

Principles of Management for Engineers	L	P	C
	3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
All	6	HS/MS	MS	MS-302

Marking Scheme:												
1. Teachers Continuous Evaluation: 25 marks 2. Term end Theory Examinations: 75 marks												
Instructions for paper setter:												
1. There should be 9 questions in the term end examinations question paper. 2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks. 3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15. 4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook. 5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.												
Course Objectives :												
1. To describe the functions, roles and skills of managers and illustrate how the manager's job is evolving. 2. To evaluate approaches to goal setting, planning and organizing in a variety of circumstances. 3. To evaluate contemporary approaches for staffing and leading in an organization 4. To analyze contemporary issues in controlling for measuring organizational performance.												
Course Outcomes (CO)												
CO 1	Examine the relevance of the political, legal, ethical, economic and cultural environments in global business											
CO 2	Evaluate approaches to goal setting, planning and organizing in a variety of circumstances.											
CO 3	Evaluate contemporary approaches for staffing and leading in an organization											
CO 4	Analyze contemporary issues in controlling for measuring organizational performance.											
Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)												
	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	2	2	1	2	-	2	-	-	1	2	3	2
CO 2	2	2	1	2	-	2	-	-	1	2	3	2
CO 3	2	2	1	2	-	2	-	-	1	2	3	2
CO 4	2	2	1	2	-	2	-	-	1	2	3	2
UNIT-I												
Introduction to Managers and Management: Management an Overview: Introduction, Definition of Management, Role of Management, Functions of Managers, Levels of Management, Management Skills and Organizational Hierarchy, Social and Ethical Responsibilities of Management: Arguments for and against Social Responsibilities of Business, Social Stakeholders, Measuring Social Responsiveness and Managerial Ethics, Omnipotent and Symbolic View, Characteristics and importance of organizational culture, Relevance of political, legal, economic and Cultural environments to global business, Structures and techniques organizations use as they go international .												
UNIT-II												
Planning: Nature & Purpose, Steps involved in Planning, Objectives, Setting Objectives, Process of Managing by Objectives, Strategies, Policies & Planning Premises, Competitor Intelligence, Benchmarking, Forecasting, Decision-Making.												

Directing: Scope, Human Factors, Creativity and Innovation, Harmonizing Objectives, Leadership, Types of Leadership, Directing, Managers as leaders, Early Leadership Theories... Trait Theories, Behavioral Theories, Managerial Grid, Contingency Theories of Leadership, Directing ... PathGoal Theory, contemporary views of Leadership, CrossCultural Leadership, Leadership Training, Substitutes of Leadership

UNIT-III

Organizing: Organizing , Benefits and Limitations- De-Centralization and Delegation of Authority, Authority versus Power, Mechanistic Versus Organic Organization , Common Organizational Designs, Contemporary Organizational Designs and Contingency Factors, The Learning Organization Nature and Purpose, Formal and Informal Organization, Organization Chart, Structure and Process, Departmentalization by difference strategies, Line and Staff authority- Benefits and Limitations- De-Centralization and Delegation of Authority Versus, Staffing, Human Resource Inventory, Job Analysis , Job Description, Recruitment and

UNIT - IV

Controlling: Controlling, Introduction to Controlling System and process of Controlling, Requirements for effective control, The planning Control link, The process of control, types of control The Budget as Control Technique, Information Technology in Controlling, Productivity, Problems and Management, Control of Overall Performance, Direct and Preventive Control, Financial Controls, Tools for measuring organizational Performance, Contemporary issues in control Workplace concerns, employee theft, employee violence

Textbook(s):

1. Tripathi PC. Principles of management. Tata McGraw-Hill Education; 6th Edition 2017.

References:

1. Koontz H, Weihrich H. Essentials of management: an international, innovation, and leadership perspective. McGraw-Hill Education; 10th Edition 2018.
2. Principles of Management Text and Cases, Pravin Durai , Pearson ,2015
3. Robbins, S.P. & Decenzo, David A. Fundamentals of Management, 7th ed., Pearson, 2010
4. Robbins, S.P. & Coulter, Mary Management; 14 ed., Pearson , 2009

