1 1 -1]	CO3	L4	6M
		OR			
6		Train bidirectional associative network to store input vectors S=S1, S2, S3, S4 to the output vectors T= T1, T2. Training input and target pairs are in binary form. Obtain the weight vectors in bipolar form.	CO4	L4	12M

Input/Target	S1	S2	S3	S4	T1	T2
1	1	0	0	0	0	1
2	1	1	0	0	0	1
3	0	0	0	1	1	0
4	0	0	1	1	1	0

UNIT-IV

7	a	Define membership function. What are the membership functions used in fuzzy designing?	CO5	L1	6M
	b	Explain fuzzy intersection operation	CO5	L2	6M
		OR			
8		What are the operations performed on fuzzy sets. Explain it in detail.	CO5	L2	12M

UNIT-V

9		Explain fuzzy rule based system in fuzzy logic.	CO3	L3	12M
		OR			
10	a	What are the basic building blocks in fuzzy logic ?	CO6	L1	6M
	b	What are the advantages of fuzzy logic control?	CO6	L1	6M

***** END *****

O.P.Code: 20CE0148	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
ELEMENTS OF ROAD TRAFFIC SAFETY
(Open Elective (OE) – III)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1		Give a detailed discussion about accident situation in India with past accident data.	CO1	L2	12M
		OR			
2		Analyze the various road geometric design elements and how they are related to cause Road accidents.	CO1	L3	12M

UNIT-II

3	a	What are the needs for traffic regulation?	CO2	L1	6M
	b	List out the various Traffic Laws as per Indian Motor Vehicle Act.	CO2	L1	6M
		OR			
4		Enumerate the various common methods in design of On-street parking with sketches.	CO2	L1	12M

UNIT-III

5	a	Explain the concept of centre lines with neat sketch.	CO3	L2	6M
	b	What is meant by pedestrian crossings? and explain it with neat sketch.	CO3	L1	6M
		OR			
6		Explain about the following terms in view of Street lighting: i) Mounting height ii) Single-sided lantern iii) Spacing of lanterns iv) Central mounting lantern	CO4	L2	12M

UNIT-IV

7		Briefly explain about Mandatory signs with neat sketches.	CO5	L2	12M
		OR			
8		Briefly explain about Informatory signs and Route marker signs with neat sketch.	CO5	L2	12M

UNIT-V

9	a	Briefly explain the concept of signal indications in various country Practices.	CO6	L2	8M
	b	Write a note on pedestrian signal indications.	CO6	L1	4M
		OR			
10	a	What is meant by signal approach dimensions and explain how to determine approach dimensions for a two phase cross-roads?	CO6	L1	6M
	b	The following table gives the flows in the arms of an intersection where a two phase signal is to be designed. Determine the proportion of dimensions of the approaches and the green times for the two phases.	CO6	L1	6M

Arm	Flow(vehicle/hour)
North	4000
South	3800
East	1000
West	900

*** END ***

O.P.Code: 20EC0453	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
INTRODUCTION TO IOT
(Open Elective (OE) – III)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Describe an example of an IoT system in which information and knowledge are inferred from the data.	CO1	L2	6M
	b	What are the protocols associated with network/internet layer of IoT? Explain them in detail.	CO4	L2	6M
		OR			
2	a	Define an internet protocol and compare IPV4 and IPV6.	CO4	L2	6M
	b	Compare Transmission protocol and user data gram protocol with neat sketch.	CO4	L3	6M

UNIT-II

3	a	Describe how the environment can be more protected with the help of IoT technology in the following categories: (i) Air pollution monitoring (ii) Noise pollution monitoring	CO2	L2	6M
	b	Describe how the environment can be more protected with the help of IoT technology in the following categories: (i) Forest fire detection (ii) River flood detection	CO2	L2	6M
		OR			
4	a	Explain how IoT technology used to enable the agricultural industry as smart irrigation system to increase operational efficiency, lower costs, reduce waste, and improve the quality of their yield.	CO3	L2	6M
	b	Explain how IoT technology used to enable the agricultural industry as Greenhouse system to increase operational efficiency, lower costs, reduce waste, and improve the quality of their yield.	CO3	L2	6M

