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Periyanaickenpalayam, Coimbatore – 641020

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

QUESTION BANK

IV YEAR

ODD SEMESTER

ACADEMIC YEAR 2024 – 2025

HoD **ACOE** **PRINCIPAL** **CHAIRMAN**

INDEX

GE3791

HUMAN VALUES AND ETHICS

UNIT I

DEMOCRATIC VALUES

Understanding Democratic values: Equality, Liberty, Fraternity, Freedom, Justice, Pluralism, Tolerance, Respect for All, Freedom of Expression, Citizen Participation in Governance World Democracies: French Revolution, American Independence, Indian Freedom Movement. Reading Text: Excerpts from John Stuart Mills' On Liberty

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define Human Values	1	1	2
2.	What are Intrinsic Values?	1	1	2
3.	Define Extrinsic Values.	1	1	2
4.	What is Fraternity?	1	1	2
5.	Define Democratic values.	1	1	2
6.	What are the relationship between religion and state?	1	1	2
7.	Define Tolerance.	1	1	2
8.	What is Indian Freedom Movement?	1	1	2
	PART B			
1.	Explain the importance and needs of democracy? What are the problems and challenges of democracy?	1	2	16
2.	Explain the concept and principles of fraternity in the Indian context.What are the significance and importance of Tolerance?	1	5	16
3.	Explain the Roles of Freedom. What are the Principles and importance of Respect. concept and principles of fraternity in the Indian context.	1	2	16
4.	Explain the concept and principles of fraternity in the Indian context. Explain features, objectives and purpose of Indian Secularism.	1	5	16

UNIT II

SECULAR VALUES

Understanding Secular values Interpretation of secularism in Indian context Disassociation of state from religion Acceptance of all faiths - Encouraging non- discriminatory practices.
Reading Text: Except from Secularism in India: Concept and Practice by Ram Puniyani

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What is Secularism?	2	1	2
2.	Define Secular Values.	2	1	2
3.	What is Secular Society?	2	1	2
4.	Explain relationship between religion and state.	2	1	2
5.	What is acceptance of all faith?	2	1	2
6.	What is State religion system?	2	1	2
7.	What are the threats of Secularism?	2	1	2
8.	What are the scope of the Non-Discrimination?	2	1	2
	PART B			
1.	What are the features, objectives and purpose of Indian Secularism? Explain briefly understanding of Secularism in India.	2	5	16
2.	What are the five models for State and Religion? What are the problems of Religion of the State?	2	2	16
3.	Explain concept of Non- Discriminatory. What are the scope of the Non-Discrimination?	2	5	16
4.	Explain Concepts of acceptance of faith. Discuss the problems of Religion of the State.	2	2	16

UNIT III

SCIENTIFIC VALUES

Scientific thinking and method: Inductive and Deductive thinking, Proposing and testing Hypothesis, Validating facts using evidence based approach - Skepticism and Empiricism Rationalism and Scientific Temper. Reading Text: Excerpt from The Scientific Temper by Antony Michaelis R

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define scientific thinking.	3	1	2
2.	What is the difference between inductive and deductive thinking?	3	1	2
3.	Explain the importance of proposing and testing a hypothesis in scientific research.	3	2	2
4.	What does the term empiricism mean in the context of scientific values?	3	1	2
5.	How does skepticism contribute to the scientific method?	3	1	2
6.	Define rationalism and its role in scientific inquiry.	3	1	2
7.	What is meant by scientific temper?	3	1	2
8.	Why is an evidence-based approach crucial in scientific investigations?	3	1	2
	PART B			
1.	Discuss the Scientific values are essential for the advancement of knowledge.	3	4	16
2.	Explain the significance of skepticism, empiricism, and rationalism in fostering scientific thinking.	3	5	16
3.	Discuss the importance of validating facts using an evidence-based approach in scientific research.	3	5	16
4.	Compare and contrast inductive and deductive reasoning with examples of their application in scientific research.	3	4	16