Universal Human Values			L	P	C
			1		1

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
All	6	HS/MS	HS	HS-304

Marking Scheme: 4. Teachers Continuous Evaluation: 25 marks 5. Term end Theory Examinations: 75 marks 6. This is an NUES paper, hence all examinations to be conducted by the concerned teacher.												
Instructions for paper setter:												
1. There should be 9 questions in the term end examinations question paper. 2. The first (1 st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks. 3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15. 4. The questions are to be framed keeping in view the learning outcomes of the course / paper.												
Course Objectives :												
1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings. 2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way. 3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature. 4. To analyze the value of harmonious relationship based on trust and respect in their life and profession												
Course Outcomes (CO)												
CO 1	Evaluate the significance of value inputs in formal education and start applying them in their life and profession											
CO 2	Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.											
CO 3	Examine the role of a human being in ensuring harmony in society and nature.											
CO 4	Apply the understanding of ethical conduct to formulate the strategy for ethical life and profession.											
Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)												
	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	-	-	-	-	-	3	-	3	1	1	-	1
CO 2	-	-	-	-	-	3	-	3	1	1	-	1
CO 3	-	-	-	-	-	3	-	3	1	1	-	1
CO 4	-	-	-	-	-	3	-	3	1	1	-	1
UNIT-I												
Introduction-Basic Human Aspiration, its fulfillment through All-encompassing Resolution: The basic human aspirations and their fulfillment through Right understanding and Resolution, Right understanding and Resolution as the activities of the Self, Self being central to Human Existence; All-encompassing Resolution for a Human Being, its details and solution of problems in the light of Resolution												
UNIT-II												
Understanding Human Being: Understanding the human being comprehensively as the first step and the core												

theme of this course; human being as co-existence of the self and the body; the activities and potentialities of the self; Basis for harmony/contradiction in the self

UNIT-III

Understanding Nature and Existence: A comprehensive understanding (knowledge) about the existence, Nature being included; the need and process of inner evolution (through self-exploration, self-awareness and self-evaluation), particularly awakening to activities of the Self: Realization, Understanding and Contemplation in the Self (Realization of Co-Existence, Understanding of Harmony in Nature and Contemplation of Participation of Human in this harmony/ order leading to comprehensive knowledge about the existence).

UNIT - IV

Understanding Human Conduct, All-encompassing Resolution & Holistic Way of Living: Understanding Human Conduct, different aspects of All-encompassing Resolution (understanding, wisdom, science etc.), Holistic way of living for Human Being with All-encompassing Resolution covering all four dimensions of human endeavor viz., realization, thought, behavior and work (participation in the larger order) leading to harmony at all levels from Self to Nature and entire Existence

Textbook(s):

1. R R Gaur, R Asthana, G P Bagaria, 2019 (2nd Revised Edition), A Foundation Course in Human Values and Professional Ethics. ISBN 978-93-87034-47-1, Excel Books, New Delhi.
2. Premvir Kapoor, Professional Ethics and Human Values, Khanna Book Publishing, New Delhi, 2022.

References:

1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA
2. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
3. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986.
4. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome's report, Universe Books.
5. A Nagraj, 1998, Jeevan Vidya EkParichay, Divya Path Sansthan, Amarkantak.
6. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
7. A N Tripathy, 2003, Human Values, New Age International Publishers.
8. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati.
9. E G Seebauer& Robert L. Berry, 2000, Fundamentals of Ethics for Scientists &Engineers, Oxford University Press
10. M Govindrajran, S Natrajan& V.S. Senthil Kumar, Engineering Ethics (including Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.
11. B P Banerjee, 2005, Foundations of Ethics and Management, Excel Books.
12. B L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.

Web Development using MERN Stack	L	P	C
	3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
CSE-in-EA	6	OAE-CSE-EA	OAE-1	FSD-322T
EAE	6	FSD-EAE	FSD-EAE-2B	FSD-322T

Marking Scheme:												
1. Teachers Continuous Evaluation: 25 marks												
2. Term end Theory Examinations: 75 marks												
Instructions for paper setter:												
1. There should be 9 questions in the term end examinations question paper.												
2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.												
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.												
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.												
5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.												
Course Objectives :												
1. To learn the Web Development, Designing and validations using HTML, XHTML, XML, CSS, XSLT and JavaScript												
2. To learn and implement the concept of ReactJS												
3. To learn and implement the concept of NodeJS and ExpressJS												
4. To learn and implement the connectivity of MongoDB with web applications												
Course Outcomes (CO)												
CO 1 To be able to learn the basic implementation and apply HTML, XHTML, XML, CSS, XSLT and JavaScript concepts in web applications												
CO 2 To be able to develop a Web application using ReactJS												
CO 3 To be able to develop a Web application based on NodeJS and ExpressJS												
CO 4 To be able to connect the applications using MongoDB												
Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)												
	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	1	2	1	1	3	1	-	1	2	-	3	3
CO 2	1	2	1	1	3	1	-	1	2	-	3	3
CO 3	1	2	1	1	3	1	-	1	2	-	3	3
CO 4	1	2	1	1	3	1	-	1	2	-	3	3
UNIT-I												
Introduction: Fundamentals of Web Design, Webpage and Website, Web application, Client-server architecture												
Markup languages: Introduction to HTML, basics of XHTML, HTML elements, HTML tags, lists, tables, forms, defining XHTML's abstract syntax, XML.												
CSS style sheets: Introduction, CSS core syntax, text properties, CSS box model, normal flow box layout, other properties like list, tables, XSLT												
Client Side Programming: JAVA Scripts, basic syntax, variables & data-types, literals, functions, objects, arrays, built-in objects, JAVA Script form programming, Intrinsic event handling, modifying element style, document trees, ECMAScript5, ECMAScript6												