UNIT-III

5	a	Describe the structure of Network function Virtualization for IoT.	CO3	L2	6M
	b	Explain the Key elements of Network function Virtualization for IoT.	CO3	L2	6M
		OR			
6	a	Define domain model specification with neat sketch & draw its structure in IoT system design.	CO3	L3	6M
	b	Describe with neat sketch the Information Model specification in IoT system Design.	CO3	L3	6M

UNIT-IV

7	a	Define and explain an IoT device & give some examples.	CO4	L2	6M
	b	Explain the GPIO pins of Raspberry Pi device with neat diagram.	CO4	L2	6M
		OR			
8	a	Describe the use of SPI and I2C interfaces on raspberry pi?	CO4	L2	6M
	b	Illustrate how to interface a switch to raspberry pi.	CO4	L3	6M

UNIT-V

9	a	Implement the analytics component for the forest fire detection system.	CO5	L3	6M
	b	Write a python code for Raspberry pi to capture image by using picamera.	CO5	L3	6M
		OR			
10	a	Design a weather monitoring IoT system using REST based?	CO6	L3	6M
	b	Design a weather monitoring IoT system using Web Socket based?	CO6	L3	6M

***** END *****

O.P.Code: 20ME0356	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
FIRE & SAFETY ENGINEERING
(Open Elective (OE) – III)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1		Explain the term cause of fires commonly understood. Prepare a list of fire causes and use examples to explain and differentiate them.	CO1	L2	12M
		OR			
2		What are the fundamental differences between flaming combustion and Smouldering?	CO1	L3	12M

UNIT-II

3	a	Discuss the term head loss in a flow through pipes and classify them.	CO2	L2	6M
	b	Write a note on heat transfer and heat flux.	CO2	L3	6M
		OR			
4		Explain the procedure to finf flash point & fire point of a fuel.	CO2	L2	12M

UNIT-III

5		Explain the fire behaviour of common materials used in buildings.	CO3	L2	12M
		OR			
6		Identify the materials used for constructions and their purposes.	CO3	L2	12M

UNIT-IV

7	a	Tabulate the types of fire protection hardware used in regular practice.	CO5	L1	6M
	b	Illustrate the purpose of fire alarm system in a building.	CO5	L2	6M
		OR			
8		Demonstrate the working of optical flame detectors and gas sensing detectors.	CO5	L2	12M

UNIT-V

9		List the common features of fire extinguishers.	CO6	L1	12M
		OR			
10		What is the primary content of water,foam and water-mist extinguishers.	CO6	L2	6M
		What are the differences in the discharge nozzle of the three types?	CO6	L1	6M

***** END *****

O.P.Code: 20ME0357	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Regular & Supplementary Examinations July-2025
WASTE RESORCE MANAGEMENT
(Open Elective-IV)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Why is waste considered one of the major environmental issues?	CO1	L2	6M
	b	Write short notes on waste generation in India.	CO1	L1	6M
		OR			
2	a	What are the main problems of waste management?	CO1	L1	6M
	b	Discuss the classification of Waste Minimization (WM) Techniques.	CO1	L2	6M

UNIT-II

3		Briefly explain the types of solid waste management.	CO2	L3	12M
		OR			
4	a	Explain the Municipal solid Wastes and Industrial Solid Waste.	CO2	L2	6M
	b	Illustrate the Agro wastes, Construction, and demolition Waste.	CO2	L1	6M

UNIT-III

5	a	Define biomedical waste.	CO6	L1	6M
	b	What do you understand by informed consent in the context of engineering as experimentation?	CO3	L1	6M
		OR			
6	a	Brief about effects of biomedical waste.	CO3	L2	6M
	b	What are sources of biomedical waste?	CO3	L1	6M

