LAKSHYA INSTITUTE OF TECHNOLOGY

BSC.ITM

1ST SEM OLD UNIVERSITY QUESTION

I - S - B.Sc. - (ITM) - P - Major - I -
(Data Structure Using C) - (R)

2025

Full Marks - 100

Time - As in the Programme

The figure in the right-hand margin indicates marks

Answer all questions

Part - I

1. Answer the answer of following Questions. [1 × 10 =10

(a) All keywords are defined in which case ?

(b) do..while is a which type of statement ?

(c) Which data structure used to convert infix to postfix notation ?

(d) What is the prefix of A-B/ (C * D ^ E) ?

(e) Which data structure allows deleting data elements from front and inserting at rear ?

(f) Which sorting algorithm used divide-and-conquer method ?

(g) Which type of function calls itself to perform a task ?

(h) Which data structure used to print the natural number in reverse order ?

[Cont...

(i) "Stack is a non-linear data structure". The statement is true or false.

(j) What is the role of a node in a tree ?

Part - II

2. Answer the following in 50 words each. [2 × 9=18

(a) Differentiate linear and non-linear data structure.

(b) What is doubly linked list and how the doubly linked list can be represented ?

(c) What are the applications of stack ?

(d) What is the difference between while loop and do...while loop ?

(e) Explain self- referential structure.

(f) Describe in detail about the command line argument.

(g) Define structure and explain how it is different from union.

(h) Explain binary searching technique.

(i) What is binary tree and write down the properties of binary tree ?

Part - III

3. Answer any eight questions of the following in 250words each. [5 × 8=40

(a) Write a c program to find length of a given string.

(b) What is the difference between a queue and a stack ?

(c) Translate infix expression into its equivalent post fix expression: (A+B^D)/(E- F)+G

(d) Write an algorithm to traverse a linked list.

(e) Explain bubble sort algorithm with example.

[Cont...

(f) Write a program to find out factorial of a number using recursion

(g) Differentiate 1D and 2D array with examples.

(h) Write down the advantages and disadvantages of array over linked list.

(i) Write down the algorithm for push and pop operation.

(j) Draw a heap tree by using max heap property of the given numbers
1000,520,400,450,630,650,300,350

Part - IV

Answer any four of the following Questions in 800 words each. [8 × 4=32

4. What is operator ? What are different types of operators in c explain all with the examples.

5. What is dynamic memory allocation explain briefly with examples ?

6. Write a C program for implementation of Queue using array.

7. Create a binary search tree for the following numbers start from an empty binary search tree. 45,26,10,60,70,30,40,75,100,120,15,200 and show the trees at each stage.

8. What is quick sort ? Explain its techniques with an example.

6. Discuss all tree traversal algorithms in detail.

OR

(a) Construct an expression tree for the following expression.

(A + B) – (((C * D) + F) / G)

(b) Construct a binary tree from its given preorder and inorder traversal.

Preorder : A B D E H C F I J G

Inorder : D B H E A I F J C G

7. Write an algorithm to implement binary search on a list of key values.

OR

Sort the following sequence of numbers using insertion sort in ascending order and also show step by step process.

44, 55, 33, 88, 77, 22, 11, 66

2024

Full Marks - 60

Time - As in the Programme

The figure in the right hand margin indicate marks.
Answer ALL questions.

Group – A

1. Answer all questions : [8 x 1

(a) What is double linked list ?

(b) What is traversal of a linked list ?

(c) Queue is termed as FIFO. Justify the statement.

(d) Define recursion.

(e) What is internal sort ?

(f) How many types of searching techniques are used in data structure ?

(g) Define degree of a node in a tree.

(h) Define binary tree.

Group – B

2. Answer any 8 questions : [8 x 1.5

(a) Explain ADT with example.

(b) What are measures used for the efficiency of the algorithm ?

[Cont...

(c) What is column major order ?

(d) Convert the following expression in postfix notation.

(A+B) * ((C+D)/E)

(e) Define Priority queue.

(f) Specify all the notations used to represent an arithmetic expression with an example.

(g) State the condition to verify that the queue is empty.

(h) Arrange the following data in lexicographic order.

JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG

(i) When R-R rotation is applied.

(j) Differentiate between full binary tree and complete binary tree.

Group – C

3. Answer any 8 of the following : [8 x 2

(a) Discuss advantages of circular linked list over linear linked list.

(b) Represent the following polynomial using a linked list.

$5x^6 + 12x^2 - 3x + 25$

(c) What are applications of stack ?

(d) Evaluate the following postfix expression using a stack.

A B C * D / + where A = 4, B = 2, C = 3, D = 6

[Cont...

(e) What is Deque ?

(f) What is Divide and Conquer Strategy ? Name the sorting methods based on this technique.

(g) Construct a binary search tree using the following key values.

52, 85, 34, 19, 41, 90

(h) State two properties of a height balanced tree.

(i) Construct a max heap using the following data values.

45, 22, 68, 23, 11, 51

(j) Define siblings with an example.

Group – D

Answer all questions : [4 x 6

4. Explain the various types of data structure used in programming.

OR

Write an algorithm to insert a node at specific location in a single linked list.

5. What do you mean by stack ? Write an algorithm for various operations that can be performed over a stack using array.

OR

Write an algorithm to delete an element from a queue.

[Cont...

20/08/24
E: C.S (H) Ex-224
2nd Sem. (Data Structure)

+3-II-S-CBCS(MS)-Sc(H)-Core-IV-Comp.Sc-R&B

2024

Time :As in Programme

Full Marks : 60

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Fill in the blanks. 1x8

   a. In general, the index of the first element in an array is _____.

   b. Minimum number of fields in each node of a doubly linked list is _____.

   c. In a stack, if a user tries to remove an element from an empty stack it is called _____.

   d. A queue follows _____ principle.

   e. The number of edges from the root node to the deepest leaf is called _____ of the tree.

   f. In a max-heap, element with the greatest key is always in the _____ node.

   g. _____ sorting algorithm is the fastest for sorting small arrays ?

   h. Binary search makes use of _____ strategy to search an element.

(Turn Over)

PART-II

2. Answer any eight within two to three sentences 1.5x8

   a. Assuming int is of 2 bytes, what is the size of int arr[12]; ?

   b. What is a sparse matrix ?

   c. How do you test for an empty queue ?

   d. What is the value of the postfix expression 6 3 2 4 + – * ?

   e. List some applications of queue data structure.

   f. Which data structure suits the most in the tree construction ?

   g. What are the applications of binary tree ?

   h. What is a balance factor in AVL trees ?

   i. Mention the types of searching.

   j. What is meant by linear search ?

PART-III

3. Answer any eight of the following (in maximum 75 words.) 2x8

   a. What is the purpose of dynamic memory management ?

   b. What are the advantages of linked list over an array ?

   c. What are the drawbacks of array implementation of queue ?

   d. Differentiate between stack and queue data structure.

   e. How can AVL tree be useful in all the operations as compared to binary search tree ?

   f. Give the preorder and postorder traversal of the expression tree (a+(b*(c-e))/f).

   g. Differentiate between merge sort and quick sort ?

h. Is the heap sort always better than the quick sort ? Explain.

PART-IV

Answer within 500 words each. 6x4

4. Write an algorithm to insert a node at the beginning, middle and end of singly list.

OR

Explain different types of dynamic memory management functions with appropriate examples.

5. Explain how an infix expression can be converted to a post-fix expression with an example.

OR

Explain the addition and deletion operations performed on a queue with necessary algorithms.

6. Create a binary search tree for the following numbers (start from an empty binary search tree) :

45, 26, 10, 60, 70, 30, 40 Delete keys 10, 60 and 45 one after the other and show the trees at each stage.

OR

Write recursive algorithms for tree traversal (Inorder, Preorder, Postorder).

7. Explain the working of quick sort on the following data :

10, 15, 0, 17, 20, 25, 30, 16, 70, 6.

OR

Write an algorithm for binary search and discuss its speed compared with linear search.

2022

Full Marks - 50

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Write the answer of the following questions

a) How to define the structure of double linked list to store the data?

b) How a binary tree is called Threaded binary tree?

c) What is Compaction?

d) How to calculate degree of a node? Explain it with example.

e) What is the postfix operaiton of (A*B+C) - (D/E)?

2. Answer any FIVE of the following questions.

i) Explain different types of data structure with examples.

ii)a) Write a program to add two different 3-dimensional matrixes.

b) Define Pointer. Explain its advantages over array?Write an example how a set of elements are manipulated with pointer.

iii) a) Draw the B-tree of order 5 using following keys. 65, 71, 70, 66, 75,68,72, 77,74, 69, 83, 73, 82, 88, 67, 76, 78, 84, 85, 80.

b) Write an algorithm to store data in a tree.

iv) Write insertion, first-insert, last-insert and deletion algorithm of linked list.

v) a) How arithmetic expressions are evaluated using stack? Explain it with example.

b) Explain linked representation of stack with an example.

vi) Define Queue. How it is represented? Explain inserting and deleting algorithm in a queue. Discuss various applications of queue.

vii) Write down push & pop algorithms and various applications of stack.

viii) Explain pre-order, in-order and post-order tree traversal with their algorithms and example.

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2022

Full Marks - 60

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Answer all the questions :

a) What is binary tree?

b) What is the use of queue data structure?

c) What is the maxium number of nodes in a binary tree of height K?

d) Which data structure suits the most in the tree construction?

e) Which data structure is used in BFS algorithm?

f) What is the use of void data type?

g) What is abstract data type?

h) Define the use of POP operation.

2. Answer any EIGHT of the following questions.

a) What is the drawback of array implementation of data structure?

b) List few applications of tree data structure.

c) What is linked list?

d) What are the advantages of dynamic data structure?

e) What is LIFO?

f) Which data structure is used for recursive algorithm?

g) What are the advantages of data structure?

h) What is post fix operation?

3. Answer any Eight of the following questions

a) State the property of B Tree.

b) Write the difference between linear and non-linear data structure?

c) Which data structure is used for pre-fix operation and how?

d) Convert the following infix to post fix operation (a+b) c(c/d) +e.

e) Write the difference between array and stack.

f) What is the use of dequeue?

g) What is AVL Tree? Explain it with an example.

h) Which sorting algorithm is called fastest and why?

4. Answer any Four of the following questions.

i) Explain different types of data structure with examples.

ii) a) Write a program to add two different 3-dimensional matrixes.

b) Define Pointer. Explain its advantages over array? ;Write an example how a set of elements are manipulated with pointer.

iii) Write insertion, first-insert, last-insert and deletion algorithm of linked list.

(iv) a) How arithmetic expressions are evaluated using stack? Explain it with example

b) Explain linked representation of stack with an example.

(v) Define queue. How it is represented? Explain insertin and deleting algorithm in a queue. Discuss various applications of queue.

vi) Write down push & pop algortithms and various applications of stack.

vii) Explain pre-order, in-order and post-order tree traversal with their algorithms and example.

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2020

Full Marks - 50

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer any TWO questions

1. (a) What is time and space complexity? How it is calculated? Is it necessary to measure the above components in the designing of programs? Justify your answer.

b) Explain the features and application of various linear data structure.

OR

c) Define structure. Discuss the syntax of a structure with example. Create a structure input book No., subject, No. of pages and price for five books and print it.

d) What is DMA? How it is implemened? Is it possible to make memory efficient program using pointer. Suggest your views.

2.a) Write an algorithm to delete a node from the last position of single linked list.

b) What is traversing in a linked list? Write an algorithm to print all the values of a linked list.

OR

c) Write an algorithm to merge two different linked lists.

d) Discuss the structure of double linked list with example.