UNIT IV

SOCIAL ETHICS

Application of ethical reasoning to social problems Gender bias and issues Gender violence Social discrimination Constitutional protection and policies Inclusive practices. Reading Text: Excerpt from 21 Lessons for the 21st Century by Yuval Noah Harari

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What is ethical reasoning?	4	1	2
2.	Define gender violence.	4	1	2
3.	Why are constitutional protections important for social equality?	4	2	2
4.	What is social discrimination, and how does it affect marginalized groups?	4	1	2
5.	Mention two constitutional protections in India against discrimination.	4	1	2
6.	What are inclusive practices, and why are they important?	4	1	2
7.	Explain the link between ethical reasoning and social justice.	4	1	2
8.	What is one example of a policy aimed at addressing gender inequality in India?	4	1	2
	PART B			
1.	Analyze the importance of ethical reasoning in promoting constitutional protections for gender equality and preventing gender-based violence. How do legal and ethical approaches complement each other?	4	6	16
2.	Discuss the concept of ethical reasoning in relation to social justice. How can ethical reasoning be applied to develop policies that address gender bias, violence, and social discrimination?	4	4	16
3.	Evaluate the role of inclusive practices in reducing social discrimination and promoting gender equality. How does ethical reasoning support these practices?	4	6	16
4.	Discuss how ethical reasoning can be applied to address gender bias in society. What actions and policies can promote fairness and equality across genders?	4	4	16

UNIT V

SCIENTIFIC ETHICS

Transparency and Fairness in scientific pursuits - Scientific inventions for the betterment of society - Unfair application of scientific inventions - Role and Responsibility of Scientist in the modern society.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What is transparency in scientific pursuits, and why is it important?	5	1	2
2.	Define Scientific Ethics.	5	1	2
3.	Give the consequences of unfair application.	5	1	2
4.	What are the scientific inventions for the betterment of society?	5	1	2
5.	What is transparency in scientific pursuits, and why is it important?	5	1	2
6.	Explain the link between ethical reasoning and social justice.	5	1	2
7.	What is one example of a policy aimed at addressing gender inequality in India?	5	1	2
8.	Why is addressing gender violence crucial for societal ethics?	5	2	2
	PART B			
1.	Explain the Ethical reasoning is essential for solving social problems. Discuss with reference to gender bias, violence, and discrimination.	5	5	16
2.	Examine the role of constitutional protections and policies in addressing social discrimination in India.	5	5	16
3.	Elaborate the Inclusive practices are key to achieving a fair and just society.	5	2	16
4.	Explain the significance of addressing gender bias and inequality for achieving social justice.	5	2	16

END

GE3751

PRINCIPLES OF MANAGEMENT

UNIT I

INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS

Definition of Management – Science or Art – Manager Vs Entrepreneur- types of managers- managerial roles and skills – Evolution of Management –Scientific, human relations, system and contingency approaches– Types of Business organization- Sole proprietorship, partnership, company-public and private sector enterprises- Organization culture and Environment – Current trends and issues in Management.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define Management	1	1	2
2.	Distinguish between Management and administration	1	2	2
3.	What are the stages in evolution of management thought?	1	1	2
4.	What is meant by Globalization?	1	1	2
5.	State your understanding of the term gang plank.	1	1	2
6.	Write your understanding on Organizational Culture.	1	1	2
7.	How does effectiveness differ from efficiency?	1	2	2
8.	What is meant by Esprit de corps?	1	1	2
	PART B			
1.	(i)Is Management a Science or Art? Discuss.(ii)Discuss the scope and nature of Management.	1	2	16
2.	Elaborate the fourteen principles of management as advocated by Henry Fayol.	1	2	16
3.	Explain the concept of gradient, divergence, and curl of a Categorize the types of business organizations in detail.	1	2	16
4.	Enumerate the trends and challenges of Management in globalized era.	1	2	16