UNIT-II

ReactJS: Introduction, Templating using JSX, Classes using JSX, Components, State and Props, Lifecycle of Components, Rendering List and Portals, Error Handling, Routers, Redux and Redux Saga, Immutable.js, Service Side Rendering, Unit Testing, Webpack

UNIT-III

NodeJS: Node js Overview, Node js Basics and Setup, Node js Console, Node js Command Utilities, Node js Modules, Node js Concepts, Node js Events, Node js Database Access, Node.js with Express.js, Express.js Request, Express.js Response, Express.js Get, Express.js Post, Express.js Routing, Express.js Cookies, Express.js File Upload, Express.js Middleware, Express.js Scaffolding, Express.js Template.

UNIT - IV

MongoDB: SQL and NoSql concepts, Create and manage MongoDB, Migration of data into MongoDB, MongoDB with NodeJS, Services offered by MongoDB

Textbook(s):

1. Vasan Subramanian, "Pro MERN Stack", Apress Publisher, 2 Edition, ISBN: 9781484243916
2. Chris Northwood, "The Full Stack Developer", Apress Publisher, ISBN: 978-1484241516

References:

1. Greg Lim, "Beginning MERN Stack Applications", Independently Published, Third Edition.
2. "Road for Being MERN STACK Developer", Independently published, ISBN:9798766684855
3. Shama Hoque, " Full Stack React Projects", O'Reilly Media , 2nd Edition.

Advanced Java Programming	L	P	C
	3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
CSE/IT/CST/ITE	6	PCE	PCE-1	CIE-306T
EAE	6	FSD-EAE	FSD-EAE-1	FSD-318T
CSE-in-EA	7	OAE-CSE-EA	OAE-2	OSD-453T
OAE	7	SD-OAE	SD-OAE-5A	OSD-453T

Marking Scheme:												
1. Teachers Continuous Evaluation: 25 marks												
2. Term end Theory Examinations: 75 marks												
Instructions for paper setter:												
1. There should be 9 questions in the term end examinations question paper.												
2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.												
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.												
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.												
5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.												
Course Objectives :												
1. To learn the ability to design console based, GUI based and web based applications												
2. To learn how to create dynamic web pages, using Servlets and JSP.												
3. To learn Designing applications using pre-built framework.												
4. To learn how to do distributed programming in Java using RMI, CORBA.												
Course Outcomes (CO)												
CO 1 Able to Understand advanced programming concepts.												
CO 2 Able to Develop server side programs using JSP and Servlets												
CO 3 Able to Develop component-based java software using java beans.												
CO 4 Able to develop advanced projects based on java.												
Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)												
	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	3	2	2	3	2	-	-	-	3	2	2	3
CO 2	3	2	2	3	2	-	-	-	3	2	2	3
CO 3	3	2	2	3	2	-	-	-	3	2	2	3
CO 4	3	2	2	3	2	-	-	-	3	2	2	3
UNIT-I												
Introduction to Java, Inheritance, Exception Handling, Multithreading, Applet Programming, Connecting to a Server, Implementing Servers, Making URL Connections, Socket Programming.												
UNIT-II												
Preparing a Class to be a Java Bean, Creating a Java Bean, Java Bean Properties, Types of beans, Stateful Session bean, Stateless Session bean, Entity bean, Servlet Overview and Architecture, Interface Servlet and the Servlet Life Cycle, Handling HTTP GET Requests, Handling HTTP POST Requests, Session Tracking, Cookies.												

UNIT-III

JSP- Introduction, Java Server Pages Overview, Implicit Objects, Scripting, Standard Actions, Directives, Custom Tag Libraries.

UNIT- IV

The Roles of Client and Server, Remote Method Invocations, Setup for Remote Method Invocation, Parameter Passing in Remote Methods, Introduction of HB, HB Architecture.