3.a) Convert the following expression to prefix and postfix form.

a - (b* (c+ d/e-f) + g* h

b) What do you mean by Stack? What are the different types of stack operation? Write a program to perform each operation on a stack.

OR

c) Define queue. What are the operations performed in a queue? Write various applications of queue.

d) Define recursion. Discuss various dis-advantaged of recursive function? Write a program to calculate factorial of number using recursion.

4.a) Write algorithms for different order of traversal performed in a binary tree.

b) What is the differfence between tree and binary tree? Define different types of binary trees.

OR

c) Write an algorithm to search a key element in a Binaryh Search Tree.

d) Construct a binary search tree whose preorder traversal is given as follows.

55, 66, 77, 15, 11, 33, 22, 35, 25, 44, 88, 99

5.a) Write an algorithm of binary search operation to search a number from a list.

b) Write a program to sort 10 numbers and print it using quick sort.

OR

c) Explain the concept of storage allocation strategies.

d) Write a program to sort a set of numbers using insertion sort.

2019

Full Marks - 60

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Group - A

1. (Answer all questions, Each carries 1 mark)

i) Define the term NonLinear Data Structure.

ii) Differenciate between double linked list and single linked list.

iii) Differenciate runtime and compile time initialization of an array.

iv) State the syntax of 2D array declaration.

v) What is postfix notation of the expression (c/d)* (a+d)?

vi) Define height of a tree.

vii) State two properties of Height Balanced Tree.

viii) Construct a binary search tree using the following key values.

11, 22, 67, 89, 21, 9, 56

ix) Define the term Dequeue.

x) State two applications of Array.

Group-B

(Answer all questions. Each carries 8 marks)

2.a) What are the different types of data structures? Explain each one in brief.

OR

b) Write a C Programme to display the result of addition of two 3*3 matrix using array

3.a) Write an algorithm to delete node from a double linked list.

OR

b) Write an algorithm to insert a node after a given node of a single linked list.

4.a) What do you mean by Stack. What are the different types of stack operation. Write a program to perform each operationon a slack.

OR

b) Define Recursion. Write a program to calculate factorial of a number.

5.a) Write an algorithm to delete an element at the end of queue.

OR

b) Write an algorithm to delete an element from the beginning of a queue.

6.a) Explain the concept of physical implemention of binary tree in memory.

OR

b) Construct a balanced binary search tree using the following nodes jan, feb, mar, apr, may, jun, jul, aug, sep, oct, nov, dec.

2019

Full Marks - 50

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Write the answer of the following questions.

a) How to calculate degree of a node? Explain it with example.

b) What is the postix operation of (A*B+C) - (D/E)?

c) How to define the structure of double linked list to store the data?

d) How a binary tree is called threaded binary tree?

e) What is Compaction?

2. Explain different types of data structure with examples.

a) WRite a program to add two different 3- dimensional matrix.

b) Define Pointer. Explain its advantages over array? Write an example how a set of elements are manipulated with pointer.

3.a) What is deallocation? How such strategy applied in data structure.

b) Explainboundary tag system in details.

OR

Write insertion, fist-insert, last-insert and deletion algorithm of linked list.

4.a) How arithmetic expressions are evaluated using stack? Explain it with example.

b) Explain linked representaiton of stack with an exmple.

OR

Write down push & pop algorithms and various applications of stack.

5.a) Define queue. How it is represented ? Explain inserting and deleting algorithm in a queue.

b) Discuss various applications of queue.

OR

a) Explain how priority queue used inRound Robin Scheduling.

b) Write down the algorithms used for insertion and deletion in deque?

6. Explain pre-order, in-order and post-order tree traversal with their algorithms and example.

OR

a) Draw the B-tree of order 5 using following keys.

65, 71, 70, 66, 75, 68, 72, 77, 74, 69, 83, 73, 82, 88, 67, 76, 78, 84, 85, 80.

b) Write an algorithm to store data in a tree.

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2018

Full Marks - 70

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. (a) What are the differences between Static Data Structure and Dynamic Data Structure?

b) What is array? Explain types of array with example.

OR

a) What is Abstract Data types? Explain with example.

b) How to structures are processed? Explain it by Nested structure.

2.a) What is lists? Explain it by using array.

b) What is single linked list? Write a algorithm to insert a node at beginning of Single Linked list.

OR

c) What is Double Linked List? Explain with example.

d) What are the applications of linked list? How linked lsit is advantageous over Array.

3.a) What is stack? What are the uses of stack? Implement stack using linked list.

b) What is Queue? Explain Queue implementation using array.

OR

c) What is tree? Write the algorithm for traversing a Binary Tree.

d) (A + B/C) * (D Λ E) + F. Convert this infix expression into postfix by using stack.

4.a) What is Quick sort? Write the algorithm for Quick sort.

b) What is Merge sort? Sort the following by using merge sort:

9	12	3	57	98	1	37	40

OR

c) What is Heap sort? Explain the algorithm for Heap sort.

d) What is Selection sort? Sort the following using Section Sort

7	3	6	10	24	2	8	23

5.a) What is Searching? Explain the criteria of selecting a search algorithm.

b) Explain High Probability ordering with example

OR

c) What is Hashing? What are the Hashing Techniques? Explain.

d) How collision occurs? Explain the linear probing.

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2018

Full Marks - 50

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Answer all the questions :

a) Explain ADT with suitable examples.

b) Evaluate the postfix expression 3, 16, 2, +, *, 12, 6, /, -.

c) What do you mean buy Expression Tree? Give an example of it.

d) List out applications of stack.

e) What are the limitations of arrays in comparisons to the linked lists?

2.a) What is data structure? Explain the objective of data structure. Discuss types of data structure with examples.

b) Write the C code to access the elements of 1D array A having capcity 15.

c) What do you mean by merging of two arrays? Write an algorithm for merging two 1D arrays into single array.

3.a) What is list? Write an algoprithm for creation a single linked list. Also write algorithm for insertion a new node to that SLL at end and at specific position.

OR

b) What do you mean by Double linked list? What is the advantageous of DLL over SLL.

c) List out the applications of linked list. Explain the memory representation of linked list.

4.a) Explain the process of conversion from infix expression to postfix expression using stack.

b) Convert infox to postfix using stack Z+ (Y*X-(W/V^U)*T)*S.

OR

c) Explain the algorithm for quick sort. Sort the elements using quick sort 56, 24, 20, 17, 2.

5.a) Write the algorithm for linked list representation of queue.

b) What is queue? Explain the overflow and underflow conditions of linear queue.

OR

c) What is double ended queue? Explain types of double ended queue with suitable examples.

6.a) In-order traversal : 10, 12, 20, 30, 37, 40, 45

Preorder traversal : 30, 20, 10, 12, 40, 37, 45

Construct BST using the above traversals.

b) What is a tree ? Describe the terminololgies used in tree.

OR

c) Construct the AVL tree by using the keys: 50, 40, 35, 58, 48, 42, 60, 30, 33, 25. Delete 40 after constructing the AVL tree.

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2018

Full Marks - 60

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Group-A

1. a) Explain the physical Implementation of Binary tree.

b) What is Buddy System?

c) Classify Data Structure.

d) What is Heap Tree?

e) Evaluate the postfix expression 5,4,6,+,*,4,9,3,/,+,*.

f) Write down the application of Linked Lists.

g) Define Double Circular Linked list.

h) What do you mean by Expression Tree?

i) Write down the applications of Stack.

j) Define Array.

Group -B

2.a) What is Multi-Dimensional Array? Write a program to enter a 3x3 matrix and display the lower triangula rmatrix.

OR

a) Write a program to multiply two 3x3 matrices

3.a) Perform the following operations in a Single Linked List.

i) Add a node at the beginning of the list

ii) Delete a node from a particular position

OR

a) Perform the following operations in a Circular Linked List.

i) Add a node at the a particular position of the list.

ii) Count total no of nodes present in the list.

4.a) What is Stack? Perform the push, Pop and Traverse Operation.

b) Find out positfix form of the expression (A+B)*(C*D-E)*F/G.

OR

a) What is Recursion? Write a program to calculate factorial of a no using Recursion.

b) Explain Quick sort with example.

5.a) What is Queue? Write algorithms to add and delete element from a queue usign Link List Representation.

OR

a) Explain any two with example

i) Dequeu

ii) Priority Queue

iii) Application of Queue

6.a) Explain any two with example

i) Binary Search Tree

ii) Weighted Binary Tree

iii) Decision Tree

OR

a) Define Linked list representation of a Binary Tree.

b) Explain Insertion, deletion, Traversal Operation on Binardy Tree.

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I - S - B.Sc. - (ITM) - P - VAC - I - (Environmental Studies and Disaster Management) - (R)

2025

Full Marks - 100

Time - As in the Programme

The figure in the right-hand margin indicates marks

Answer all questions

Part - I

1. Answer the answer of following Questions. [1 × 10 =10

(a) Write the full form of NDMA.
(b) Give the full form of ODRAF.
(c) When Wildlife Protection Act was formed.
(d) When Forest Conservation Act was formed.
(e) What is the unit of Noise Pollution ?
(f) Name the gas responsible for ozone depletion.
(g) What is biodiversity ?
(h) Name some secondary air pollutants.
(i) Name & endemic species of India.
(j) Name the Hot spots of India.

Part - II

2. Answer the following in 50 words each. [2 × 9=18

(a) Give a brief description on Energy Resources.
(b) Give a difference on Endangered & Endemic species of India.
(c) What is pollution ?

[Cont...

(d) Define Air pollution
(e) Briefly describe on Forest Resources.
(f) Name some hot spots of Bio-diversity.
(g) What is Environment al Ethics ?
(h) What is urbanization ?

Part - III

3. Answer any eight questions of the following in 250words each. [5 × 8=40

(a) Explain soil pollution & its measure controls.
(b) Describe Natural Resources.
(c) Explain the Noise Pollution, its causes & controls measures.
(d) What is Disaster Management ?
(e) Discuss the institutional framework, preparedness measures and community participation in disaster management.
(f) Explain the concept of biodiversity ?
(g) Explain the threats to biodiversity & the conservation measures required to protect endangered species.
(h) Explain the causes, effects & control measures of soil pollution.
(i) Explain the importance of public awareness in environmental studies ?
(j) Discuss the effect of urbanization on the society.

[Cont...

Part - IV

Answer any four of the following Questions in 800 words each. [8 × 4=32

4. Discuss the causes, effects and control measures of water pollution.
5. Discuss the causes, effects & control measures of air pollution.
6. Explain biodiversity & explain the concept of Hot Spots of biodiversity with examples.
7. Discuss the role of stakeholder in disaster management and how they improve the response & recovery efforts.
8. Outline the different types of natural resources & associated problems emphasizing issues related to Forest resources.

Part – IV

Answer all within 500 words maximum :

4. Describe the energy flow in Eco-system. [7

OR

Describe the source, effects and control of water pollution.

5. Discuss the causes and effects of population growth in India. [7

OR

Write an essay on HIV/AIDS, its prevention, control measures and awareness.

6. Write a note on Environmental Movements in Odisha. [7

OR

Give an account of Women welfare in India.

7. Describe the salient features of the Wild Life Protection Act,1972. [7

OR

Discuss the equitable distribution of natural resources and wealth between rich and the poor countries will lead to sustainable life- styles.

2023

Full Marks - 80

Time - As in the Programme

The figures in the right hand margin indicate marks.

Answer ALL questions.

Part – I

1. Answer the following question with ONE word or fill in the blank : [1 x 12 = 12

(a) The peeling of Ozone Umbrella is mainly caused due to the release of _____ gas into the atmosphere.

(b) Water which is suitable for _____ is called _____ water.