UNIT-IV

7	a	Write a short note on Radioactive waste and Chemical waste.	CO4	L1	6M
	b	Define toxic waste and what are the hazard related risks.	CO4	L1	6M
		OR			
8		List out the important characteristics of industrial hazardous waste management.	CO4	L1	12M

UNIT-V

9	a	Define waste collection, Discuss the waste collection methods.	CO5	L2	6M
	b	What are the various environmental concerns for the selection of waste collection?	CO5	L2	6M
		OR			
10		Describe and briefly explain types of waste collection system design	CO5	L3	12M

*** END ***

O.P.Code: 20EC0454	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. IV Year I Semester Regular & Supplementary Examinations July-2025

MATLAB PROGRAMMING

(Open Elective)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

		UNIT-I			
1	a	How MATLAB handling the arrays and compute the following array in MATLAB $w=5 \sin u$ for $u = 0, 0.1, 0.2, \ldots 10$.	CO2	L3	6M
	b	Use MATLAB to Interpret the roots of the polynomial $290-11x+6x^2+x^3$.	CO2	L3	6M
		OR			
2	a	Compute volume of sphere of radius 5 cm using a MATLAB script.	CO4	L3	6M
	b	Explain how to solve Complex Number equations by using MATLAB with an example.	CO1	L2	6M
		UNIT-II			
3	a	Write Element-by-Element operation on Array Multiplication.	CO2	L2	6M
	b	What is structure array? How does it differ from ordinary arrays and cell arrays?	CO2	L1	6M
		OR			
4	a	Describe in brief about multidimensional array with examples.	CO1	L1	6M
	b	How Polynomial Multiplication and Division performed in MATLAB? Explain with suitable example.	CO1	L1	6M
		UNIT-III			
5	a	How Multiple-Input Arguments are handled in Anonymous Functions	CO2	L1	6M
	b	What are Nested Functions? Explain with suitable example.	CO2	L3	6M
		OR			
6	a	How to Export ASCII Data Files in MATLAB?	CO3	L4	6M
	b	What are the advantages of User-Defined Functions in MATLAB?	CO2	L1	6M
		UNIT-IV			
7	a	Write the following statements to use only one if statement using MATLAB if x < y then, w = xy.	CO4	L3	6M
	b	Compute the perimeter p and the area A of a triangle whose sides are a, b, and c. The formulas are p=a+b+c, s= (P/2), A=$\sqrt{s(s-a)(s-b)(s-c)}$, with suitable steps.	CO4	L2	6M
		OR			
8	a	What are the tools available in Interactive Plotting in MATLAB? Give suitable Example.	CO2	L1	6M
	b	Write a program using the switch structure to input one angle, whose value may be 45, -45, 135, or -135^0, and display the quadrant (1, 2, 3, or 4) containing the angle	CO2	L3	6M
		UNIT-V			
9	a	Solve the following equations, using the matrix inverse method. 2x1 + 9x2 =5, 3x1 - 4x2 =7	CO1	L3	6M
	b	Explain how Cramer's Rule performed in MATLAB? with an example.	CO1	L5	6M
		OR			
10	a	List the different methods of transfer functions in MATLAB with examples.	CO1	L1	6M
	b	Discuss about computational difficulties using theoretical linear algebra techniques.	CO5	L2	6M

*** END ***

O.P.Code: 20EE0243	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Regular & Supplementary Examinations July-2025
APPLICATION OF ELECTRICAL POWER
(Open Elective-IV)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12** = **60** Marks)

UNIT-I

1	a	State and explain laws of illumination briefly.	CO1	L1	6M
	b	A machine shop 40m×20m is to have an illumination of 160lux on working plane. The lamps are mounted on 6m above the working plane. Give the layout of a suitable installation. a) Using filament lamp. b) Using 50 watts fluorescent lamp. Assume necessary data.	CO1	L3	6M
		OR			
2	a	A room measuring 30m×15m is to be illuminated by 10 lamps and the average illumination is to be 85 lux. Determine the MSCP of each lamp if the utilization and depreciation factors are 0.5 and 0.8 respectively	CO1	L3	6M
	b	Write short notes on incandescent lamp.	CO1	L3	6M