Textbook(s):

1. Kathy Sierra, Head First Servlets and JSP, O'Reilly Media.
2. Kanika Lakhani, Advance Java Programming, S.K. Kataria & Sons

References:

1. Brett Spell, Professional Java Programming, WROX Publication.
2. Harvey. M. Dietal, Advanced Java 2 Platform, How to Program, Prentice Hall.
3. Gajendra Gupta, Advanced Java, Firewall Media.

Database Modelling and Design	L	P	C
4			4

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
IT	6	PCE	PCE-1	CIE-316

Marking Scheme:

- Teachers Continuous Evaluation: 25 marks
- Term end Theory Examinations: 75 marks

Instructions for paper setter:

- There should be 9 questions in the term end examinations question paper.
- The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.
- Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.
- The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.
- The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.

Course Objectives :

- To understand the database design life cycle and design conceptual model of database system.
- To design logical model of database system.
- To physically implement the database.
- To understand the need of database tuning and security.

Course Outcomes (CO)

- CO 1** Able to understand the database design life cycle and design conceptual model of database system.
CO 2 Able to design logical model of database system.
CO 3 Able to physically implement the database.
CO 4 Able to perform database tuning.

Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)

	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	3	3	2	2	2	-	-	-	3	2	2	3
CO 2	3	3	2	2	2	-	-	-	3	2	2	3
CO 3	3	3	2	3	3	-	-	-	3	2	2	3
CO 4	3	3	2	3	3	-	-	-	3	2	2	3

UNIT-I

Introduction: Overview of database systems architecture and components, database design life cycle
 Conceptual data modelling: ER Modeling, EER Modeling, Modeling complex relationships, Design issues in ER & EER modeling

UNIT-II

Logical data modelling: Overview of relational data model, Integrity constraints, Mapping ER Model to a logical schema, Mapping EER Model to a logical schema, Mapping of higher degree relationships, Mapping of Aggregation, Mapping complex ER Model Constructs to a logical schema

Normalization: Introduction, Anomalies, Normal forms – 1NF, 2NF, 3NF, BCNF, 4NF & 5NF

UNIT-III

Database implementation and physical database design: Database creation using SQL, SQL commands – DDL &

DML; Views; Advanced data manipulation using SQL

Database Programming: Cursor, Exception Handling, Procedures, Functions, Packages, Triggers

UNIT - IV

Database tuning and maintenance: Introduction, Clustering and indexing, guidelines for index selection, de-normalization, database tuning

Database security: Introduction, Access control DCL Commands, views

Textbook(s):

1. Database Modelling and Database Design. Narayan S. Umanath and Richard W. Scamell. Cengage Learning, 2nd Edition.
2. Database Management Systems. Raghu Ramakrishnana and Johannes Gehrke, Mc Graw Hill, 3rd Edition.

References:

1. Database Modelling and Design. Toby Teorey, Sam Lightstone, Tom Nadeau and H. V. Jagadish. Morgan Kaufmann Publishers, 5th Edition
2. Elmasri, Navathe, Fundamentals of Database Systems, 5th Edition, Pearson Education, India.
3. Database System Concepts, Silberschatz, Korth, McGraw hill, V edition.

Artificial Intelligence	L	P	C
	3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
CSE/IT/CST/ITE	6	PCE	PCE-3	CIE-374T
ECE	6	PCE	PCE-1	ECE-318T
CSE-AI/CSE-AIML	6	PC	PC	AI-302T
EAE	6	AI-EAE	AI-EAE-1	AI-302T
EAE	6	AIML-EAE	AIML-EAE-1	AI-302T

Marking Scheme:

- Teachers Continuous Evaluation: 25 marks
- Term end Theory Examinations: 75 marks

Instructions for paper setter:

- There should be 9 questions in the term end examinations question paper.
- The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.
- Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.
- The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.
- The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.

Course Objectives :

- To impart the definition and basic knowledge of Artificial Intelligence.
- To introduces AI by examining the nature of the difficult problems.
- To understand with AI demonstration that intelligence requires ability to find reason.
- To understand the latest techniques and the future scope of the technology.

Course Outcomes (CO)

- | | | | | | | | | | | | | |
|-------------|---|--|--|--|--|--|--|--|--|--|--|--|
| CO 1 | Ability to use AI methods and control strategies to solve the problems. | | | | | | | | | | | |
| CO 2 | Understand the production system and its applications. Also, to understand the properties and applications for the different search algorithms. | | | | | | | | | | | |
| CO 3 | Applying the different algorithms and the techniques, also analyse the reason for the results. | | | | | | | | | | | |
| CO 4 | Study the expert systems and the modern approaches. | | | | | | | | | | | |

Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)

	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	3	3	3	3	3	2	2	-	-	-	-	2
CO 2	3	3	3	3	3	2	2	-	-	-	-	2
CO 3	3	3	3	3	3	2	2	-	-	-	-	2
CO 4	3	3	3	3	3	2	2	-	-	-	-	2

UNIT-I

AI Definition, Problems, The Foundations of Artificial Intelligence, Techniques, Models, Defining Problem as a state space search, production system, Intelligent Agents: Agents and Environments, Characteristics, Search methods and issues in the design of search problems.

