|| Jai Sri Gurudev ||

BGSKH Education Trust(R.) - A unit of Sri Adichunchanagiri Shikshana Trust(R.)

BGS College Of Engineering and Technology

Mahalakshmipuram, Bengaluru – 560 086

(Approved by AICET – New Delhi, Affiliated to VTU, Belagavi)

BGS College of Engineering & Technology
Knowledge is Power
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Bengaluru - 86

VTU – IV Sem Question Papers. June/July - 2025

2022 - Scheme

||Jai Sri Gurudev ||
BGSKH Education Trust (R.) – A unit of Sri Adichunchanagiri Shikshana Trust(R.)
BGS College of Engineering and Technology
Mahalakshmipuram, West of Chord Road, Bengaluru-560086
(Approved by AICTE, New Delhi and Affiliated to VTU, Belagavi)

IV Semester Question Papers June/July - 2025

Sl.No	Name of the Subject	Subject Code
1	Analysis and Design of Algorithms	BCS401
2	Microcontrollers	BCS402
3	Advanced Java	BIS402
4	Computer Graphics and Visualization	BCG402
5	Artificial Intelligence	BAD402
6	Database Management Systems	BCS403
7	Discrete Mathematics Structures	BCS405A
8	Graph Theory	BCS405B
9	Biology for Engineers (CSE)	BBOC407
10	Universal Human Values	BUHK408/22BD47

CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐ **BCS401**

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Analysis and Design of Algorithms

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	**M**	**L**	**C**
Q.1	**a.**	Define algorithm Explain asymptotic notations Bigh oh, Big omega and Big theta notations.	**08**	**L2**	**CO1**
	b.	Explain the general plan for analyzing the efficiency of a recursive algorithm. Suggest a recursive algorithm to find factorial of number. Derive its efficiency.	**08**	**L3**	**CO1**
	c.	If $t_1 (n) \in O(g_1(n))$ and $t_2(n) \in O(g_2(n))$ then show that $t_1 (n) + t_2(n) \in o(\max \{ g_1(n), g_2(n)\})$	**04**	**L2**	**CO1**
		OR			
Q.2	**a.**	With a neat diagram explain different steps in designing and analyzing algorithm.	**08**	**L2**	**CO1**
	b.	Write an algorithm to find the max element in an array of n elements. Give the mathematical analysis of this non- recursive algorithm.	**08**	**L3**	**CO1**
	c.	With the algorithm derive the worst case efficiency for selection sort.	**04**	**L3**	**CO1**
		Module – 2			
Q.3	**a.**	Explain the concept of divide and conquer. Design an algorithm for merge sort and derive its time complexity.	**10**	**L3**	**CO2**
	b.	Design an algorithm for insertion algorithm and obtain its time complexity. Apply insertion sort on these elements. 89, 45, 68, 90, 29, 34, 17	**10**	**L3**	**CO2**
		OR			
Q.4	**a.**	Design an algorithm for Quick sort. Apply quick sort on these elements. 5, 3, 1, 9, 8, 2, 4, 7.	**10**	**L3**	**CO2**
	b.	Explain Strassen's Matrix multiplication and derive its time complexity.	**10**	**L2**	**CO2**
		Module – 3			
Q.5	**a.**	Define AVL trees. Explain its four rotation types.	**10**	**L2**	**CO3**
	b.	Design an algorithm for Heap sort. Construct bottom – up heap for the list 15, 19, 10, 7, 17, 16.	**10**	**L3**	**CO4**
		OR			
Q.6	**a.**	Design Horspool's Algorithm for string matching Apply Horspool algorithm to find pattern BARBER in the test: JIM_SAW_ME_IN_A_BARBERSHOP.	**10**	**L3**	**CO4**
	b.	Define heap. Explain the properties of heap along with its representation.	**10**	**L2**	**CO3**

Module – 4

Q.7 **a.** Construct minimum cost spanning tree using Kruskal's algorithm for the following graph. — 10 — L3 — CO4