UNIT-II

3	a	What are the different types of heating? Write advantages of electric heating.	CO2	L1	6M
	b	A slab of insulating material 150 sq cm in area and 1 cm thick is to be heated by dielectric heating. The power required is 400 W at 30 × 106 cps. Materials has permittivity of 5 and power factor of 0.05. Determine voltage necessary.	CO2	L3	6M
		OR			
4	a	Describe Indirect core type furnace with neat sketch.	CO2	L2	6M
	b	Determine the amount of energy required to melt brass at the rate of one ton per hour in a single phase Ajax Wyatt furnace. Specific heat of brass is 0.094 Kcal/ Kg/°C. Latent heat of fusion is 40 Kcal/Kg, initial temperature is 24°C, melting point of brass is 920°C. Assume efficiency to be 65 %.	CO2	L3	6M

UNIT-III

5		Describe with a neat sketch the various methods of electric resistance welding.	CO3	L1	12M
		OR			
6	a	Explain about inert gas arc welding, atomic hydrogen arc welding methods with necessary illustrations.	CO3	L2	6M
	b	What are the qualities of a good weld?	CO3	L2	6M

UNIT-IV

7		Ii is required, to repair a worn out circular shaft 15 cm in diameter and 32 cm long bv coating it with a layer of 1.6 mm of nickel. Determine the Theoretical quantity of electricity required and the time taken if the current density used is 210 A/m^2 Electrochemical equivalent of nickel is $30.4x10^{-8}$ Kg/°C of electricity and density of nickel is $8.9 x10^3$ Kg/m3	CO4	L3	12M
		OR			
8	a	Explain the factors on which quality of electrodeposition depends.	CO4	L2	6M
	b	Discuss about Faraday's laws of electrolytic process.	CO4	L2	6M

UNIT-V

9		Describe how Plugging, Rheostatic braking and Regenerative braking are employed with DC series motor	CO5	L2	12M

OR

10	a	Explain about the different methods of electric braking systems in the case of traction.	CO5	L2	6M
	b	An electric train is to have acceleration and breaking retardation of 0.8 km/hr/sec and 3.2 km/hr/sec respectively. If the ratio of maximum to average speed is 1.3 and time for stop is 26 sec, find the schedule speed for a run of 1.5 km. Assumesimplified trapezoidal speed time curve.	CO6	L3	6M

***** END *****

O.P.Code: 20EC0441	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
DIGITAL IMAGE PROCESSING
(Electronics and Communications Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	State the purpose of the image processing. List out the fundamental steps in digital image processing which can be applied to images.	CO1	L1	6M
	b	Define image processing. Illustrate example fields of its usage.	CO1	L2	6M

OR

2	a	List out the applications of image subtraction and image multiplication.	CO1	L2	6M
	b	Explain the Linear versus Nonlinear operations on digital images with relevant equations.	CO1	L3	6M

UNIT-II

3	a	Deduce the basis function of 2D – Discrete Fourier Transform for N = 4.	CO2	L4	6M
	b	Compute 2D – Discrete Fourier Transform for the following image.			

$$f(x,y) = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$$ CO2 L3 6M

OR

4	a	Compute the image basis function of Hadamard Transform when N = 2.	CO2	L3	6M
	b	Evaluate Hadamard transform for the given image			

$$f(x,y) = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$ CO2 L3 6M

UNIT-III

5	a	Define histogram and draw the histogram four basic image types.	CO3	L1	6M
	b	Explain the procedure for histogram process and uses of histogram.	CO3	L2	6M

OR

6	a	Illustrate the method of converting colors from HSI to RGB.	CO3	L2	6M
	b	Draw the functional block diagram of pseudo colour processing and explain each block.	CO3	L1	6M