(c) The collection of individuals which belongs to the same species when live together in a region is known as _____.

(d) _____ disease continues for many days and causes _____ on body.

(e) In _____ diseases, microbes cannot be transmitted from infected person to a susceptible person by contact or by any other methods.

[Cont...

(f) Narmada Bachavo Movement is led by _____.

(g) The Central Pollution Control Board (CPCB) is established under _____.

(h) Our society has changed a lot for women as a result of their struggle for _____.

(i) A _____ plays numerous roles in the transmission of knowledge.

(j) The resources that reproduce within a specified time span are _____.

(k) Air is a _____.

(l) A place where animals are protected in their natural habitat is called _____.

Part – II

2. Answer any EIGHT questions within TWO or THREE sentences maximum : [2 x 8 = 16

(a) Define Ecosystem.

(b) What is Biosphere ?

(c) What do you mean by Nitrogen Cycle ?

(d) What is Pollution ?

(e) Give some examples of Non-Communicable Diseases.

(f) What are the objectives of SPCB ?

(g) What are the 4 types of natural resources ?

[Cont...

(h) Differentiate the recyclable, renewable and non-renewable resources.

(i) In your own words, define "Conservation."

(j) Give the full form of ODRAF and NDMA.

Part – III

3. Answer any EIGHT questions within 75 words maximum : [3 x 8 = 24

(a) Describe the scope of environmental science.

(b) Differentiate between Ecology and Ecosystem.

(c) Differentiate between "population explosion and population clock".

(d) Lay out how people's health is negatively impacted by pollution.

(e) Describe the role of women in environment.

(f) Discuss some of the functions of Central Pollution Control Board.

(g) Give the features of Water Act, 1974.

(h) What is meant by Natural Resources and list out the problems associated with natural resources exploitation.

(i) How will you create awareness among people about natural resources ?

(j) How does soil erosion occur ? State your remedy for the same.

[Cont...

2023

Time :As in Programme

Full Marks : 80

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Fill in the blanks. 1x12

ଶୂନ୍ୟସ୍ଥାନ ପୂରଣ କର ।

a. The study of human population is called ____.
ମନୁଷ୍ୟ ଜନସଂଖ୍ୟା ପଠନକୁ ____ କୁହାଯାଏ ।

b. The influenza virus chiefly transmited by ____.
ଇନ୍‌ଫ୍ଲୁଏଞ୍ଜା ଭୂତାଣୁ ମୁଖ୍ୟତଃ ____ ଦ୍ୱାରା ସଞ୍ଚାରିତ ହୋଇଥାଏ ।

c. The daily atmospheric condition of an area is called as ____.
ଗୋଟିଏ ଅଞ୍ଚଳର ବାୟୁମଣ୍ଡଳର ଦୈନନ୍ଦିନ ଅବସ୍ଥାକୁ ____ କୁହାଯାଏ ।

d. The ____ remain at the base of a pyramid of energy.
ଶକ୍ତିର ପିରାମିଡ୍‌ରେ ତଳ ସ୍ତରରେ ____ମାନେ ଅବସ୍ଥାନ କରୁଛନ୍ତି ।

e. The chief contributor gases of acid rain are ____ and ____.
ଅମ୍ଳବର୍ଷାର ମୁଖ୍ୟ ବାଷ୍ପଗୁଡ଼ିକ ହେଲା ____ ଏବଂ ____ ।

f. The Water Act was enacted in the year of ____.
ଜଳ ପ୍ରଦୂଷଣ ଆଇନ ____ ମସିହାରେ ପ୍ରଣୟନ ହୋଇଥିଲା ।

g. Rhizobium remains symbiotic in the roots of ____ crops.
ରାଇଜୋବିଅମ୍ ବ୍ୟାକ୍ଟେରିଆ ____ ଗଛର ଚେରରେ ସହଜୀବୀ ଭାବରେ ସ୍ଥାପନ କରେ ।

h. The wildlife protection Act enacted in the year of ____.
ବନ୍ୟପ୍ରାଣୀ ସୁରକ୍ଷା ଆଇନ ____ ମସିହାରେ କାର୍ଯ୍ୟକାରୀ ହୋଇଥିଲା ।

i. Both fog and smoke form ____ in the atmosphere.
ବାୟୁମଣ୍ଡଳରେ ଧୂଆଁ ଓ କୁହୁଡ଼ି ମିଶ୍ରଣରେ ____ ସୃଷ୍ଟି ହୁଏ ।

(Turn Over)

j. The KYOTO protocol is about the reduction of ____.
କିୟୋଟୋ ପ୍ରୋଟୋକଲ୍/ମୁସାବିଦ୍ ____ର ହ୍ରାସ ବିଷୟରେ ଗଠିତ ହୋଇଥିଲା ।

k. The Chernobyl disaster is associated with ____ pollution.
ଚେର୍ନୋବିଲ ବିପର୍ଯ୍ୟୟ ____ ପ୍ରଦୂଷଣ ସହିତ ଜଡ଼ିତ ।

l. Ban on single use polythene restricts polyethene bags below ____ of thickness.
____ ଠାରୁ କମ୍ ମୋଟେଇ ଥିବା ଏକକ ବ୍ୟବହାର ପ୍ଲାଷ୍ଟିକ୍ ବ୍ୟବହାର ଉପରେ କଟକଣା ଅଛି ।

PART-II

2. Answer any eight of the following within two to three sentences each. 2x8
ନିମ୍ନଲିଖିତ ଯେକୌଣସି ଆଠଟିର ଉତ୍ତର ଦୁଇ ବା ତିନୋଟି ବାକ୍ୟରେ ଦିଅ ।

a. Sanitization
ବିଶୋଧନ

b. Food chain
ଖାଦ୍ୟ ଶୃଙ୍ଖଳ

c. Soil pollution
ମୃତ୍ତିକା ପ୍ରଦୂଷଣ

d. Earth summit
ବିଶ୍ୱ ଶିଖର ସମ୍ମିଳନୀ

e. Carbon foot print
ଅଙ୍ଗାର ପାଦଚିହ୍ନ

f. IMD
ଆଇଏମ୍‌ଡି

g. Survival skills during lightening
ବିଜୁଳି ମାରିବା ସମୟର ନୈପୁଣ୍ୟତା

h. Role of Revenue Department in flood management
ବନ୍ୟା ପରିଚାଳନାରେ ରାଜସ୍ୱ ବିଭାଗର ଭୂମିକା

i. Pandemic disease
ବିଶ୍ୱ ମହାମାରୀ

j. Sustainable development
ପରିପୋଷଣକାରୀ ବିକାଶ

PART-III

3. Answer any eight of the following within 75 words each. 3x8
ନିମ୍ନଲିଖିତ ଯେକୌଣସି ଆଠଟିର ଉତ୍ତର ୭୫ ଶବ୍ଦରେ ଦିଅ ।

a. Ecosysem
ପରିସଂସ୍ଥା

b. Water cycle
ଜଳଚକ୍ର

c. Sound pollution
ଶବ୍ଦ ପ୍ରଦୂଷଣ

d. Anthropogenic causes of global warming
ବିଶ୍ୱତାପନର ମନୁଷ୍ୟକୃତ କାରଣଗୁଡ଼ିକ

e. Flood disaster
ବନ୍ୟା ବିପର୍ଯ୍ୟୟ

f. Earthquake
ଭୂମିକମ୍ପ

g. Corporate Social Responsibility
ଶିଳ୍ପ ସଂସ୍ଥାମାନଙ୍କର ସାମାଜିକ ଦାୟିତ୍ୱବୋଧ

h. Balanced diet
ସନ୍ତୁଳିତ ଆହାର

i. Quarantine
କ୍ୱାରେନ୍‌ଟାଇନ୍

j. National Health Mission
ଜାତୀୟ ସ୍ୱାସ୍ଥ୍ୟ ମିଶନ

PART-IV

Answer all the following within 500 words each. 7x4
ନିମ୍ନଲିଖିତ ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ୫୦୦ ଶବ୍ଦରେ ଦିଅ ।

4. Describe the components and usefulness of atmosphere.
ବାୟୁମଣ୍ଡଳର ଉପାଦାନ ଓ ଉପକାରିତା ସମ୍ବନ୍ଧରେ ବର୍ଣ୍ଣନା କର ।

OR/କିମ୍ବା

Discuss the causes, effects and control measures of air pollution.
ବାୟୁ ପ୍ରଦୂଷଣର କାରଣ, ପ୍ରଭାବ ଏବଂ ନିୟନ୍ତ୍ରଣ ଉପାୟଗୁଡ଼ିକ ଆଲୋଚନା କର ।

5. Explain, in brief, the effects of population explosion and the methods adopted to control population growth.
ଜନସଂଖ୍ୟା ବିସ୍ଫୋରଣର ପ୍ରଭାବ ଏବଂ ଏହାକୁ ନିୟନ୍ତ୍ରଣ କରିବା ପାଇଁ ଅବଲମ୍ବନ ପଦ୍ଧତିଗୁଡ଼ିକ ସଂକ୍ଷେପରେ ବ୍ୟାଖ୍ୟା କର ।

OR/କିମ୍ବା

Discuss the different steps taken by government for a sustainable development.
ପରିପୋଷଣକାରୀ ବିକାଶ ପାଇଁ ସରକାର ନେଇଥିବା ପଦକ୍ଷେପଗୁଡ଼ିକ ଆଲୋଚନା କର ।

6. Discuss the organization, functions and a few success stories of NDRF or ODRAF.
NDRF କିମ୍ବା ODRAFର ସଙ୍ଗଠନ, କାର୍ଯ୍ୟ ଓ କେତୋଟି ସଫଳ କାହାଣୀ ଆଲୋଚନା କର ।

OR/କିମ୍ବା

Give an account of survival skills adopted during and post-disaster periods of cyclone and fire.
ଘୂର୍ଣ୍ଣିବାତ୍ୟା ଓ ଅଗ୍ନି ବିପର୍ଯ୍ୟୟରୁ ବଞ୍ଚିରହିବା ନୈପୁଣ୍ୟ ଏବଂ ଏହା ପରବର୍ତ୍ତୀ କାର୍ଯ୍ୟପନ୍ଥା ଉପରେ ରେଖାପାତ କର ।

7. Discuss the different approaches of life style management for maintaining a good health.
ଏକ ସୁନ୍ଦର ସୁସ୍ଥ ଜୀବନ ପାଇଁ ଆବଶ୍ୟକ ବିଭିନ୍ନ ଜୀବନଚର୍ଯ୍ୟା ପରିଚାଳନା ଉପରେ ଆଲୋଚନା କର ।

OR/କିମ୍ବା

Explain three non-communicable diseases with their causes and effects.
ତିନିଗୋଟି ଅଣ-ସଂକ୍ରାମକ ରୋଗର କାରଣ ଏବଂ ପ୍ରଭାବଗୁଡ଼ିକ ବ୍ୟାଖ୍ୟା କର ।

2024

Time :As in Programme

Full Marks : 100

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Answer all the questions. [1×10]

a) Name one secondary Air pollutant.

b) What is biodiversity?

c) Which type of disaster is earthquake classified as?

d) Who is the head of National Disaster Management Authority (NDMA)?

e) Name the Act related to the preservation of air quality in India.

f) What is the unit of noise pollution?

g) How can urban and industrial waste be managed effectively?

h) What is the term used to describe the interrelationship of individuals, species, and population in an ecosystem?

i) Name one ex-situ method of biodiversity conservation.

j) State one reason for conflicts over water resources.