UNIT II

PLANNING

Nature and purpose of planning – Planning process – Types of planning – Objectives – Setting objectives – Policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making steps and process.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Explain the objectives of Planning?	2	2	2
2.	Explain the different types of Planning.	2	2	2
3.	List the forecasting technique used for decision-making.	2	2	2
4.	Explain the steps involved in decision making	2	2	2
5.	Distinguish between formal and informal organization	2	2	2
6.	What is meant by Strategy?	2	1	2
7.	List the forecasting technique used for decision-making	2	1	2
8.	Define MBO in Planning	2	1	2
	PART B			
1.	What is planning? Explain the steps involved in Planning and different types of plans.	2	2	16
2.	Define MBO. With the help of block diagram, explain the process of MBO.	2	2	16
3.	Explain the process of Decision-Making with the help of an example.	2	2	16
4.	Rana group has set its objectives of doubling its objectives of doubling profit every three years and sales revenue every four years. Answer the following questions: i) What do you think would be the employee's reaction to this Objective? ii) Give your comment on objectives of Rana group. Give guidelines for Objective settings	2	2	16

UNIT III

ORGANISING

Nature and purpose – Formal and informal organization – Organization chart – Organization structure – Types – Line and staff authority – Departmentalization – delegation of authority – Centralization and decentralization – Job Design - Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management, Career planning and management.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define Organizing.	3	1	2
2.	Distinguish between formal and informal organization	3	1	2
3.	Mention the three categories of Span of Management.	3	1	2
4.	Compare on the job and off the job training.	3	1	2
5.	Conclude your understanding on benefits of decentralization	3	1	2
6.	List down the different types of training.	3	2	2
7.	Explain benefits of decentralization	3	2	2
8.	What is a Matrix Structure?	3	2	2
	PART B			
1.	Explain about various types of departmentation by different strategies.	3	2	16
2.	A MNC company setting shop in India is in a dilemma to decide whether to adopt a line or a line and staff organisation structure. Highlight the advantages of line and line and staff organisation structure. According to you, which structure would be suitable for a huge MNC?	3	2	16
3.	Explain the procedures involved in the selection process	3	2	16
4.	Discuss in detail the various types of training. Employees prefer off the job training to on-the-job training. Why?	3	2	16

UNIT IV

DIRCTING

Foundations of individual and group behaviour– Motivation – Motivation theories – Motivational techniques – Job satisfaction – Job enrichment – Leadership – types and theories of leadership – Communication – Process of communication – Barrier in communication – Effective communication – Communication and IT.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define the term Motivation.	4	1	2
2.	Compile the various forms of communication.	4	2	2
3.	List out the organizational culture.	4	1	2
4.	What do you understand by non-verbal communication?	4	1	2
5.	Mention the various elements in the process of communication.	4	1	2
6.	Compare motivation and satisfaction.	4	1	2
7.	Can you explain the concept of grape vine communication?	4	2	2
8.	Explain goal setting theory.	4	2	2
	PART B			
1.	Explain four traditional theories of motivation.	4	2	16
2.	List the different components of communication and explain them	4	2	16
3.	Analyze the various leadership behaviour and styles ranging from maximum to minimum.	4	2	16
4.	The country head of Z InfoTech finds it difficult to communicate to his boss in California. Sometimes it is due to difference in timings, sometimes due to difference in meanings of words. Phone lines are noisy and signal breaks sometimes. What do you think would be the type of barriers faced by him while communication takes place between people of different countries?	4	2	16

UNIT V

CONTROLLING

System and process of controlling – Budgetary and non - Budgetary control techniques – Use of computers and IT in Management control – Productivity problems and management – Control and performance – Direct and preventive control – Reporting.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Differentiate between production and productivity	5	2	2
2.	Write a short note on the purpose of reporting.	5	1	2
3.	Compare feed forward and feedback control.	5	2	2
4.	Define budgetary control	5	1	2
5.	Define productivity. List the types of productivity.	5	1	2
6.	Mention any two non – budgetary control techniques.	5	1	2
7.	What is quality control	5	1	2
8.	What are the factors affecting productivity?	5	1	2
	PART B			
1.	What is meant by Controlling? Explain the process of controlling.	5	2	16
2.	Explain the usage of Break-Even Analysis. Summarize the aspects of Ratio Analysis.	5	2	16
3.	Explain the concept of MIS and the stages involved in establishing MIS.	5	2	16
4.	Explain budgetary and non-budgetary control techniques	5	2	16