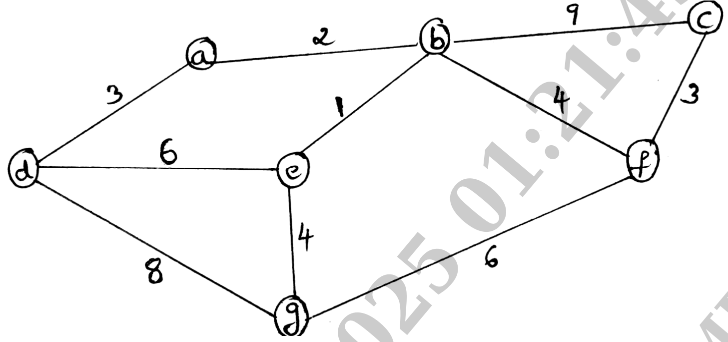

Fig. 7(a)

b. What are Huffman trees? Construct the Huffman tree for the following data — 10 — L3 — CO4

Character	A	B	C	D	-
Probability	0.4	0.1	0.2	0.15	0.15

i) Encode the text ABAC ABAD

ii) Decode the code100010111001010

OR

Q.8 **a.** Apply Dijkstra's algorithm to fine single source shortest path for the given graph by considering A as the source vertex. — 10 — L3 — CO4

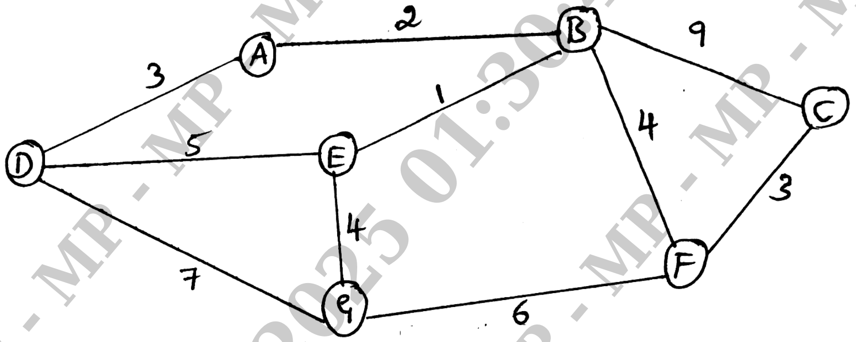

Fig.8 (a)

b. Define transitive closure of a graph. Apply Warshall's algorithm to compute transitive closure of a directed graph. — 10 — L3 — CO4

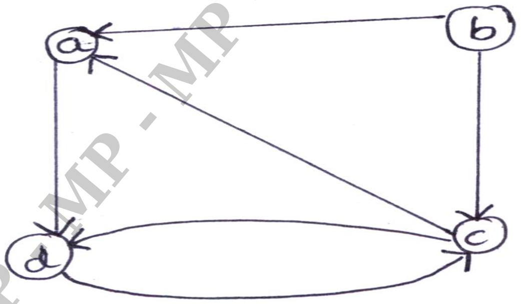

Fig.8 (b)

Module – 5

<table>
<tr><td>Q.9</td><td>a.</td><td>Explain the following with examples.
i) P problem
ii) NP problem
ii) NP-Complete problem
iv) NP – Hard problem</td><td>10</td><td>L2</td><td>CO5</td></tr>
<tr><td></td><td>b.</td><td>What is backtracking? Apply backtracking to solve the below instance of sum of subset problem.
S = { 1, 2, 5, 6, 8} and d = 9.</td><td>10</td><td>L3</td><td>CO6</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>Q.10</td><td>a.</td><td>Illustrate N Queen’s problem using backtracking to solve 4 – Queens problem.</td><td>10</td><td>L2</td><td>CO6</td></tr>
<tr><td></td><td>b.</td><td>Using Branch and Bound method solve the below instance of Knapsack Problem.
<table>
<tr><th>Item</th><th>Weight</th><th>Value</th></tr>
<tr><td>1</td><td>4</td><td>40</td></tr>
<tr><td>2</td><td>7</td><td>42</td></tr>
<tr><td>3</td><td>5</td><td>25</td></tr>
<tr><td>4</td><td>3</td><td>12</td></tr>
</table>
Capacity = 10</td><td>10</td><td>L3</td><td>CO6</td></tr>
</table>