PART-II

2. Answer all the questions in 50 words each. [2×9]

a) Name two mega-biodiversity countries in the World.

b) Write two methods for controlling human population?

c) Name a bio-geographic province of the world.

d) What do GHGs contribute to concerning the environment?

e) What is biodiversity Hotspots?

f) In which year ODRAF was established?

g) Write examples of Non-renewable sources of energy?

h) Which Act focuses on controlling and preserving air quality in the environment?

i) What is the term that describes the act of protecting endangered species within their natural habitats?

PART-III

3. Answer any eight of the following in 250 words each. [5×8]

a) Discuss the major types of environmental pollution and elaborate on their control measures.

b) Explain the concept of biodiversity with a focus on threats faced by biodiversity and the conservation measures required to protect endangered species.

c) Outline the different types of natural resources and associated problems, emphasizing issues related to water resources.

d) Discuss the institutional framework, preparedness measures, and community participation in disaster management.

e) Explore the social issues related to the environment, focusing on environmental ethics and the impact of climate change.

f) Explain the causes, effects, and control measures of soil pollution.

g) Explain urbanization and its effect on the society.

h) Differentiate between natural disasters and man-made disasters, providing examples of each type along with their causes and effects.

i) Explain the importance of public awareness in environmental studies.

j) Discuss the causes, effects, and control measures of water pollution.

PART-IV

4. Answer any four of the following in 800 words each. [8×4]

a) Define the term 'biodiversity' and explain the concept of hotspots of biodiversity with examples.

b) Discuss the causes and effects of air pollution, providing examples for each.

c) Explain the importance of public awareness in environmental studies and provide examples with success story.

d) Illustrate the role of stakeholders in disaster management and discuss how their participation can improve response and recovery efforts.

e) Identify the key components of the Disaster Management cycle and explain the significance of each phase in reducing the impact of disasters.

2018

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Group-A

1. (a) Define photochemical smog.

b) Explain cyclone management

c) How does earthqueak occurs.

d) What are the important aspects of sustainable development?

e) What are the important causes of climate change?

f) What is Green Hosue Effect?

g) Define population density?

h) What is full form of HIV & AIDS?

i) What are the causes of ozone layer depletion?

j) Define Lmmigration?

Group - B

2. a) Explain the four spheres of present above Earth surface.

b) Explain Nitrogen Cycle.

OR

a) Explain any Two :-

i) Carbon Cycle

ii) Ecology

iii) Ecosystem

3. a) What is Pollution? Explain causes and effects of Air Pollution.

b) Explain different type of Natural Disasters and write donw methods to manage these situations.

OR

a) Explain causes and effects of any two Polluctions.

i) Thermal Pollution

ii) Noise Pollution

iii) Soil Pollution

4. a) Explain Urbanization and how its affects to the environment?

b) Defien the terms like ‘Species’ & ‘Community”

OR

Explain different Communicable Diseases . Also describe its transmission methods and how to control such Diseases.

5. a) Explain diffeent Environemntal movements in India and also in Odisha.

OR

a) Explain followings

i) Central pollution Control Board.

ii) Role of Women in Environmental Movements.

6.a) What is Natural Resources? Explain different Natrual REsources and why do we need to conserve all the these REsources?

OR

b) Explain any TWo :-

i) Water Act

ii) The Wildlife Act

iii) Environmental Protection

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2022
Full Marks - 60
Time - As in the Programme
Sub: Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons
The figure in the right hand margin indicate marks
Answer All question.

Part-I
(Answer all questions)

1. Answer the following question with ONE word or fill in the blank.

a) _____and _____are two examples of greenhouse gases?

b) The lower part of atmosphere is called_____?

c) Presently, there are_____numbers of notified biosphere reserve in India?

d) _____is the macro and _____is the micro nutrient present in soil.

e) Harmful algal blooms and fish kills i the water bodies are the results of a process called_____

f) Which UN agency works for the welfare of children?

g) Who heads the central pollution control board (CPCB) meeting?

h) Name a key person linked to Narmada Bachao Andolan?

i) What is AIDS stands for?

j) _____are those resources which we are not extracting at present despite technological availability.

k) NDMA stands for_____

l) _____is an example of exnaustible resource.

Part-II

2. Answer any EIGHT questions within TWO or THREE sentences maximum

a) Define Ecological Pyramid?

b) What is genetic effect of nuclear radiation?

c) Write two effects of global warming?

d) What is the signficance of Red Data book?

e) What is mutualism in environmental science?

f) Write two objectives of SPCB?

\g) What is Buffer Zone?

h) Differentiate between Hazard and Disaster?

i) What are the causes of soil erosion?

j) Differentiate between epidemic and pandemic diseases?

Part-III

3. Answer any EIGHT questions within 75 words maximum

a) Explain the term “Ozoe Layer Depletion”?

b) Write on three scopes of environemntal study?

c) Define the term population density, and populatin distribution?

d) What are the features of K-species and R-species?

e) Differentiate between biotic and abiotic factors?

f) What are the powers of CPCB?

g) What are the major causes of population growth?

h) Differentiate between renewable and non-renewable resources?

i) Explain Air Act 1981?

j) Explain the terms BOD and COD in water sample?

Part-IV

Answer all within 500 words maximum

4.(a) Discuss causes, advantages, disadvantages and solution of Acid Rain?

OR

b) What are different segments and elements of environemnt, explain in brief? Write the name of any four environmental concerns presently we are facing?

5.a) What are the communicable diseases and non communicable diseases, explain with examples? What are the characteristics of communicable diseases?

OR

b) Explain the various causes of Urbanization? What are its effects on society? Write the solutions of urbanization?

6.a) Explain about different causes of environmental conflicts?Explain the role of women in environmental movements?

OR

b) Write a short note on Bishnoi Movement?

7. a) What are the purposes of wildlife conservation? What are the different threats to wildlife? Write two steps to be taken for wildlife conservation?

OR

b) Write one aspect of disaster management? Explain natural disaster management? Write a short note on effective way of natural disaster management.

***

2022

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Answer all the questions:

a) What is vector bome disease?

b) What is CPCB?

c) Which chemical used to kill pest in agriculture?

d) Jungle Bachao Andolan started from which state of India?

e) What is goal of water act and which year it was started?

f) Define BOD.

g) What is greenhouse gas?

h) Which layer of atmosphere protect earth from harmful UV ray?

2. Answer any EIGHT of the following questions:

a) Explain food chain with an example.

b) What is ecological pyramid?

c) Write notes on non-communicable disease with an example.

d) What is water borne dieseae?

e) What is the role of SPCB?

f) Write a short note about AIDS.

g) Write short note on Appiko movement.

h) What is ammonification?

i) Difference between renewable and non-renewable resources.

j) What is Ecology?

3. Answer any EIGHT of the following questions.

a) Define food web with an example.

b) Write short note on nitrogen cycle.

c) Discusss various layers of atmosphere.

d) Write the impact of urbanization on our society.

e) Write the impact of overpopulation.

f) What is Biodiversty ? Discuss about hte types of biodiversity.

g) What is chipko Movement?

h) What ae the role of women in environmental movement?

i) Explain forest as an ecosystem.

j) What are the laws of thermodynamics?

4. Answer any FOUR of the following questions.

a) Describe about structure and function of ecosystem

OR

Write the cause, effect and control of water pollution.

b) Write a detailed note about control method of population.

OR

Define natural disasters. Explain the impact of flood& its management.

c) Write the structure and function of central pollution control board.

OR

Write a note on different environmental movement in India.

d) Explain briefly about the wild life and its management. Discuss the procedure of conservation.

OR

Discuss different types of soil erosion and its conservation metod.

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2022

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Answer all the questions:

a) In Ecological Pyramid, Pyramid of Energy is always_____.

b) The process in which ammonia is converted into nitrite is called_____.

c) All population of a given area is called_____.

d) The birth rate of a population per unit area at a given time is called _____.

e) Malaria is a _____type of disease.

f) The movement of individuals from an area & return to the same area aferwards is called_____.

g) _____is the leader of Chipko Movement.

h) CPCB stands for_____.

i) Save Silent Valley Movement occurs in _____ state of India.

j) The Water Act enacted in the year_____.

k) Solar energy is a _____ type of natural resources.

l) An_____is a sudden shaking (vibration) of ground caused disturbances in the eart crust.

2. Answer any EIGHT of the following questions:

i) What is Food Chain? Define with example.

ii) Different between nitrification & de-nitrification.

iii) What is Pollutants? What is the full form of PAN?

iv) Who is the leader of Bishnoi Movement? What is the cause of Bishnoi movement?

v) What is communicable disease? Give two examples of water borne disease.

vi) What is the role of State Pollution Control Board?

vii) Difference between Renewable & Non-renewable resources.

viii) Write a note on Narmada Bachao Andolon.

ix) What is Biodiversity? Difference between in-Situ & Ex-Situ Conservation.

x) When the Air Act Established? What is its objectives?

3. Answer any EIGHT of the following questions

a) Write a note on Atmosphere.

b) Describe Carbon Cycle.

c) Control measures against soil pollution.

d) Give a brief note on Air Borne disease

e) What are the consequences of overpopulation?

f) Write a brief note on Appiko movement.

g) Write a note on role of women in Environment moverment.

h) What is Natrual disaster?What is the Behavioural response during & after the cyclone?

i) Write a note on Wild Life Protection Act.

j) Define Urbanization. Write two effects of Urbanization.

4. Answer any FOUR of the following questions.

a) Write a note on structure & function of Ecosystem.

OR

Write a detailed notes on causes effect & measures of control of Air-Pollution.

b) What are Communicable Diseases?

OR

Write a note on control methods of population.

c) Write a note on different environment movements in Odisha.

OR

Write the structure & function of Central Pollution Control Board.

d) Write a note on management & conservation of soil.

OR

What are natural disasters ? Write about flood & its management.

***

2020

Full Marks - 50

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Group-A

(Answer all questions. Each carries 2 marks)

1. (i) What is Biosphere?

ii) How Lithosphere, Hydrosphere & Atmosphere interact Biosphere?

iii) What is Green Marketing?

iv) How Eco Mark helpful?

v) What is Plastic Waste?

vi) Describe the categories of Plastic & its Recovery.

vii) How Ozone layer depletion causes?

viii) Give the difference between GIS, GPS & RS.

ix) Define the term Eco labelling.

x) What is Green Technology?

Group -B

(Answer all questions. Each Carries 12 marks)

2.(a) What is Energy REsoruces? Explain about the Non Renewable resoruces & types.

b) What is Renewable resoruces? Why alternative Renewable soruces need to the environment?

OR

a) How Land use planing to the environemnt. Describe Land Resources.

b) Explain about Nuclear Energy Resources

3.a) Write the 12 pinciples of Green Chemistry?

b) Explain about Iso certification for the substances.

OR

a) How Green computing design helpful for the Environment?

b) Explain the causes of climate change? How Global warmign resonsible for it?

4.a) Describe the States of EIA?

b) What is Solid Waste? Explain abot the E-Waste sources, Causes & Management.

OR

a) What is EIA? Explain its Roles & objectives.

Write the different between EIA, EIS & EA.

b) Describe about the Environmental Protection Act. 1986.

5. Write short notes on : (Any two)

i) Water Act

ii) Air Act

iii) Wildlife Protection Act.

***

2020

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All questions including Q.No-1.

1. Answer the following questions.

a) What are the control methods of population?

b) What are the effects of radiation pollution?

c) What is soil pollution?

d) Define wild life management.

e) What is radiation pollution?

f) Hoiw does nitrogen return to the soil?

g) How can land pollution be prevented?

h) What is soil erosion?

i) What is biogeochemical cycle?

j) What are the compositions of air?

2. Explain various components of ecosytem in details.

OR

Discuss various components of environment and layers of each component with suitable diagram.