END

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HOLISTIC NUTRITION

UNIT I

NUTRITION AND HEALTH

Introduction to the principles of nutrition; Basics of nutrition including; micronutrients (vitamins and minerals), the energy-yielding nutrients (Carbohydrates, Lipids and Proteins), metabolism, digestion, absorption and energy balance. Lipids: their functions, classification, dietary requirements, digestion & absorption, metabolism and links to the major fatal diseases, heart disease and cancer.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What are micronutrients and give two examples.	1	1	2
2.	Write the basic principles of nutrition.	1	1	2
3.	How are vitamins classified?	1	1	2
4.	What is metabolism?	1	1	2
5.	How do carbohydrates contribute to energy balance?	1	1	2
6.	What role do enzymes play in digestion?	1	1	2
7.	What are the sources of dietary lipids?	1	1	2
8.	What is the primary role of proteins in the body?	1	1	2
	PART B			
1.	Explain the basic functions of the energy yielding nutrients in the body.	1	2	16
2.	Discuss the digestion, absorption, and metabolism of carbohydrates.	1	2	16
3.	Discuss the relationship between dietary lipids and the risk of heart disease.	1	2	16
4.	Explain the role of micro nutrients in human nutrition	1	2	16

UNIT II

AYURVEDA – MIND/BODY HEALING

Philosophy of Holistic Nutrition with spiritual and psychological approaches towards attaining optimal health; Principles and practical applications of Ayurveda, the oldest healing system in the world. Three forces – Vata, Pitta and Kapha, that combine in each being into a distinct constitution. Practical dietary and lifestyle recommendations for different constitutions will also be explored in real case studies

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What is holistic nutrition?	2	1	2
2.	Define Ayurveda.	2	1	2
3.	Can you explain the significance of Vata, Pitta, and Kapha in Ayurveda?	2	1	2
4.	How can Ayurveda be integrated into modern healthcare practices?	2	1	2
5.	How can Pitta dosha be balanced through diet and lifestyle?	2	1	2
6.	How does holistic nutrition address emotional and spiritual well-being?	2	1	2
7.	How does Ayurveda approach the treatment of specific health conditions?	2	1	2
8.	Can you provide examples of sattvic foods?	2	1	2
	PART B			
1.	Discuss the principles of Ayrveda and how it contributes to health.	2	2	16
2.	Explain the characteristics and functions of Vata,Pitta,and Kapha in Ayurveda.	2	2	16
3.	Describe the dietary and lifestyle recommendations for balancing each dosha in Auyrvedha	2	2	16
4.	Discuss the practical application of Auyrvedha through case studies and how dietary recommendations varies on different constitutions	2	2	16

UNIT III

NUTRITION AND ENVIRONMENT

Based on an underlying philosophy that environments maintain and promote health and that individuals have a right to self-determination and self-knowledge, Nutrition principles which promote health and prevent disease. Safety of our food supply, naturally occurring and environmental toxins in foods, microbes and food poisoning.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What are naturally occurring toxins in foods?	3	1	2
2.	List any two common types of microbes that cause food poisoning.	3	1	2
3.	What role does balanced diet play in these nutrition principles?	3	1	2
4.	What agricultural practices can reduce environmental toxin contamination?	3	1	2
5.	What role does balanced diet play in these nutrition principles?	3	1	2
6.	Why is the safety of our food supply crucial in relation to this philosophy?	3	1	2
7.	What are some examples of naturally occurring toxins found in foods, and how do they pose risks to human health?	3	1	2
8.	How does this philosophy translate into nutrition principles?	3	1	2
	PART B			
1.	Discuss the nutrition principles which promote health and prevent disease	3	2	16
2.	Describe the naturally occurring and environmental toxins in food ,microbes and food poisoning	3	2	16
3.	Discuss the underlying philosophy that support nutrition as a tool for health promotion and disease prevention	3	2	16
4.	Discuss the importance of safety of the food supply in prompting public health and prevented food borne illnesses	3	2	16