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CBCS SCHEME

USN | | | | | | | | | |

BCS402

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Microcontrollers

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	**M**	**L**	**C**
Q.1	**a.**	Explain the major design rules to implement the RISC design philosophy.	**08**	**L2**	**CO1**
	b.	Differentiate between RISC and CISC processors.	**04**	**L2**	**CO1**
	c.	Explain ARM core data flow model, with neat diagram.	**08**	**L2**	**CO1**
		OR			
Q.2	**a.**	With the help of bit layout diagram, explain Current Program Status Register (CPSR) of ARM.	**08**	**L2**	**CO1**
	b.	With an example, explain the pipeline in ARM.	**05**	**L2**	**CO1**
	c.	Discuss the following with diagrams: (i) Von-Neuman architecture with cache (ii) Harvard architecture with TCM	**07**	**L2**	**CO1**
		Module – 2			
Q.3	**a.**	Explain the different data processing instructions in ARM.	**08**	**L2**	**CO2**
	b.	Explain the different branch instructions of ARM.	**04**	**L2**	**CO2**
	c.	Explain the following ARM instructions: (i) MOV r_1, r_2 (ii) ADDS r_1, r_2, r_4 (iii) BIC r_3, r_2, r_5 (iv) CMP r_3, r_4 (v) UMLAL r_1, r_2, r_3, r_4	**08**	**L2**	**CO2**
		OR			
Q.4	**a.**	Explain the different load store instructions in ARM.	**08**	**L2**	**CO2**
	b.	With an example, explain full descending stack operations.	**07**	**L2**	**CO2**
	c.	Develop an ALP to find the sum of first 10 integer numbers.	**05**	**L3**	**CO2**
		Module – 3			
Q.5	**a.**	List out basic C data types used in ARM. Develop a C program to obtain checksums of a data packet containing 64 words and write the compiler output for the above function.	**08**	**L2**	**CO3**
	b.	Explain the C looping structures in ARM.	**08**	**L2**	**CO3**
	c.	Explain pointer aliasing in ARM.	**04**	**L2**	**CO2**

		OR			
Q.6	**a.**	With an example, explain function calls in ARM.	**08**	**L2**	**CO3**
	b.	Explain register allocation in ARM.	**07**	**L2**	**CO3**
	c.	Write a brief note on portability issues when porting C code to ARM.	**05**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Explain the ARM processor exceptions and modes, vector table and exception priorities.	**10**	**L2**	**CO4**
	b.	Explain the interrupts in ARM.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain the ARM firmware suite and red hat redboot.	**10**	**L2**	**CO4**
	b.	Explain the sandstone directory layout and sandstone code structure.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Explain the basic architecture of a cache memory and basic operation of a cache controller.	**10**	**L2**	**CO5**
	b.	With a neat diagram, explain a 4 KB, four way set associative cache.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain the write buffers and measuring cache efficiency.	**08**	**L2**	**CO5**
	b.	Explain the cache policy.	**12**	**L2**	**CO5**

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CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐ **BIS402**

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Advanced Java

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	**M**	**L**	**C**
Q.1	**a.**	What is Collection Framework? Explain the methods define by the collection interface.	**7**	**L2**	**CO1**
	b.	Demonstrate ArrayList class collection with example.	**7**	**L2**	**CO1**
	c.	Explain how collections can be accessed using an iterator with example.	**6**	**L2**	**CO1**
		OR			
Q.2	**a.**	Explain the following map classes: i) HashMap ii) TreeMap.	**10**	**L2**	**CO1**
	b.	What are comparators? Write a comparator program to sort accounts by last name.	**10**	**L3**	**CO1**
		Module – 2			
Q.3	**a.**	Explain the string comparison functions with suitable program.	**6**	**L2**	**CO2**
	b.	Explain the following built in methods with respect to StringBuffer class: i) capacity( ) ii) delete( ) iii) replace( ) iv) append( ) v) substring( )	**7**	**L2**	**CO2**
	c.	Write a Java program that demonstrates any four constructors of string class.	**7**	**L3**	**CO2**
		OR			
Q.4	**a.**	Write a Java program to remove duplicate characters from a given string and display the resultant string.	**7**	**L3**	**CO3**
	b.	Explain character extraction functions in string class.	**7**	**L2**	**CO2**
	c.	Explain constructors in Java string builder class.	**6**	**L2**	**CO2**