UNIT-IV

7	a	Draw the degradation/restoration model in image processing and describe the each part presented on it.	CO4	L1	6M
	b	Differentiate the Image Enhancement and Image Restoration.	CO4	L4	6M
		OR			
8	a	Discuss the Laplacian operator in edge detection. Also mention its drawbacks.	CO5	L2	6M
	b	Discuss the concept of Laplacian of Gaussian (LoG) operator for edge detection.	CO5	L2	6M

UNIT-V

9	a	Discuss the Objective fidelity criteria and subjective fidelity criteria with suitable example.	CO6	L2	6M
	b	Compare zero-memory source and Markov or finite memory source.	CO6	L2	6M
		OR			
10	a	Explain the procedure for Arithmetic coding with suitable example.	C06	L2	6M
	b	Summarize the procedure of Bit plane coding with suitable example.	C06	L2	6M

***** END *****

O.P.Code: 20ME0336	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
OPERATION RESEARCH
(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 Solve the following LPP using Simplex method. **CO1 L3 12M**
Maximize $Z=3X_1+5X_2+4X_3$, Subjected to: $2X_1+3X_2 \leq 8$, $2X_2+5X_3 \leq 10$, $3X_1+2X_2+4X_3 \leq 15$ and $X_1, X_2, X_3 \geq 0$

OR

2 **a** Explain the procedure to solve the LPP. **CO1 L2 6M**
b List out the characteristics of operation Research. **CO1 L1 6M**

UNIT-II

3 Solve the following transportation problem Determine the Shipping scheme by the Northwest corner Rule. **CO2 L3 12M**

	A	B	C	D	AVAILABLE
P	4	6	8	13	50
Q	13	11	10	8	70
R	14	4	10	13	30
S	9	11	13	8	50
REQUIRED	**25**	**35**	**105**	**20**	

OR

4 A as salesman has visits of Five cities A,B,C,D and E the distance between the five cities is as Follows. If the salesman starts from city A and has to come back to his starting point, which route is should be select So that the total distance travelled in minimum. **CO2 L3 12M**

	A	B	C	D	E
A	-	7	6	8	4
B	7	-	8	5	6
C	6	8	-	9	7
D	8	5	9	-	8
E	4	6	7	8	-

UNIT-III

5 Solve the game matrix by using the relation of Dominance principle. **CO3 L3 12M**

		Firm B					
		Bl	B2	B3	B4	B5	B6
FirmA	Al	4	2	0	2	1	1
	A2	4	3	1	3	2	2
	A3	4	3	7	-5	1	2
	A4	4	3	4	-1	2	2
	A5	4	3	3	-2	2	2

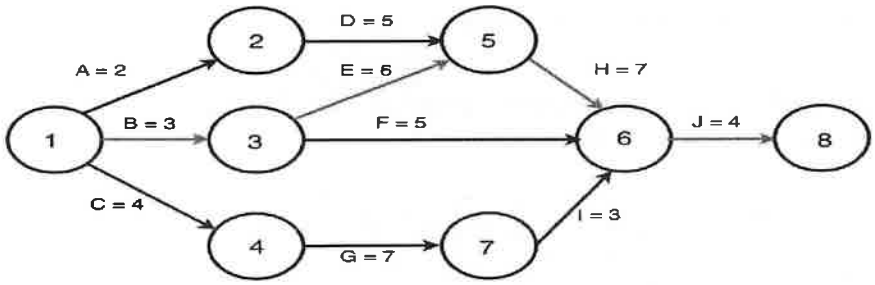
OR

6 Consider a self-service store with one cashier. Assume Poisson arrivals and exponential service times. Suppose that 9 customers arrive on the average every 5 minutes and the cashier can serve 10 in 5 minutes, Find **CO3 L3 12M**

a) Average number of customers queuing for service
b) Probability of having more than 10 customers in the system.
c) Probability that a customer has to queue for more than 2 minutes.