UNIT IV

COMPARATIVE DIETS

Evaluating principles of food dynamics, nutrient proportions, holistic individuality, the law of opposites, food combining, and more. Therapeutic benefits and limitations of several alternative diet approaches, including: modern diets (intermittent fasting, macrobiotics), food combining (colour-therapy/rainbow diet), high protein diets (Ketogenic, Paleo), Vegetarian approaches (plant-based/vegetarian/vegan variations, fruitarian, raw food), as well as cleansing and detoxification diets (caffeine, alcohol, and nicotine detoxes, juice fasts).

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What are the principles of food dynamics in holistic nutrition?	4	1	2
2.	Define law of opposites in nutrition.	4	1	2
3.	What is Paleo diet?	4	1	2
4.	Define detoxification diet.	4	1	2
5.	What are the demerits associated with following a fruitarian diet?	4	1	2
6.	How does a raw food diet prioritize nutrient proportions and support vitality?	4	1	2
7.	List the merits of macrobiotic diet.	4	1	2
8.	List the demerits of colour therapy.	4	1	2
	PART B			
1.	Evaluate the therapeutic benefits and limitations of intermittent fasting as modern diet approach	4	2	16
2.	Compare and contrast the therapeutic benefits and limitations of high protein diets	4	2	16
3.	Discuss the principles of food combining and its benefits for its digestive health nutrient absorbed	4	2	16
4.	Discuss the therapeutic benefits and challenges of plant based diet	4	2	16

UNIT V

PREVENTIVE HEALTH CARE

Proper nutrition protection against, reverse and/or retard many ailments including: osteoporosis, diabetes, atherosclerosis and high blood pressure, arthritis, cancer, anemia, kidney disease and colon cancer. Current research developments on phytochemicals, antioxidants and nutraceuticals will be explored.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What role does nutrition play in the management of diabetes	5	1	2
2.	How does nutrition impact kidney disease?	5	1	2
3.	How can nutrition effectively manage anemia?	5	1	2
4.	How do omega-3 fatty acids found in fatty fish contribute to lowering blood pressure?	5	1	2
5.	What dietary modifications are recommended for individuals with kidney stones to prevent recurrence?	5	1	2
6.	What role does vitamin D play in preventing osteoporosis, and how can it be obtained through diet?	5	1	2
7.	What dietary interventions can help manage high blood pressure naturally?	5	1	2
8.	How can nutrition effectively manage anemia?	5	1	2
	PART B			
1.	Discuss how proper nutrients can help prevent and manage of osteoporosis	5	2	16
2.	Elaborate role of nutrients in the prevention and management of atherosclerosis.	5	2	16
3.	Discuss the current research developments Phyto chemicals	5	2	16
4.	Describe the ways can proper nutrition help manage kidney disease and improve kidney health	5	2	16