3. Define urbanization. Discuss its effect on the society.

OR

Discuss different sources of water pollution. Explain different measures to control over water pollution.

4. What is noise pollution? Discuss different sources of noise pollution? What are the effects of noise pollution?

OR

What are communicable diseases? Write down its transmission methods. How it is different from non-communicable diseases.

5. Write down the role of Central and State Pollution Control Board in details.

OR

Discuss various environment movements in India for safety of the environment. Also explain how women contribute towards such movement.

6. Write down different steps taken by the government for management and conservation of wild life.

OR

Write short notes. (Answer any two)

a) Wild life Act, 1972

b) Environment Protection

c) Conservation of natural resources

d) Management of natural disaster

***

2019

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Group-A

1. Define each of the following in ONE sentence only.

i) Ecology

ii) Pollution

iii) Disaster

iv) Disease

v) Urbanization

vi) NItrogen Cycle

vii) Conservation

viii) Wildlife

ix) Biosphere

x) Atmosphere

Group-B

2. Give an account of carbon cycle with diagrm.

OR

Explain hydrosphere with its importance.

3. Describe the causes and control measures of soil pollution.

OR

Enlist the management during and after cyclone.

4. State the control measures of population.

OR

Give an account of non-communicable diseases.

5. Discuss the role of women in environmental movements.

OR

Mention the role of State Pollution Control Board.

6. Narrate the conservation of wildlife in detail.

OR

Give an account of conservation of forest with its importance.

***

2022

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

PART-I

1. Answer in one sentence

(a) Give one example of manmade disaster.

b) Give one example of Natural Disaster.

c) Cholera is example of what types of disease?

d) What are the mode of communication to warn people during Natural Disaster.

e) What is the Green House Gases?

f) What is the importance of Ozone Layer?

g) Give one soical cause behind the population growth in India.

h) Give one economic cause responsible for population growth.

i) What was the main objective of the Environment protection Act-1986?

j) What step can be taken to prevent soil erosion?

k) What types of forest has the maximum biodiversity?

l) What is meant by life style diseases?

PART-II

2. Answer any eight of the following within two to three sentences each

a) What is light pollution?

b) What is the necessity of Quarantine?

c) What is Hydrosphere?

d) What are the importance of The Wild Life Protection Act-1972?

e) What cause Tsunami?

f) What is Vehicular pollution?

g) What is the significance of environment?

h) What is nitrification?

i) HOw to protect one from lighting?

j) What is Immunity?

PART-III

3. Answer any eight of the following within 75 words each.

a. Biosphere

b. Ecosystem

c. Sound pollution

d. Community

e. Global warming

f. Sustainable Development

g. Man-made Disaster

h. National Disaster Management Authority

i. Preventive measures of Covid-19

j. HIV and AIDs

k. Methods to control population growth

PART-IV

Answer the following within 500 words each.

4. Explain the signficance of carbon cycle.

OR

Discuss the causes, effects and measures to control industrial pollution.

5. What is climate change?Explain its causes & effects on environment.

OR

Explain the effects of increasign urbanisation on society and growth

6. Give a brief description of types of disasters and there effects.

OR

What are the various institutions and their role in disaster management? Explain.

7. Give an accoutn of communicable diseases and their transmission.

OR

Explain the role of different sector in managing Health Disaster.

***

2021

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

1. Fill in the blanks.

i) Carbon dioxide, methane, nitrous, oxide and chlorofluorocarbon are together called _____gases.

ii) _____proposed the term “ecosystem”.

iii) _____is defined as group of individuals of any one kind of organism.

iv) The port of the earth where differed ecosystems operate is called the_____

v) The transfer of food energy from plant sources through a service of organization in an ecosystem is known as_____

vi) When sulpher dioxide and nitrogen oxides reacts in the atmosphere if forms _____ rain.

vii) Unwanted sound is called _____

viii) Increased radiation from atomic bomb blasts or radioactive wastes are hazardous, because such radiations are called_____ radiation.

ix) An_____is a sudden shaking (vibrations) of ground caused by disturbances in the earth’crust.

x) The diseases that are transferred from one person to another is called_____ diseaes.

xi) In ecosystem the living organism are placed in different levels called _____level.

xii) The plants synthesize/prepare their own food, so they are called_____

2. Answer any EIGHT of the following

i) What is soil erosion and what are its effect?

ii) Define ecosystem and this termwas given whom?

iii) What are the causes of air pollution?

iv) Give difference food chain and food web.

v) Define atmosphere

vi) When was building protection act established? Write its objective.

vii) When was the water act established and what was its objective.

viii) Write down the role of central pollution control boards.

ix) Define pollutants? How many ways they are available?

x) What is photochemical smong?

3. Answer any EIGHT of the following:

i) Write a note on hydrosphere.

ii) Give some points for conservation of soil.

iii) Write some points on flood.

iv) Write the functions of State Pollution Control Board.

v) Define urbanization and its effects.

vi) What are natural resoruces and its types.

vii) How resources can be conserved?

viii) Write a note on carbon cycle.

ix) What are the components of lithospehere?

x) What are the causes and effects of radiation pollution?

4. Answer any FOUR of the following

i) What do you mean by ecosystem? What are the different components of ecosystem?Mention in detail

ii) What are communicable diseases? Mention some communicable diseases.

iii) Write notes on different environmental movements in India.

iv) Write notes on Environment protection. Discuss various acts related to Environmental Protection.

v) What are natural disasters? Write some of the disaster and their management.

vi) Write a detailed notes on causes, effect and measures of control of air pollution.

vii) Write a note on management and conservaiton of wildlife.

***

2021

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Part-I

A. Define the following:

1. Ecological pyramid
2. Chipko movement
3. SPCB
4. CNG
5. CPCB
6. Noise Pollution
7. Sustainable Development
8. Nuclear Hazard
9. Water Conservation
10. Biodiversity
11. Child Welfare
12. Red Data Book

Part-II

B. Answer the following questions

1. What is the causes of soil erosion?
2. Write two effects of airpollution?
3. Write scope of the environment?
4. What is the meanign of K-selected species?
5. What do you mean Communicable diseases?Give the two examples.
6. What are the main objectives of State PollutionControl Board?
7. What is the difference between Hazard & Disaster?
8. Write the name of two Non Communicable diseases.
9. What is the main objective of Wild life Protection Act 1972?
10. What are the causes of Acid Rain?

Part-III

C. Answer the following questions in brief (any 8)

1. Define the term population density
2. Define the term population distribution?
3. What is a Eco-system?
4. Differentiate between Biotic factors & Abioticfactors.

5. Differentiate between communicable diseases and non -communicable diseases.
6. Whatisacommunity?
7. How does radiationcause Pollution? Write two examples.
8. What do you mean by Speciation & Competition of Individuals?
9. What are the objectives of CPCB?
10. What are natural resources?

Part-IV

D. Answer the following questions

1. Describe broadly the constituents of atmosphere and atmosphere structure? Mention which major gasses are present in different levels of atmosphere?

   OR

   What are different segments and elements of environment? Explain in brief.

2. Explainvarious causes of Urbanization and its effects on society? How does population affect ecology?

   OR

   Explain different modes of contact of communicable diseases and non-communicable diseases? What are the steps to betaken prevent disease transmission?

3. What are the root causes of environmental movements? What are different types of environmental movements? Explain the role of women in environmental movements?

   OR

   Explain Functions and powers of CPCB?

4. Classify natural resources? What are the causes of depletion of natural resources?

   OR

   What is natural disaster and classify them? What are the aspects of disaster management? Write a short note on effective way of natural disaster management?

***

2021

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicate marks

Answer All question.

Part - I

1. a. Fill in the blanks with word(s)

a) World Environment Day is observed every year on _____

b) Silent Valley is situated in the state of _____

c) Maximum biodiversity is found in the _____ forests.

d) _____is the major constituent of biogas.

e) For measuring intensity of earthquake _____ scale is used

f) Social erosion can be prevented by _____

g) Cholera is a _____ type of disease

h) Generic name of man is _____

i) _____ is the national animal of India.

j) Coal is a _____ resoruce

k) _____ is a fossil fuel

l) Wildlife protection Act was enacted in the year _____

PART-II

2. Answer any eight questions, each within two to three sentence

(a) Food chain

(b) Biosphere

c) Contact Tracing

d) Mortality

e) Hydrosphere

f) Renewable Resource

g) Pandemic disease

h) Quarantine

i) Tsunami

j) Social afforestation

PART-III

3. Answer any eight questions, each within 75 words

a) Troposphere

b) Threats to biodiversity

c) Effect of yoga on Covid patients

d) Radiation pollution

e) The Wildlife Protection Act

f) Renewable energy

g) Natural Disaster management

h) Explain 3R principle

i) Ozone layer depletion

j) Corporate Social Responsibility

k) Chipko Movement

PART-IV

Answer any four questions, each within 500 words

4. Describe the nitrogen cycel and its significance.

OR

Discuss the causes, effects and measures to control water pollution.

5. What is sustainable development? Discuss the steps taken by government towards sustainable development.

OR

Discuss the causes of population growth and different methods adopted to control population.

6. Explain global warmign with its causes and effects.

OR

Discuss the preparedness measures taken by government for disaster management.

7. Discuss the different preventive measure adopted during Covid-19 pandemic.

OR

Briefly discuss on water borne diseases.

8. Discuss the effects of urbanisation on the society and methods of urban wastes managment.

OR

Write notes on :

a) NDRF b) Communicable disease

9. Discuss environmental laws.

OR

Discuss the characteristics of a community.

***

2019
SUB-EVS
BSc. ITM

1. Write the answer of the flowign questions.

a) Define food chain.

b) Write down the biotic component of an ecosystem

c) Defien the composition of air.

d) Defien noise pollution

e) Define biodiversity.

f) Give two examples of control method of population.

g) Write down the major roles of State Pollution Control Board.

h) What is objective of Chipko movement?

i) What is air pollution?

j) Define wild life management.

2. Write down the structure and function of ecosystem.

OR

Write notes on:

a) Atmosphere

b) Nitrogen cycle

3. Define water pollution. Write down the sources of water pollution. Explain different measures to control water pollution.

OR

Write notes on :

a) Flood and its management

b) Thermal Pollution

4. Define what are communicable diseases? Write down its transmisson methods.

OR

Explain the following terms in detail.

a) Urbanization

b) Population Growth Curve

5. Write down the role of Central Pollution Control Board in details

OR

a) Appiko Movement

b) Role of Women in Environmental Movements

6. Write down the conservation of wild life and discuss its management methods.

OR

a) Wild Life Act

b) Soil Erosion and conservation

OR

Give an account on water pollution with all its effect, causes and measures to control it

(b) What is population ? Describe all its characteristics.

OR

Write a detailed note on urbanisation and its impact.

(c) Give a detailed note on the major environmental movements in India

OR

Write a note on role of women in environmental movements.

(d) Write a note on different types of environmental laws of our country.

OR

What do you mean by disaster ? Give a note on the preparedness before and after flood and earthquake.

2023

Full Marks - 80

Time - As in the Programme

The figure in the right hand margin indicates marks.

Answer All questions

1. Answer all the Questions. [1 × 12 =12

(a) Write the full form of SPCB ?

(b) Who first use the term 'ecosystem' ?

(c) The living component of ecosystem us called _____.

(d) Which layer in the atmosphere protects the living organism from harmful radiation of the sun ?

(e) The Chipko movement started in which village of Uttar Pradesh ?

(f) In which year, the water Act was started?

(g) Write an example of in-situ conservation.

(h) _____ is the aggregation or arrangement of individual in a population.

(i) _____ means exit of individual in a group of population.

(j) _____ is the number of offspring produced per female per unit time.