		Module – 3			
Q.5	**a.**	Explain the difference between AWT and Swing. What are two key features of swing and explain.	**6**	**L2**	**CO3**
	b.	What is JLabel class? Explain with example of any three constructors and methods of JLabel class.	**7**	**L2**	**CO3**
	c.	Write a Java program in swing event handling applications that creates 2 buttons ALPHA and BETA and displays the text "Alpha pressed" when Alpha button is clicked and "Beta pressed" when beta button is clicked.	**7**	**L3**	**CO3**
		OR			
Q.6	**a.**	What is JPanel class? Explain the constructors of Jpanel class and give a suitable example.	**6**	**L2**	**CO3**
	b.	What is JCheckBox class? Explain the constructors of JCheckBox class and give a suitable example.	**7**	**L2**	**CO3**
	c.	What is JFrame class? Explain constructors and methods of JFrame class.	**7**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Explain the life cycle of servlet.	**6**	**L2**	**CO4**
	b.	Write a Java servlet program to display the name, USN and total marks by accepting student detail.	**7**	**L3**	**CO4**
	c.	Describe the core interfaces that are provided in Javax.Servlet.http package.	**7**	**L3**	**CO4**
		OR			
Q.8	**a.**	What is JSP? Explain the various types of JSP tags with example.	**10**	**L2**	**CO4**
	b.	What are cookies? How cookies are handled in JSP? Write a JSP program to create and read a cookie.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	What are database drivers? Explain the different JDBC driver types.	**10**	**L2**	**CO5**
	b.	Describe the various steps of JDBC with code snippets.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Write any two syntax of established a connection to a database.	**6**	**L2**	**CO5**
	b.	What is connection pooling? Explain connection pooling with a neat diagram with snippets.	**7**	**L2**	**CO5**
	c.	Describe the following concepts: i) Callable statement ii) Transaction processing.	**7**	**L2**	**CO5**

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CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

BCG402

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Computer Graphics and Visualization

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: Bloom's level, C: Course outcomes.

		Module – 1	**M**	**L**	**C**
Q.1	**a.**	What is computer graphics? Explain applications of computer graphics with examples.	**10**	**L2**	**CO1**
	b.	Explain coordinate reference frames in Open GL.	**10**	**L2**	**CO1**
		OR			
Q.2	**a.**	With necessary steps explain Bresenham's line drawing algorithm. Consider the line from (6, 6) to (12, 8). Use the algorithm to rasterize the line.	**10**	**L3**	**CO1**
	b.	Explain the versions graphics functions with examples. (any five).	**10**	**L2**	**CO1**
		Module – 2			
Q.3	**a.**	What is the need of homogenous coordinate system? Explain transaction, rotation and scaling in 2D homogenous coordinate system with matrix representation.	**10**	**L2**	**CO2**
	b.	Develop openGL program to create and rotate cube.	**10**	**L1**	**CO2**
		OR			
Q.4	**a.**	Illustrate the raster method for geometric transformation.	**10**	**L2**	**CO2**
	b.	List and explain all 3-D geometric transformation.	**10**	**L2**	**CO2**
		Module – 3			
Q.5	**a.**	Explain any five input device used for logical classification.	**10**	**L2**	**CO3**
	b.	Explain traditional animation technique in details with example.	**10**	**L2**	**CO3**
		OR			
Q.6	**a.**	Explain any five different ways of designing graphical user interface.	**10**	**L2**	**CO3**
	b.	Explain character animation and periodic motions in detail.	**10**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	Explain clipping window and view port transformations with an example.	**10**	**L2**	**CO4**
	b.	Explain Cohen - Sutherland algorithm with example and neat diagram.	**10**	**L3**	**CO4**
		OR			
Q.8	**a.**	Differentiate between color models: RGB and CMY.	**10**	**L2**	**CO4**
	b.	Explain illumination models: (i) Ambient light. (ii) Diffuse Reflection.	**10**	**L3**	**CO4**
		Module – 5			
Q.9	**a.**	Explain the concept of hidden surface removal.	**10**	**L2**	**CO5**
	b.	Explain open GL 3D viewing functions (any five).	**10**	**L3**	**CO5**
		OR			
Q.10	**a.**	Explain orthogonal projections with help of 3D viewing.	**10**	**L2**	**CO5**
	b.	Explain Depth Buffer method with algorithm.	**10**	**L2**	**CO5**