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MECHATRONICS

UNIT I

INTRODUCTION AND SENSORS

Introduction to Mechatronics – Systems – Need for Mechatronics – Emerging areas of Mechatronics – Classification of Mechatronics. Sensors and Transducers: Static and Dynamic Characteristics of Sensor, Potentiometers – LVDT – Capacitance Sensors – Strain Gauges – Eddy Current Sensor – Hall Effect Sensor –Temperature Sensors – Light Sensors.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define Mechatronics.	1	2	2
2.	List any two emerging areas of Mechatronics.	1	2	2
3.	What is the need for integrating Mechatronics in modern systems?	1	2	2
4.	Differentiate between static and dynamic characteristics of sensors.	2	2	2
5.	State the working principle of a potentiometer.	1	2	2
6.	Mention two applications of LVDT (Linear Variable Differential Transformer).	1	2	2
7.	What is the function of a Hall Effect sensor?	1	2	2
8.	Name two temperature sensors and mention one application of each.	1	2	2
	PART B			
1.	Explain in detail the concept of Mechatronics. Discuss its need, benefits, and various classifications. Support your answer with suitable examples.	1	2	16
2.	Describe the static and dynamic characteristics of sensors. Why are these characteristics important in sensor selection for Mechatronic systems?	1	2	16
3.	With neat diagrams, explain the construction, working principle, and applications of the following sensors: Potentiometer, LVDT, Strain Gauge and Eddy Current Sensor	1	2	16
4.	Explain the working principles and applications of the following sensors used in Mechatronics: Capacitance sensor, Hall Effect sensor, Temperature sensor and Light sensor	1	2	16

UNIT II

8085 MICROPROCESSOR

Introduction – Pin Configuration - Architecture of 8085 – Addressing Modes – Instruction set,Timing diagram of 8085.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What is a microprocessor? Give an example.	2	1	2
2.	State the size of the data bus and address bus in 8085 microprocessor.	2	1	2
3.	List any two features of 8085 microprocessor.	2	1	2
4.	What is the function of the ALE (Address Latch Enable) pin in 8085?	2	1	2
5.	Name any two types of addressing modes in 8085.	2	1	2
6.	What is an opcode and operand in 8085 instruction format?	2	1	2
7.	Define the term "machine cycle" with reference to 8085 timing diagram.	2	1	2
8.	What is the function of the Program Counter (PC) in 8085 architecture?	2	1	2
	PART B			
1.	Explain the pin configuration of 8085 microprocessor in detail with a neat diagram. Mention the function of each pin.	2	2	16
2.	With a neat block diagram, explain the architecture of 8085 microprocessor. Describe the function of each block.	2	2	16
3.	Describe in detail the various addressing modes supported by 8085 with suitable examples.	2	2	16
4.	Draw and explain the timing diagram for the execution of a simple instruction (like MOV or MVI). Explain each phase involved in the instruction execution cycle.	2	2	16

UNIT III

PROGRAMMABLE PERIPHERAL INTERFACE

Introduction – Architecture of 8255, Keyboard Interfacing, LED display – Interfacing, ADC andDAC Interface, Temperature Control – Stepper Motor Control – Traffic Control Interface.

Q.No	Question	CO	BTL	Marks

PART A

1.	What is the purpose of the 8255 Programmable Peripheral Interface (PPI)?	3	1	2
2.	List the three ports available in 8255.	3	1	2
3.	Name the different modes of operation of 8255.	3	1	2
4.	What is the function of a keyboard interface circuit?	3	1	2
5.	Mention any two applications of LED display interfacing.	3	1	2
6.	Differentiate between ADC and DAC.	3	2	2
7.	What is the role of a stepper motor in control applications?	3	1	2
8.	State one application of traffic control interfacing using microprocessors.	3	1	2

PART B

1.	With a neat block diagram, explain the architecture of 8255. Discuss the various modes in which 8255 can be operated.	3	2	16
2.	Explain the interfacing of a keyboard with a microprocessor using 8255. Discuss how key press detection and debounce handling is done.	3	2	16
3.	Describe the interfacing of ADC and DAC with a microprocessor. Also explain how temperature can be monitored and controlled using this interface.	3	2	16
4.	With a suitable block diagram and control logic, explain the stepper motor control and traffic light control interfacing using microprocessors. Mention any real-time applications.	3	2	16