(k) In which state of India, Silent valley movement was started ?

(l) _____ is the sudden shaking of ground caused in the Earth's crust.

2. Answer any eight of the following questions. [2 × 8=16

(a) What do you mean by biogeochemical cycle ?

(b) Define food chain with examples

(c) What was the aim of NARMADA BACCHAO ANDOLAN ?

(d) What is an earthquake ?

(e) What are pollutants ?

(f) Define Trophic level.

(g) What is pollution ? Write name some of the environmental pollution.

(h) What do you mean by non- communicable diseases give some examples

(i) Define Denitrification.

(j) What was the objectives of Water Act ?

[Cont...

3. Answer any eight of the following questions. [3 × 8=24

(a) Describe the steps of nitrogen cycle.

(b) Write down the Control measures of noise pollution.

(c) Write a note on Appiko movement.

(d) Differentiate between biotic and abiotic component of ecosystem.

(e) Write a note on consumers of ecosystem.

(f) What is community ? Write 3 characteristics of community.

(g) Write a note on water and vector borne diseases.

(h) Write some steps that should be taken after the cyclone.

(i) Differentiate between renewable and non-renewable resources.

(j) Define urbanization. Write two impacts of urbanization.

4. Answer any four of the following questions. [7 × 4=28

(a) What is ecosystem ? Describe it in details.

[Cont...

a. 0,400

b. 1,10

c. 2,100

d. 3,420

e. 4,95

Also calculate the physical address if no trap is produced.

7. Discuss different file protection methods.

OR

Explain the following :

a. File system mounting

b. Direct Access method

2025

Time :As in Programme

Full Marks : 60

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Answer all Questions. 1x8

a. What is a system call in operating system ?

b. What are open-source system ?

c. Define IO bound process.

d. Define Thread.

e. What is IPC? Give examples.

f. Give 2 examples of non-preemptable resource.

g. SJF is a _____ algorithm.

h. _____ graph is used in deadlock detection if all the resources have only single instance.

PART-II

2. Answer any eight within two to three sentences 1.5x8

a. Define monitor in operating System.

b. Give examples of system calls used for different file operation.

c. What is contiguous memory allocation?

d. Define page replacement algorithm.

e. State the different types of schedulers used by a operating system.

f. Define virtual machine.

g. An application program can directly access computer hardware, True or False. Justify your answer.

h. Define MMU.

i. What is a file system. Give example

j. What is segmentation ?

PART-III

3. Answer any eight of the following (in maximum 75 words.) 2x8

a. Differentiate between physical and logical address space.

b. State the contents of a PCB.

c. State the types of queue used in process management?

d. What criteria are used for CPU scheduling?

e. Discuss context switching.

f. Differentiate between program and process.

g. Define Thrashing.

h. Discuss sequential file access methods.

i. What is a file system? Give example.

j. What is swapping ? Which OS program performs swapping ?

PART-IV

Answer within 500 words each. 6x4

4. What are the functionalities of Operating System ?

OR

State and explain the structures of operating system ?

5. Consider the set of 6 processes whose arrival time and burst time are given below -

Process ID	Arrival time	Burst time
P1	0	7
P2	1	5
P3	2	3
P4	3	1
P5	4	2
P6	5	1

If the CPU scheduling policy is SJF, then calculate the average waiting time and average turn around time. Also draw the Gantt Chart.

OR

Define IPC. Give examples of IPC systems.

6. What is paging. Differentiate between paging and segmentation.

OR

Consider the following segment table -

Segment No.	Base	Length
0	1000	700
1	1300	14
2	90	100
3	1303	680
4	2206	90

Which of the following logical address will produce trap addressing error ?

2024

Time :As in Programme

Full Marks : 60

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Answer all Questions. 1x8

   a. Operating System is a ____ software.

   b. Which program locates the kernel and loads into the main memory.

   c. ____ is the heart of UNIX operating system.

   d. Virtual Memory uses ____ Memory.

   e. SJF algorithm is stands for ____.

   f. If a process does not get the processor time for a long duration. This condition is ____.

   g. ____ system call is used to create a separate and duplicate process.

   h. ____ acts as a command interpreter in UNIX operating system.

PART-II

2. Answer any eight within two to three sentences 1.5x8

   a. What is operating system ?

   b. What is masking ?

c. What is SPOOLing ?

d. What is Be-Lady's anomaly ?

e. what is deadlock ?

f. Define thrashing.

g. What is locality of reference ?

h. Define safe state.

i. Briefly describe sleeping - barber problem.

j. What is segmentation ?

k. Write the use of process control block.

l. What is fragmentation ?

PART-III

3. Answer any eight of the following (in maximum 75 words.) 2x8

a. State the little formula and explain its usages.

b. What is Semaphore ? Briefly explain its usage.

c. State Bounded-Buffer problem.

d. State the necessary conditions of deadlock.

e. What is paging ? Explain the basic methods of paging implementation.

f. Distinguish between internal and external fragmentation.

g. Why are segmentation and paging sometimes combined into one scheme.

h. What is demand paging ? Explain the role of virtual memory and demand paging.

i. Define shared lock and exclusive lock and explain file-locking mechanism.

j. What is Hash table ? How collision creates problem in directory implementation ?

PART-IV

Answer within 500 words each. 6x4

4. Differentiate between multiprogramming and multi-tasking operating system.

OR

What is System call ? Describe various system calls with suitable example.

5. Define critical section. What are the requirements to solve critical - section problem ?

OR

Differentiate between process and thread. Explain different thread implementation mechanism.

6. Consider the following page reference string 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 for a memory with three frames. How many page fault would occur for following replacement algorithm and find the optimized one.

a. LRU replacement

b. FIFO replacement

OR

Differentiate between physical and logical address. How multilevel paging is useful in logical address space ?

7. What is virtual memory ? How virtual memory is useful in demand paging ?

OR

Explain optimal page replacement algorithm and justify this algorithm is not suffered from Belady's anomaly.

2023

Time :As in Programme

Full Marks : 60

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Fill in the blanks. 1x8
   a. An operating system is a ____.
   b. SPOOL is an acronym for ____.
   c. ____ is a logical extension of multiprogramming.
   d. FORK is ____.
   e. ____ threads are supported directly by the operating system.
   f. A process utilizes a resource in the sequence ____.
   g. The solution of internal fragmentation is ____.
   h. Disk scheduling involves deciding ____.

PART-II

2. Answer any eight within two to three sentences. 1.5x8
   a. Explain real time operating system ?
   b. Write the advantages of batch processing system over serial processing system.
   c. Why a thread is called a light-weight process ?
   d. What is interprocess communication ?
   e. Explain deadlock.
   f. Distinguish between logical and physical addressing.
   g. Write some uses of relocation register.
   h. Explain associative memory ?

(Turn Over)

i. What is DMA ?

j. Explain file attributes.

PART-III

3. Answer any eight of the following (in maximum 75 words.) 2x8

a. Explain distributed operating system ?

b. Write four functions of operating system.

c. Explain Be-Lady's anomaly ?

d. Compare the concurrency and parallelism.

e. What is locality of reference ?

f. Write the basic use of process control block.

g. Define thrashing.

h. Distinguish between paging and segmentation.

i. Explain fragmentation ?

j. Distinguish between blocking and non-blocking I/0.

PART-IV

Answer within 500 words each. 6x4

4. "Operating System can be considered as resource allocator." Explain

OR

Describe multiprogramming and multi-tasking operating system.

5. What is process management ? Explain Inter-process communication.

OR

Explain different deadlock detection techniques.

6. What is virtual memory ? How virtual memory is useful in demand paging.

OR

Explain Memory Management Stratergies like Swapping and Paging.

7. Describe file system concept and file system mounting.

OR

Explain File Sharing and File Protection.

2023

Time :As in Programme

Full Marks : 60

The figures in the right-hand margin indicate marks.

*Answer **all** questions.*

PART-I

1. Answer the following questions. 1x8
   a. Bitmap is a collection of ____ that describes an image.
   b. ____ and ____ are examples of any 2 input devices.
   c. DDA stands for ____.
   d. What is aspect ratio ?
   e. ____ plane is used of 2D transformation.
   f. ____ types of translation are present in computer graphics.
   g. Clipping is used for ____ in computer graphics.
   h. The Cohen Sutherland algorithm divides 2D area into ____ regions.

PART-II

2. Answer any eight within two to three sentences. 1.5x8
   a. What is resolution ?
   b. List any 3 display devices.
   c. Discuss any 3 applications of computer graphics.
   d. Give the matrix representation for 2D rotation.
   e. What is shear transformation ?
   f. Write down any 2 line attributes ?
   g. What is B-spline curve ?

h. Discuss the concept of Vanishing Points.

i. What is view plane ?

j. What is point clipping ?

PART-III

3. Answer any eight of the following (in maximum 75 words.) 2x8

a. Explain random scan system.

b. What is reflection transformation ?

c. List hidden edge surface remoral techniques ?

d. What is aliasing and antialiasing ?

e. What is scan line algorithm ?

f. Discuss boundary fill algorithm ?

g. Discuss some important properties of Bezier curve.

h. What is 3D rotation ?

i. What is 2D viewing transformation ?

j. Differentiate between view port and window ?

PART-IV

Answer within 500 words each. 6x4

4. Describe computer graphics and its applications.

OR

Discuss about raster scan system ?

5. Explain any 2 line drawing algorithms briefly.

OR

Explain any one area filling technique.

6. Explain 2D scaling with an example.

OR

What do you mean by 3D transformation ?

7. Explain about 2D viewing ?

OR

Explain, in brief, about line clipping algorithm.

6. Explain Bankers algorithm with an example.

OR

Calculate hit and miss using page replacement policies LRU and FIFO :

0, 4, 3, 2, 1, 4, 6, 3, 0, 8, 9, 3, 5.

7.(a) What are the typical operations that can be performed on a file. Discuss each one them.

OR

(b) List and briefly explain file allocation method.

IV - S - BCA - CC - 8 - (OPERATING SYSTEMS)

IV - S - BCA - CC - 8 - (OPERATING SYSTEMS)

2022

Full Marks - 60

Time - As in the Programme

The figure in the right hand margin indicate marks.

Answer ALL questions.

Group - A

1. Answer all questions : [8 x 1

(a) DMA stands for _____.

(b) Open() system call is used for _____.

(c) FCFS stands for _____.

(d) IPC stands for _____.

(e) _____ is used for OS to store the information about process.

(f) Paging is a _____ memory allocation method.

(g) File can be organized in _____ & _____.

(h) A stack is a Data structure which works on _____ property.

Group – B

2. Answer any EIGHT : [8 x 1.5

(a) What is the difference between process and program ?

[P.T.O...

(b) Define system software with examples.

(c) State the necessary conditions behind the deadlock.

(d) What is a Thread ?

(e) Discuss advantages of fragmentation.

(f) What is the use of paging in operating system ?

(g) Differentiate between logical address space and physical address space.

(h) What is Kernel ?

(i) Define Semaphore.

(j) What are the merits and demerits of round robin algorithm.

Group – C

3. Answer any EIGHT : [8 x 2

(a) Write the structure of an operating system.

(b) Differentiate between batch processing and multi programming.

(c) Define real time operating system.

(d) Differentiate between long term scheduler and short term scheduler.

(e) What is Thrashing ?

(f) Mention the methods used to handle deadlock.

[Cont...

(g) Explain resource allocation graph with diagram.

(h) What is demand paging ?

(i) Discuss advantages of sequential access method over random access method.

(j) List different types of file ?

Group – D

Answer all questions : [4 x 6

4. Explain in detail the functions of an operating system.

OR

Explain how the process is created when program is an execution.