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CBCS SCHEME

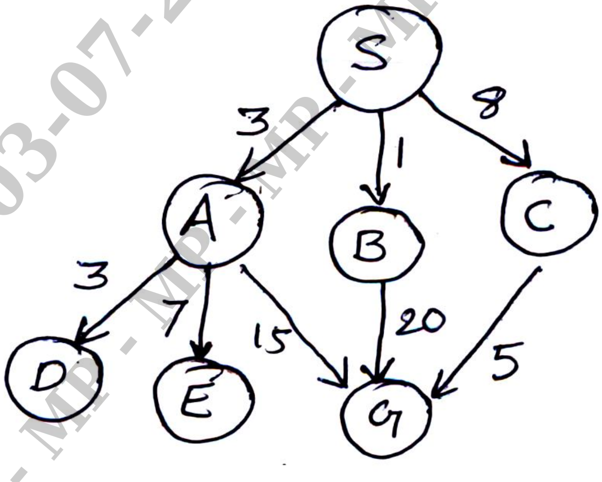
USN ☐☐☐☐☐☐☐☐☐☐ **BAD402**

Fourth Semester B.E/B.Tech. Degree Examination, June/July 2025

Artificial Intelligence

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	**M**	**L**	**C**
1	a.	What are the four components to define a problem? Define them.	**4**	**L1**	**CO1**
	b.	Compare and contrast human intelligence to artificial intelligence with numerous examples and applications.	**7**	**L4**	**CO1**
	c.	Explain the following : i) PEAS ii) Simple reflex agent iii) Model based agent.	**9**	**L2**	**CO1**
		OR			
2	a.	What is AI? List out the applications of AI, state the characteristics of AI problem.	**8**	**L1**	**CO1**
	b.	Analyse and generalize what is a rational agent.	**6**	**L4**	**CO1**
	c.	Explain the structure of agents and analyse the characteristics of intelligent agents.	**6**	**L2**	**CO1**
		Module – 2			
3	a.	You are given two jugs, a 5 liters one and a 4 liters one, A pump which has unlimited water which you can use to fill the jug, and the ground on which water may be poured. Neither jug has any measuring markings on it. How can you get exactly 2 (two) liters of water in the 5(five) liters of jug? Unit : Apply water Jug problem algorithm.	**10**	**L3**	**CO2**
	b.	Describe Depth First Search (DFS) search algorithm with an example.	**10**	**L2**	**CO2**
		OR			
4	a.	Explain Breadth First Search (BFS) algorithm and apply BFS to find the solution for the above graph. Also find the optimum path and cost for the above graph.  Fig.Q4(a)	**10**	**L3**	**CO2**
	b.	Describe the iterative deepening depth first search with an example.	**10**	**L2**	**CO2**

		Module – 3			
5	a.	Compare blind search and heuristic search algorithm in detail.	**6**	**L4**	**CO3**
	b.	Write a note on Wumpus world problem.	**6**	**L2**	**CO3**
	c.	Write the connectives used to form complex sentence of propositional logic. Given example for each.	**8**	**L2**	**CO3**
		OR			
6	a.	Describe A* search algorithm with an example.	**10**	**L3**	**CO3**
	b.	Compare proposition logic and predicate logic in detail with example.	**4**	**L4**	**CO3**
	c.	Explain the following concepts with example : i) Heuristic function ii) Atomic sentence iii) Complex sentence.	**6**	**L2**	**CO3**
		Module – 4			
7	a.	What are predicates? Explain its syntax and semantics.	**5**	**L2**	**CO4**
	b.	Define universal and existential instantiation and give example for both.	**5**	**L1**	**CO4**
	c.	Consider the following knowledge base : i) Gita likes all kinds of food ii) Mango and chapatti and food iii) Gita eats almond and is still alive iv) Anything eaten by anyone and is still alive is food Goal : Gita likes almond.	**10**	**L3**	**CO4**
		OR			
8	a.	Write appropriate quantifiers for the following : i) Some students read well ii) Some students like some books iii) Some students like all books iv) All students like some books v) All students like no books Explain the concept of resolution in first order logic with appropriate procedure.	**8**	**L3**	**CO4**
	b.	Write and explain simple backward – chaining algorithm and forward – chaining algorithm for first – order knowledge bases with example. Also, explain the process of unification.	**12**	**L3**	**CO4**
		Module – 5			
9	a.	Explain the impact of uncertainty in probabilistic reasoning.	**5**	**L2**	**CO5**
	b.	Explain Bayes' rule and its utilization in probabilistic reasoning.	**5**	**L2**	**CO5**
	c.	Write the representation of Bayes Theorem. In a class, 70% children were fall sick due to viral fever and 30% due to bacterial fever. The probability of observing temperature for viral is 0.78 and bacterial is 0.31. If a child develops high.	**10**	**L3**	**CO5**
		OR			
10	a.	Write short notes on : i) Expert systems ii) Knowledge acquisition.	**8**	**L2**	**CO5**
	b.	Suppose a doctor is trying to find out if a patient is suffering from some type of cancer. If the cancer is only found on average in 2 out of every, 1000 people, the doctor's initial beliefs can be expressed as P(cancer) = 0.002. There is a laboratory test to determine if the patient has cancer. Unfortunately this test is 100 % accurate. The test comes back positive in 98% of cases where the patient has cancer. Also, the test comes out negative only in 97% of the cases, where the patient does not have a cancer. If the doctor orders a test, and it comes back positive what is the probability that the patient indeed has cancer?	**12**	**L3**	**CO5**