UNIT IV

PROGRAMMABLE LOGIC CONTROLLER

Introduction – Architecture – Input / Output Processing – Programming with Timers, Countersand Internal relays – Data Handling – Selection of PLC.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define a Programmable Logic Controller (PLC).	4	1	2
2.	List any two advantages of using PLCs over traditional relay-based systems.	4	1	2
3.	What is the role of the CPU in a PLC architecture?	4	1	2
4.	Name two types of I/O modules used in PLCs.	4	1	2
5.	What is a timer in a PLC? Give an example of its application.	4	1	2
6.	Differentiate between a timer and a counter in PLC programming.	4	2	2
7.	What is meant by an internal relay in PLCs?	4	1	2
8.	Mention two key factors to consider while selecting a PLC for an industrial application.	4	1	2
	PART B			
1.	Explain the architecture of a PLC with a neat block diagram. Describe the function of each component in detail.	4	2	16
2.	Discuss the input/output processing in PLCs. Explain how scanning, status checking, and execution of control logic are performed.	4	2	16
3.	Write and explain PLC programming examples using timers, counters, and internal relays. Include ladder diagrams for at least two cases.	4	4	16
4.	Describe various data handling operations in PLCs. Also explain the criteria for selecting a suitable PLC for an industrial automation task.	4	2	16

UNIT V

ACTUATORS AND MECHATRONICS SYSTEM DESIGN

Types of Stepper and Servo motors – Construction – Working Principle – Characteristics,

Stages of Mechatronics Design Process – Comparison of Traditional and Mechatronics DesignConcepts with Examples – Case studies of Mechatronics Systems – Pick and Place Robot –Engine Management system – Automatic Car Park Barrier.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	What is the basic difference between a stepper motor and a servo motor?	5	1	2
2.	List any two types of stepper motors.	5	1	2
3.	Mention one application each for stepper and servo motors.	5	1	2
4.	What are the main characteristics of a stepper motor?	5	1	2
5.	Define the term "holding torque" in stepper motors.	5	1	2
6.	List the stages involved in the Mechatronics design process.	5	1	2
7.	State one key difference between traditional and Mechatronics design approaches.	5	2	2
8.	What is the main function of a pick and place robot in Mechatronic systems?	5	1	2
	PART B			
1.	Explain the types, construction, working principle, and characteristics of stepper and servo motors with neat diagrams.	5	2	16
2.	Discuss the stages of Mechatronics design process in detail. Illustrate your answer with a suitable example.	5	2	16
3.	Compare traditional design and Mechatronics design concepts with examples. Highlight the advantages of Mechatronics approach.	5	2	16
4.	Explain the working and Mechatronics integration in the following systems:Pick and Place Robot, Engine Management System and Automatic Car Park Barrier	5	2	16

*****END*****

OBT356

LIFESTYLE DISEASES

UNIT I

INTRODUCTION

Lifestyle diseases – Definition ; Risk factors – Eating, smoking, drinking, stress, physical activity, illicit drug use ; Obesity, diabetes, cardiovascular diseases, respiratory diseases, cancer; Prevention – Diet and exercise.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define lifestyle diseases.	1	1	2
2.	List any four examples of lifestyle diseases.	1	1	2
3.	Name two common habits that increase the risk of lifestyle diseases.	1	1	2
4.	Define cardiovascular diseases.	1	1	2
5.	What is the role of exercise in lifestyle disease prevention?	1	1	2
6.	What is the impact of excessive sugar consumption on health?	1	1	2
7.	Mention two ways to manage stress effectively.	1	1	2
8.	What is the significance of early diagnosis in lifestyle diseases?	1	1	2
	PART B			
1.	Explain the concept of lifestyle diseases and their impact on global health.	1	2	16
2.	Discuss the role of smoking, drinking, and illicit drug use in lifestyle diseases.	1	2	16
3.	Explain the prevention and management of diabetes through diet and exercise.	1	2	16
4.	Discuss the role of physical activity in reducing the risk of cardiovascular diseases	1	2	16