5.

Process	Burst time	Arrival time
P1	5	0
P2	3	1
P3	7	3
P4	1	4

Implement the SJF (Preemptive) scheduling. Draw the Gantt chart. Also calculate the average waiting time.

OR

What is Process Management ? Explain various states of process with neat diagram.

[Cont...

IV - S - B.Sc. (ITM) - Core - 10 -
(Operating System) - (NC)

2023

Full Marks - 60

Time - As in the Programme

The figures in the right hand margin indicate marks.
Answer ALL questions.

1. Answer all the questions : [1 x 8 = 8

(a) What do you mean by multitasking ?

(b) Define scheduler and dispatcher.

(c) How to differentiate between a process and a program in Operating System ?

(d) What is program counter ?

(e) Define Swapping.

(f) What is Semaphore ?

(g) Define demand paging.

(h) What do you mean by fragmentation ?

2. Answer any EIGHT of the following questions : [1.5 x 8 = 12

(a) What is convoy effect ?

(b) Give the definition of segmentation.

(c) Which attributes are considered while designing the file structure ?

[Cont...

(d) When deadlock occur ?
(e) What is demand paging ?
(f) What is the difference between logical and physical address ?
(g) When does thrashing occur ?
(h) Differentiate between scheduler and dispatcher.
(i) What is virtual memory ?
(j) What is context switching ?

3. Answer any EIGHT of the following questions : [2 x 8 = 16

(a) What is preemptive and non-preemptive scheduling.
(b) Explain RAG.
(c) What is process synchronization ?
(d) Explain producer-consumer problem.
(e) What is critical-section problem ?
(f) Explain the concept of compaction.
(g) What is PCB ?
(h) Define throughput, turnaround time and waiting time.
(i) What do you mean by system call ?
(j) Discuss the concept of first fit, best fit and worst fit.

4. Answer any FOUR of the following questions : [6 x 4 = 24

(a) Briefly explain the services and function of Operating System.

[Cont...

OR

What is Operating System ? Explain different types of Operating Systems.

(b) Find the average waiting time and Turnaround time of the following process p_0, p_1, p_2, p_3, p_4 with arrival time 0, 2, 3, 6, 8 and burst time 3, 6, 4, 5, 2 using SJF.

OR

What do you mean by process ? Explain the process state diagram.

(c) Briefly explain the concept of paging.

OR

Solve the following using LRU with frame size -4. Find the percentage of page hit and page miss.

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1.

(d) What is File ? Explain the file system concept.

OR

What is the layered structure of file. Briefly explain various operations on file.

(i) The position vectors of the points A, B, C, D are respectively $2\hat{i}+\hat{j}-\hat{k}, \hat{t}+\hat{j}+\hat{k}$, $\hat{t}-2\hat{j}+3\hat{k}$ and $3\hat{i}-\hat{j}+2\hat{k}$, then evaluate $\overline{AB}\left(\overline{AC}\times\overline{AD}\right)$.

(j) The position of an object moving in space is given by $\overrightarrow{R(t)} = e^{-t}\cos t\,\hat{i} + e^{-t}\sin\hat{j} + e^{-t}\hat{k}$

Part - IV

Answer any four of the following Questions in 800 words each. [8 × 4=32

4. If x = sint, y= sinpt, prove that $\left(1-x^2\right)\frac{d^2y}{dx^2} - x\frac{dy}{dx} + p^2y = 0$

5. Find the nth derivative of $y = \tan^{-1}\left(\frac{1+x}{1-x}\right)$.

6. Find the range of value of x for which $y = x^4 - 6x^3 + 12x^2 + 5x + 7$ is concave upward or downward. Also find its point of inflection.

7. Find all horizontal asymptotes to the function $f(x) = \left(\frac{x+3}{x+2}\right)^{2x}$ by using L' Hospital's rule.

8. Find the volume of the tetrahedron with vertices P(-1,2,0), Q(2,1,-3), R(1,0,1) ,S(3,-2,3).

2025

Full Marks - 100

Time - As in the Programme

The figure in the right-hand margin indicates marks

Answer all questions

Part - I

1. Answer the answer of following Questions. [1 × 10 =10

(a) Find the asymptotes parallel to the co-ordinate axes of the curve $x^2y^2 = 9(x^2 + y^2)$.

(b) Find the value of integral $\int_0^{\frac{\pi}{2}} cos^9 x dx$

(c) Evaluate $\lim_{x\to 0}\left(\frac{2x + 2x\cos x^2}{2x + 3x^2}\right)$.

(d) Write behaviour of hyperbolic functions.

(e) What is value of the integral $\int \frac{(1+x)e^x}{(2+x)^2}\,dx$?

(f) Determine volume of the solid obtained when the region enclosed by the curve $x = \sqrt{y}$ and $x = \frac{y}{4}$ is revolved about x-axis.

(g) The area of revolution about y-axis of function $f(y) \geq 0$ is _____.

[Cont...

(h) Let $\overrightarrow{F(t)} = 2t\hat{i} - 5\hat{j} + t^2\hat{k}$ and $\overrightarrow{G(t)} = (\sin t) + e^t j$,Then find $\overrightarrow{F(t)}.\overrightarrow{G(t)}$.

(i) Find tangent vector of the given vector function = + $\overrightarrow{F(t)} = t^2\hat{i} + (\cos t)\hat{j} + (t^2\cos t)\hat{k}$ at t = 0 and $t = \frac{\pi}{2}$.

Part - II

2. Answer the following in 50 words each. [2 × 9=18

(a) Find the points of inflection for the function f defined by $f(x) = x^4 + 4x^3 - 18x^2 + 9x - 3$

(b) Find the asymptote of the cubic curve $x^3 + y^3 - 3axy = 0$

(c) Express the integral du entirely in terms of $\tanh^{-1}u$.

(d) Find the eccentricity and distance from the pole to the directrix of the curve

$$r = \frac{4}{2 - 3\sin\theta}$$

(e) Examine for concavity, convexity and point of inflection of the function $f(x) = x^3$

(f) Find the equation of the hyperbolic spiral $r\theta = a$.

(g) Find the asymptote parallel to neither axes for the curve $y = x + \frac{1}{x}$

[Cont...

(h) Evaluate $\int_0^1 xe^{-\sqrt{x}}\,dx$ using reduction formula.

(i) Find the length of the vector function $\overrightarrow{R(t)} = \cos t\hat{i} + (\sin t)\hat{j} + t\hat{k}$ from t = 0 to $t = \pi$.

Part - III

3. Answer any eight questions of the following in 250words each. [5 × 8=40

(a) Trace the curve of the polar curve $r = a(1 - \cos\theta)$.

(b) Evaluate $\lim_{x\to 1}\frac{(x-1)\sin(x-1)}{1-\cos(x-1)}$ using L' Hospital's rule.

(c) Evaluate $\int \cos ec^8 x\,dx$ by reduction formula.

(d) Apply Leibnitz rule to find y_4 if $y = x^4\cos x$.

(e) Find the asymptotes of the curve $x^3 - x^2y - xy^2 + y^3 - x^2 + y^2 - 10x - 2y + 1 = 0$.

(f) If $y = \tan^{-1}x$, then prove that $(1 + x^2)y_2 + 2xy_1 = 0$.

(g) Find the surface of the formed by the revolution about x-axis of the loop of the curve

$$x = t^2, y = t - \frac{t^3}{3}.$$

(h) Sketch the graph of hyperbola $\frac{(y-3)^2}{9} - \frac{(x-4)^2}{25} = 1$.

[Cont...

I - S - B.Sc. - (ITM) - P - AEC - I - (Hindi) - (R)

2025

Full Marks - 100

Time - As in the Programme

The figure in the right-hand margin indicates marks

Answer all questions

'क' - विभाग

1. निम्निलिखित प्रश्नों का उत्तर १ या २ शब्दों में दीजिये । : [1×10

(क) प्रयोजमुलक हिंदी किसे कहते हैं ?

(ख) पल्लवन को हिंदी में क्या कहते हैं ?

(ग) कौन हमारे हृदय की भावनाओं को खोल कर रख देते हैं ?

(घ) भारत में पारिभाषिक शब्दावली का प्रारंभ किसके शासनकाल में हुआ ?

(ङ) Notification का हिंदी शब्द क्या है ?

(च) Computer शब्द का पूरा नाम क्या है ?

(छ) कंप्यूटर के जनक कौन हैं ?

(ज) डॉ. भोलनाथ तिवारी हिंदी के मुख्य कितने भेद मानते हैं ?

(झ) हिंदी दिवस कब मनाया जाता है ?

(ञ) संपर्क भाषा को अंग्रेजी में क्या कहते हैं ?

[Cont...

'ख' - विभाग

2. किन्ही ९ प्रश्नों का उत्तर १-२ वाक्यों में दीजिए । [2×9

(क) प्रयोजनमूलक हिंदी की किसी एक विशेषता बताइए ।

(ख) संविधान सभा की प्रथम बैठक कब हुई और उसके अधक्ष्य कौन थे ?

(ग) सरकारी पत्र और अर्ध सरकारी पत्र में क्या अंतर है ?

(घ) संसदीय राजभाषा समिति क्या है ?

(ङ) Lowest Quotations may be accepted का हिंदी अनुवाद क्या है ?

(च) आवश्यक संशोधन कर लिया जाए का अंग्रेजी अनुवाद क्या है ?

(छ) शब्द संसाधन किसे कहते हैं ?

(ज) व्यावसायिक पत्र में कौन कौन से पत्र आते हैं ?

(झ) मुंशी आयंगर फार्मूला क्या है ?

(ञ) प्रयोजमुलक हिंदी परिभाषा दीजिए ।

(ट) नेटवर्क किसे कहते हैं ?

'ग' - विभाग

3. किन्हीं ८ प्रश्नों का उत्तर २०० शब्दों में दीजिये : [5×8

(क) टिप्पण का अर्थ समझाइए और उसके साथ साथ उसकी विशेषताओं पर प्रकाश डालिए ।

(ख) राष्ट्रपति का आदेश ११५५ की प्रमुख बातों का उल्लेख हैं ?

(ग) कंप्यूटर के अंगो के बारे में उल्लेख कीजिए ?

(घ) व्यक्तिगत पत्र किसे कहते हैं ? उसमें कितने पत्र उल्लेख है ?

[Cont...

(ङ) कार्यालय में पल्लवन का क्या महत्व होता है ?

(च) पारिभाषिक शब्दावली निर्माण में लोकवादी सिद्धांत से क्या अभिप्राय है ?

(छ) कंप्यूटर क्या है ? उसकी पांच उपयोगिताओं का वर्णन कीजिए ।

(ज) प्रयोजनमूलक हिंदी का स्वरूप का वर्णन कीजिए ।

(झ) ईमेल क्या है ? कितने प्रकार के ईमेल होते हैं उसका उत्तर दीजिए ।

(ञ) सामान्य हिंदी और प्रयोजनमुलक हिंदी में अंतर बताइये ।

'घ' - विभाग

4. किन्हीं ४ प्रश्नों का उत्तर ५०० शब्दों में दीजिये । [8×4

(क) प्रयोजनमुलक हिंदी की समस्या और संभावनाओं की चर्चा कीजिये ।

(ख) राजभाषा (संशोधन) अधिनियम १९६७ का सविस्तार कीजिए ।

(ग) कंप्यूटर का प्रकार भेद का सविस्तार उल्लेखन कीजिए ।

(घ) संक्षेपण का अर्थ क्या है ? उसकी प्रक्रिया विधि का वर्णन कीजिए ।

(ङ) सरकारी पत्र का स्वरूप विस्तार पूर्वक वर्णन कीजिए । और सरकारी पत्र का प्रारूप प्रस्तुत कीजिए ।

4.6.2025

I - S - B.Sc. - (ITM) - P - AEC - I - (Odia) - (R)

2025

Full Marks - 100

Time - As in the Programme

The figure in the right-hand margin indicates marks

Answer all questions

'କ' - ବିଭାଗ

୧. ଗୋଟିଏ ବାକ୍ୟରେ ଉତ୍ତର ଦିଅ । (୧ × ୧୦

(କ) ସାଧାରଣତଃ ଶବ୍ଦ କେତେ ପ୍ରକାର ?