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CBCS SCHEME

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BCS403

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Database Management Systems

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	**M**	**L**	**C**
Q.1	**a.**	Explain the types of attributes with example.	**4**	**L2**	**CO1**
	b.	Define database. Explain the main characteristics of the database approach.	**8**	**L2**	**CO1**
	c.	Show the ER diagram for an EMPLOYEE database by assuming your own entities (minimum 4) attributes and relationships, mention cardinality ratios wherever appropriate.	**8**	**L3**	**CO2**
		OR			
Q.2	**a.**	Describe the three schema architecture.	**4**	**L2**	**CO1**
	b.	Explain the component models of DBMS and their interaction with the help of diagram.	**8**	**L2**	**CO1**
	c.	Design ER diagram for a university database by assuming your own entities (4). Mention primary key , constraints and relationships.	**8**	**L3**	**CO2**
		Module – 2			
Q.3	**a.**	Explain relational model constraints.	**6**	**L2**	**CO1**
	b.	Explain the characteristics of relations with suitable example for each.	**6**	**L2**	**CO1**
	c.	Considering the following schema : Sailors (sid , sname , rating , age) Boats (bid , bname , color) Reserves (sid , bid , day) Write a relational algebra queries for the following : i) Find the names of sailors, who have reserved red and a green boat. ii) Find the names of sailors who have reserved a red boat. iii) Find the names of sailors who have reserved a red or green boat. iv) Find the names of sailors who have reserved all boats.	**8**	**L3**	**CO1**
		OR			
Q.4	**a.**	Explain the steps to convert the basic ER model to relational Database schema.	**6**	**L2**	**CO1**
	b.	Explain Unary relational operations with example.	**6**	**L2**	**CO1**

<table>
<tr><td></td><td>c.</td><td>Consider the relation schema Employee database.
EMPLOYEE (Fname ,Minit , Lname , SSn , Bdates , Address , Sex , Salary Super_SSn , Dno)
DEPARTMENT (Dname , Dnumber , Mgr_SSn , Mgr_start_date)
PROJECT (Pname , PNumber , Plocation , Dnum)
WORKS_ON (Essn , Pno , Hours)
DEPENDENT (Essn , Dependent_name , sex, Bdate , Relationship)
Write relational algebra queries for the following :
i) Retrieve the name and address of all employees who work for the 'Research' department.
ii) List the names of all employees with 2 or more dependents.
iii) Find the names of employees who work on all the projects controlled by department number 5.
iv) List the names of employees who have no dependents.</td><td>8</td><td>L3</td><td>CO3</td></tr>
<tr><td colspan="6">Module – 3</td></tr>
<tr><td>Q.5</td><td>a.</td><td>What is the need for normalization? Explain second and third normal form with examples.</td><td>6</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>b.</td><td>Outline constraints in SQL.</td><td>6</td><td>L2</td><td>CO1</td></tr>
<tr><td></td><td>c.</td><td>Identify the given Relation R(ABCDE) and its instance, check whether FDS given hold or not. Give reasons.
i) A → B ii) B → C iii) D → E iv) CD → E.
<table>
<tr><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr>
<tr><td>a_1</td><td>b_1</td><td>c_1</td><td>d_1</td><td>e_1</td></tr>
<tr><td>a_1</td><td>b_2</td><td>c_1</td><td>d_1</td><td>e_1</td></tr>
<tr><td>a_2</td><td>b_2</td><td>c_1</td><td>d_2</td><td>e_3</td></tr>
<tr><td>a_2</td><td>b_3</td><td>c_3</td><td>d_2</td><td>e_2</td></tr>
</table></td><td>8</td><td>L3</td><td>CO4</td></tr>
<tr><td colspan="6">OR</td></tr>
<tr><td>Q.6</td><td>a.</td><td>What is Multivalued dependency? Explain 4NF and 5NF with suitable example.</td><td>6</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>b.</td><td>Outline the informal design guidelines for relational schema.</td><td>6</td><td>L2</td><td>CO4</td></tr>
<tr><td></td><td>c.</td><td>Consider relation R with following function dependency :
EMPPROJ (SSn , Pnumber , Hours , Ename , Pname , Plocation)
SSN , Pnumber → Hours,
SSN → Ename
Pnumber → Pname , Plocation.
Is it 2NF? Verify? If no give reason.</td><td>8</td><td>L3</td><td>CO4</td></tr>
</table>