UNIT-II

Knowledge representation issues, mapping, frame problem. Predicate logic, facts in logic, representing instance and Isa relationship, Resolution, procedural and declarative knowledge, matching, control knowledge. Symbolic reasoning under uncertainty, Non monotonic reasoning, statistical reasoning.

UNIT-III

Game Playing, minimax search, Alfa beta cut-offs, Natural Language Processing, Learning, Explanation-based learning, discovery, analogy, Neural net learning and Genetic Learning.

UNIT - IV

Fuzzy logic systems, Perception and action, Expert systems, Inference in Bayesian Networks, K-means Clustering Algorithm, Machine learning.

Textbook(s):

1. Elaine Rich, Kevin Knight, and Shivashankar B Nair, "Artificial Intelligence", Tata McGraw Hill.
2. S. Russel and P. Norvig, "Artificial Intelligence: A Modern Approach", Pearson Edu.

References:

1. Deepak Khemani, "A First Choice in Artificial Intelligence", McGraw Hill.
2. K M Fu, "Neural Networks in Computer Intelligence", McGraw Hill.

Introduction to Internet of Things				L	P	C
				3		3

Discipline(s) / EAE / OAE	Semester	Group	Sub-group	Paper Code
CSE/IT/CST/ITE	6	PCE	PCE-2	CIE-330T
ICE	6	PCE	PCE-3	ICE-328T
CSE-IoT/CSE-ICB	6	PC	PC	IOT-324T
EAE	6	IOT-EAE	IOT-EAE-1A	IOT-324T
EAE	6	ICB-EAE	ICB-EAE-1A	IOT-324T
ECE	7	PCE	PCE-5	ECE-429T

Marking Scheme:

1. Teachers Continuous Evaluation: 25 marks
2. Term end Theory Examinations: 75 marks

Instructions for paper setter:

1. There should be 9 questions in the term end examinations question paper.
2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.
5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.

Course Objectives :

1. Describe what IoT is and how it works today
2. Recognise the factors that contributed to the emergence of IoT
3. Design and program IoT devices
4. Define the infrastructure for supporting IoT deployments

Course Outcomes (CO)

- | | |
|-------------|--|
| CO 1 | Demonstrate basic concepts, principles and challenges in IoT. |
| CO 2 | Illustrate functioning of hardware devices and sensors used for IoT |
| CO 3 | Analyze network communication aspects and protocols used in IoT |
| CO 4 | Apply IoT for developing real life applications using Arduino programming. |

Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)

	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	-	1	-	-	-	1	-	-	2	-	3	-
CO 2	1	-	2	-	3	-	-	-	-	1	-	2
CO 3	-	2	2	-	-	1	-	-	2	-	-	2
CO 4	2	1	-	-	2	-	-	-	-	1	1	-

UNIT-I

Internet of Things (IoT): Vision, Definition, Conceptual Framework, Architectural view, technology behind IoT, Sources of the IoT, M2M Communication, IoT Examples. Design Principles for Connected Devices: IoT/M2M systems layers and design standardization, communication technologies, data enrichment and consolidation, ease of designing and affordability

UNIT-II

Hardware for IoT: Sensors, Digital sensors, actuators, radio frequency identification (RFID) technology, wireless sensor networks, participatory sensing technology. Embedded Platforms for IoT: Embedded computing basics,

Overview of IOT supported Hardware platforms such as Arduino, NetArduino, Raspberry pi, Beagle Bone, Intel Galileo boards and ARM cortex.

UNIT-III

Network & Communication aspects in IoT: Wireless Medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination

UNIT - IV

Programming the Arduunio: Arduunio Platform Boards Anatomy, Arduunio IDE, coding, using emulator, using libraries, additions in arduunio, programming the arduunio for IoT.

Textbook(s):

1. Olivier Hersistent, David Boswarthick, Omar Elloumi, "The Internet of Things key applications and protocols", Willey
2. Jeeva Jose, Internet of Things, Khanna Publishing House

References:

1. Michael Miller, "The Internet of Things", Pearson
2. Raj Kamal, "Internet of Things", McGraw-Hill, 1st Edition