UNIT-IV

7 Find the critical path and calculate the Total float, Free float. **CO4 L3 12M**



OR

8 A project schedule has the following characteristics. **CO4 L5 12M**

Construct i) PERT network

ii) Find critical path and Time duration of the project

Activity	Time	Activity	Time
1-2	2	4-8	8
1-4	2	5-6	4
1-7	I	6-9	3
2-3	4	7-8	3
3-6	1	8-9	5
4-5	5		

UNIT-V

9 Determine the sequence for the jobs and the total elapsed time ? **CO5 L4 12M**

	A	B	C	D	E	F	G	H	I
Machine1	4	7	6	11	8	10	9	7	6
Machine2	8	10	9	6	5	11	5	10	13

OR

10 **a** Describe about the sequencing Problem and Define total elapsed time. **CO5 L1 6M**

b List out the sequential steps involved in sequencing jobs and briefly discuss them. **CO5 L1 6M**

***** END *****

O.P.Code: 20CS538	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. IV Year I Semester Supplementary Examinations June/July-2025
BIG DATA
CSE (Artificial Intelligence and Machine Learning)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Illustrate the process of setting up and analyzing a sample dataset using Apache Hadoop's HDFS and explain how it handles large-scale data storage.	CO1	L2	6M
	b	Construct a MapReduce program to compute the word frequency from a text file and explain its execution in the Hadoop ecosystem.	CO1	L6	6M

OR

2	a	Using an example, explain how Hadoop Streaming can integrate non-Java programming languages like Python to process big data tasks.	CO1	L5	6M
	b	Demonstrate the components of the Hadoop ecosystem by applying the roles of HDFS, MapReduce, and YARN to a sample data processing pipeline.	CO1	L2	6M

UNIT-II

3	a	Demonstrate the role of Hadoop archives (HAR) in managing small files in HDFS by applying it to a sample dataset and explaining its advantages.	CO2	L2	6M
	b	Illustrate the use of Hadoop I/O compression techniques by applying them to a large dataset to reduce storage and improve processing speed.	CO2	L2	6M

OR

4	a	Write and demonstrate the use of Avro for serializing and deserializing data in Hadoop, and explain how it handles schema evolution.	CO2	L5	6M
	b	Illustrate the design of HDFS by applying its architecture to explain how it ensures fault tolerance and high availability with examples.	CO2	L5	6M

UNIT-III

5	a	Demonstrate task execution in a MapReduce job by explaining how mappers, reducers, and combiners interact during the processing of a large dataset.	CO3	L2	6M
	b	Apply MapReduce features such as counters, combiners, and distributed cache to optimize the performance of a data processing task.	CO3	L6	6M

OR

6	a	Construct a scenario to explain how MapReduce handles task failures and ensures fault tolerance in a distributed system.	CO3	L5	6M
	b	Using an example, demonstrate how the shuffle and sort phase works in a MapReduce job and its impact on task execution.	CO3	L2	6M

UNIT-IV

7	a	Apply User Defined Functions (UDFs) in Pig to process complex data transformations and explain their integration with a Pig script.	CO4	L6	6M
	b	Illustrate the use of data processing operators in Pig (e.g., FOREACH, FILTER, JOIN) by writing a script for a real-world data analysis task.	CO4	L2	6M

OR

8	a	Using an example, explain how Pig handles unstructured and semi-structured data compared to structured data.	CO4	L5	6M
	b	Write a Pig Latin script to join two datasets and explain the execution process in both local and MapReduce modes.	CO4	L3	6M

UNIT-V

9	a	Demonstrate the creation and querying of tables in Hive, including both managed and external tables, with a sample dataset.	CO5	L2	6M
	b	Write a basic program to connect to HBase using a client, create a table, and perform CRUD (Create, Read, Update, Delete) operations.	CO5	L3	6M

OR

10	a	Demonstrate the use of Big SQL by writing a query to perform a complex aggregation task on a distributed dataset and explain its advantages over traditional SQL.	CO5	L2	6M
	b	Apply HBase commands to insert, retrieve, and update data in an HBase table using the HBase client.	CO5	L6	6M

***** END *****