(ଖ) ତୁଳନାତ୍ମକ ରୂଢ଼ିର ଦୁଇଟି ଉଦାହରଣ ପ୍ରଦାନ କର ।

(ଗ) ବୈଦେଶିକ ଶବ୍ଦ କାହାକୁ କୁହାଯାଏ ?

(ଘ) 'ଆଖୁ' ଶବ୍ଦର ତତ୍ସମ ରୂପ କ'ଣ ?

(ଙ) 'ପୁରସ୍କାର' ଶବ୍ଦର ଶୁଦ୍ଧ ରୂପ କ'ଣ ?

(ଚ) 'ଆଣ୍ଠି ଛୁରୀ ତଣ୍ଟିକାଟେ' ରୂଢ଼ିର ଅର୍ଥ କ'ଣ ?

(ଛ) ଜଟିଳ ବାକ୍ୟ କିପରି ଗଠିତ ହୁଏ ?

(ଜ) ତତ୍ସମ ଶବ୍ଦ କାହାକୁ କୁହାଯାଏ ?

(ଝ) 'ରକ୍ତମୁଖା ହେବା' ଅର୍ଥ ସୂଚାଉଥିବ ରୂଢ଼ିଟି କ'ଣ ?

(ଞ) ବାକ୍ୟ କାହାକୁ କୁହାଯାଏ ?

[Cont...

'ଖ' - ବିଭାଗ

୨. ପ୍ରତ୍ୟେକ ପ୍ରଶ୍ନର ଉତ୍ତର ଦୁଇଟି ବାକ୍ୟରେ ୫୦ ଶବ୍ଦ ମଧ୍ୟରେ ଦିଅ । (୨ ×୯

(କ) ବାକ୍ୟ କେତେ ଭାଗରେ ବିଭକ୍ତ ଏବଂ ସେଗୁଡ଼ିକ କ'ଣ କ'ଣ ?

(ଖ) କ୍ରିୟାଯୁକ୍ତ ରୂଢି କାହାକୁ କହନ୍ତି ? ଏହାର ଗୋଟିଏ ଉଦାହରଣ ଦିଅ ।

(ଗ) 'ଟାଣ ଭାଙ୍ଗିବା' ଅର୍ଥ ପ୍ରକାଶ କରୁଥିବା ରୂଢିକୁ ବାକ୍ୟରେ ପ୍ରୟୋଗ କର ।

(ଘ) ବାକ୍ୟରେ 'ଆସତି' କାହାକୁ କୁହାଯାଏ ଉଦାହରଣ ସହ ଲେଖ ।

(ଙ) ବିବୃତି ସୂଚକ ବାକ୍ୟ କାହାକୁ କୁହାଯାଏ ଉଦାହରଣ ସହ ଲେଖ ।

(ଚ) 'ଆବଳ ବୃଦ୍ଧ ବନିତା ଗଣ ଏକତ୍ରିତ ହେଲେ' - ବାକ୍ୟଟିକୁ ଶୁଦ୍ଧ ରୂପେ ଲେଖ ।

(ଛ) କେତୋଟି ଶବ୍ଦରେ ଶୀର୍ଷକ ଲେଖିବା ଉଚିତ ?

(ଜ) ସ୍ତମ୍ଭଟି କିପରି ଲେଖିଲେ ଆକର୍ଷଣୀୟ ଲାଗେ ?

(ଝ) ବିଜ୍ଞାପନ ର ସଂଜ୍ଞା ଲେଖ ।

'ଗ' - ବିଭାଗ

୩. ଯେକୌଣସି ଆଠଟିର ଉତ୍ତର ୨୫୦ ଶବ୍ଦ ମଧ୍ୟରେ ଦିଅ । (୫ ×୮

(କ) ପ୍ରକାରଭେଦ ଦୃଷ୍ଟିରୁ ରୂଢି କେତେ ପ୍ରକାର ଆଲୋଚନା କର ।

(ଖ) ବାକ୍ୟର ସଂଜ୍ଞା ଓ ଲକ୍ଷଣ ନିରୂପଣ କର ?

(ଗ) ବୃହତ ଅନୁଚ୍ଛେଦକୁ ସଂକ୍ଷିପ୍ତ କରିବାର ୫ଟି କୌଶଳ ଉପରେ ଚର୍ଚ୍ଚା କର ।

[Cont...

(ଘ) ଫିଚରର ପାଞ୍ଚୋଟି ବୈଶିଷ୍ଟ୍ୟ ଉଲ୍ଲେଖ କର ।

(ଙ) ବିଜ୍ଞାପନର ସ୍ୱରୂପ ଦର୍ଶାଅ ।

(ଚ) ଲୋକସମ୍ପର୍କ ବିଜ୍ଞାପନ କ'ଣ ?

(ଛ) ପତ୍ରଲିଖନର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।

(ଜ) ସ୍ତମ୍ଭ ରଚନାରେ କେଉଁ ନିୟମଗୁଡ଼ିକ ପ୍ରତି ଦୃଷ୍ଟିଦେବାକୁ ପଡ଼େ ?

(ଝ) ଲିଙ୍ଗଗତ ଶବ୍ଦ ଅଶୁଦ୍ଧି କାହାକୁ କୁହାଯାଏ ଆଲୋଚନା କର ।

(ଞ) ଅନୁଚ୍ଛେଦର ବିଭିନ୍ନ ଅଙ୍ଗ ବିଷୟରେ ଆଲୋକପାତ କର ।

'ଘ' - ବିଭାଗ

ଯେକୌଣସି ଚାରିଟିର ଉତ୍ତର ୮୦୦ ଶବ୍ଦ ମଧ୍ୟରେ ଦିଅ । (୮ ×୪

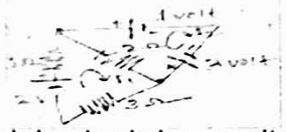
୪. ବାକ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ ସମ୍ପର୍କରେ ସବିଶେଷ ଆଲୋଚନା କର ।

୫. ଫିଚର ପ୍ରସ୍ତୁତି ବେଳେ କେଉଁ ଦିଗ ପ୍ରତି ଧ୍ୟାନ ଦିଆଯିବ । ଦରକାର ?

୬. ଗଣମାଧ୍ୟମରେ ତ୍ରୁଟିପୂର୍ଣ୍ଣ ତଥ୍ୟକୁ ଆଧାର କରି ଗଣମାଧ୍ୟମର ସମ୍ପାଦକଙ୍କୁ ପତ୍ର ।

୭. ବିଜ୍ଞାପନର ନମୁନା ଗୁଡିକୁ ଆଲୋଚନା କର ।

୮. ବିଭିନ୍ନ ପ୍ରକାର ସ୍ତମ୍ଭ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।



(e) Sate and explain ohm's Law. write its Limitations.

(f) In a house five 150Watt fans , six 10 watt LED bulbs, runs 6 hours on daily basis. Calculate the cost of Electricity consumption in 2 Months. Given cost of 1 unit electricity is Rs 2.60. (Home supply Voltage is 230V rms.)

(g) What do you mean by operating point of BJT and how you draw dc Load Line ?

(h) Draw the circuit diagram of common collector NPN Transistor and explain why it is not used as an amplifier ?

Part - D

4. Answer any four from the following questions.[8×4

(a) State Ohm's Law and explain Ohm's Law using experimental set up circuit diagram.

(b) Explain Semiconductor in Term of Energy band Diagram and it behavior in terms of temperature.

(c) How does a PN Junction is formed?Explain forward and reversed biased PN Junction operations along with their VI characteristics.

(d) What do you mean by an Amplifier? Explain The operation CE –NPN transistor working as amplifier with Proper circuit diagram.

(e) In a conductor material estimate the expression for drift speed V_d for electrons when it is exposed to an external electric field E, when Relaxation time ξ and mass of free electrons mare Known

2025

Full Marks - 100

Time - As in the Programme

The figure in the right-hand margin indicates marks

Answer all questions

Part - A

1. Answer all questions. [1×10

(a) Write the CGS Unit of electric current and statcoulomb / 4 sec =.....(fill in the blank) 2

(b) What is the reason for flow of electric current in conductors ?

(c) What do you mean by drift speed of Free electrons in metal ?

(d) When Length of a wire gets doubled and diameter reduced to ¼ th of its original value then what would happen to its resistivity value ?

(e) What is the relation between emf, potential difference and internal resistance of a battery ,when it flows I amount of current ?

(f) Two identical batteriesof emf å is given, How can you reduce the equivalent emf of combination of batteries ,when their internal resistance r is given.

(g) Phosphorous doped with which material becomes converted to P-type semiconductor ?

[Cont...

(h) What do you meanby Thermal equilibrium state in an Intrinsic semiconductor ?

(i) Define Barrier potential of PN Junction |diode.

(j) Identify the semiconductor with Numbering system BN 547,

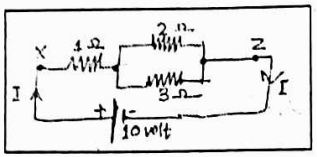
(k) What do you mean by Breakdown Voltage for PN Junction diode ?

Part - B

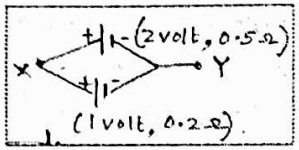
2. Answer the following questions. [2×9

(a) Calculate the resistivity of the material " ñ " having electric resistance 5 &! with area of cross section A=2 cm^2 and Length 0.5 meter.

(b) Calculate the Potential difference between Y & Z. i.e. V_{YZ}



(c) Calculate the equivalent emf X & Y.



(d) Calculate the drift current in a Metal when free electron density n= 10^5 / m^3 and area of cross section is A = 2 m^2, e= 1.6x 10^{-19} C and drift speed of free electrons $v_{d=}$ 0.2m/sec. values are given.

(e) In an extrinsic semiconductor,Thermal equilibrium intrinsic concentration is 10^{20} /cm^3. And free Electron concentration is 10^6 /cm^3. calculate the free hole concentration p_0.

[Cont...

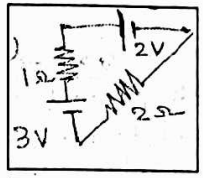
(f) Draw VI characteristic curve for both forward and reversed Biased PN Junction.

(g) 5% of the emitter current is lost in Base region calculate current amplification factor â when emitter current is 2 Ampere.

(h) Draw the practical way circuit diagram of common base NPN Transistor.

(i) In a common emitter NPN Transistor, calculate the Leakage current I_{CEO} with given â=50 with given collector current 12mA and base current is 0.2 A.

(j) Calculate the amount of current I in this closed circuit using KVL.



Part - C

3. Answer the following questions. [5×8

(a) What do you mean by Semiconductor and explain the formation of P type and N type semiconductor by covalent bonding structure.

(b) Explain the formation of PN Junction and current conduction in PN diode with proper Biasing.

(c) What do you mean by Wheatstone Bridge ? explain the Necessary balanced condition for a Wheatstone Bridge.

(d) In the given circuit diagram, find the values of I_1 and I_2 using Kirchhoff' voltage Law

[Cont...