UNIT II

CANCER

Types - Lung cancer, Mouth cancer, Skin cancer, Cervical cancer, Carcinoma oesophagus; Causes Tobacco usage, Diagnosis – Biomarkers, Treatment.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define cancer.	2	1	2
2.	Define biomarkers in cancer diagnosis.	2	1	2
3.	Define lung cancer.	2	1	2
4.	What are the risk factors for skin cancer?	2	1	2
5.	What is radiation therapy?	2	1	2
6.	List two types of lung cancer.	2	1	2
7.	What is the importance of early cancer detection?	2	1	2
8.	List two methods to prevent cervical cancer.	2	1	2
	PART B			
1.	Discuss the different types of cancers and their risk factors.	2	2	16
2.	Explain the process of cancer diagnosis, including the role of biomarkers.	2	2	16
3.	Discuss the impact of lifestyle changes on reducing the risk of cancer.	2	2	16
4.	Explain the causes, prevention, and treatment of skin cancer.	2	2	16

UNIT III

CARDIOVASCULAR DISEASES

Basic link analysis, Interference analysis, Rain induced attenuation and interference, Ionosphere characteristics, Link Design with and without frequency reuse.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define coronary artery disease (CAD).	3	1	2
2.	What is atherosclerosis?	3	1	2
3.	What is the purpose of an electrocardiograph (ECG)?	3	1	2
4.	What is an echocardiograph?	3	1	2
5.	What is the role of exercise in cardiac rehabilitation?	3	1	2
6.	Name two symptoms of a heart attack.	3	1	2
7.	List two preventive measures for cardiovascular diseases.	3	1	2
8.	Define myocardial infarction.	3	1	2
	PART B			
1.	Explain the role of diet and lifestyle in preventing atherosclerosis.	3	2	16
2.	Discuss the role of exercise in maintaining cardiovascular health.	3	2	16
3.	Explain the role of diagnostic tools like ECG and ECHO in detecting heart diseases.	3	2	16
4.	Describe the process and benefits of coronary angioplasty and bypass surgery.	3	2	16

UNIT IV

DIABETES AND OBESITY

Types of Diabetes mellitus; Blood glucose regulation; Complications of diabetes – Paediatric and adolescent obesity – Weight control and BMI.

Q.No	Question	CO	BTL	Marks
	PART A			
1.	Define weight control.	4	1	2
2.	Define Body Mass Index	4	1	2
3.	Define hyperglycemia	4	1	2
4.	What is the role of glucagon in blood sugar regulation?	4	1	2
5.	Define metabolic syndrome.	4	1	2
6.	Define diabetic neuropathy.	4	1	2
7.	What is the role of exercise in managing diabetes?	4	1	2
8.	Mention two health risks of childhood obesity	4	1	2
	PART B			
1.	Discuss the causes, types, and complications of diabetes mellitus.	4	2	16
2.	Explain the role of diet and exercise in preventing and managing diabetes.	4	2	16
3.	Describe the role of lifestyle changes in weight management and diabetes prevention.	4	2	16
4.	Explain the importance of early detection and treatment of diabetes	4	2	16

UNIT V

RESPIRATORY DISEASES

Chronic lung disease, Asthma, COPD; Causes - Breathing pattern (Nasal vs mouth), Smoking – Diagnosis - Pulmonary function testing.

Q.No	Question	CO	BTL	Marks

PART A

1.	Define chronic obstructive pulmonary disease.	5	1	2
2.	Define pulmonary function testing.	5	1	2
3.	What is the role of smoking in respiratory diseases?	5	1	2
4.	What are the major cause and diagnostic method for chronic lung diseases such as asthma and COPD?	5	1	2
5.	Define chronic bronchitis	5	1	2
6.	Mention two complications of COPD.	5	1	2
7.	What is the impact of air pollution on respiratory health?	5	1	2
8.	Mention two environmental causes of respiratory diseases.	5	1	2

PART B

1.	Explain the causes, symptoms, and management of chronic obstructive pulmonary disease (COPD).	5	2	16
2.	Discuss the role of smoking in respiratory diseases and methods to prevent its impact.	5	2	16
3.	Explain the role of pulmonary function tests (PFTs) in diagnosing respiratory diseases.	5	2	16
4.	Describe the symptoms, causes, and preventive measures for chronic lung diseases	5	2	16

*****END*****