		Module – 4			
Q.7	**a.**	Consider the following schema for a company database : Employee (FName , LName , SSn , Adderss , Sex , Salary , Dno , Super_SSn) Department (Dname , Dnumber , mgr_SSn, mgr_st_date) Project (Pname , Pnumber , Plocation , Dnum) WORKS_on (Essn , Pno , Hours) DEPENDENT (Essn , Dependent name , Sex , Bdate, relationship). Write the SQL queries for the following : i) List the names of managers who have atleast one dependent (use correlated nested). ii) Retrieve the name of each employee who has a dependent with the same first name and is the same sex as the employee. iii) For each project retrieve the project number , project name and the number of employees who work on that project. iv) Retrieve the SSN of all employees who work on project number 1, 2 or 3. (Use 1N). v) Find the sum of the salaries of all employees of the 'Research' department as well as maximum salary , minimum salary , average salary in this department.	**10**	**L3**	**CO3**
	b.	Why concurrency control is needed? Demonstrate with an example.	**10**	**L2**	**CO5**
		OR			
Q.8	**a.**	Consider the following schedule. The actions are listed in the order they are scheduled and prefixed with the transaction name. S1 : T1 : R(X) , T2 : R(X) T1 : W(Y) , T2 : W(Y) , T1 : R(Y) , T2 : R(Y) S2 : T3 : W(X) , T1 : R(X) , T1 : W(Y) , T2 : R(Z) , T2 : W(Z) , T3 : R(Z) For each schedule answer the following : i) What is the precedence graph for the schedule? ii) Is the schedule conflict_serializable? If so what are all the conflicts equivalent serial schedules? iii) Is the schedule view serializable? If so what are all the view equivalent serial schedules?	**10**	**L3**	**CO5**
	b.	Explain triggers with example write a trigger in SQL to call a procedure "Inform_Supervisor" whenever an employees salary is greater than the salary of his or her direct supervisor in the COMPANY database.	**10**	**L3**	**CO5**
		Module – 5			
Q.9	**a.**	Describe the two – phase locking protocol for concurrency control provide example to illustrate how it ensures serializability in transaction schedule.	**10**	**L2**	**CO5**
	b.	Explain the characteristics of NOSQL system.	**10**	**L2**	**CO6**
		OR			
Q.10	**a.**	Explain binary locks and shared lock with algorithm.	**10**	**L2**	**CO5**
	b.	Explain MongoDB data model, CRUD operations and distributed system characteristics.	**10**	**L2**	**CO6**

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CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐ **BCS405A**

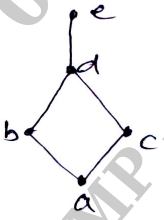
Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Discrete Mathematical Structures

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Define Tautology, show that $[(p\vee q)\wedge\{(p\to r)\wedge(q\to r)\}]\to r$	6	L1	CO1
	b.	Prove the following using the laws of logic : $\neg[\{(p\vee q)\wedge r\}\to\neg q]\Leftrightarrow\neg[\neg[(p\vee q)\wedge r]\vee.\neg q]\Leftrightarrow q\wedge r$.	7	L2	CO1
	c.	Give i) a direct proof ii) an Indirect proof for the following statement "If n is an odd integer then n + 9 is an even integer".	7	L2	CO1
		OR			
Q.2	a.	Define i) an open statement ii) quantifiers.	6	L2	CO1
	b.	Test the validity of the following arguments. i) $p\wedge q$, $p\to(q\to r)$ $\therefore r$ ii) P, $P\to\sim q$, $\sim q\to\sim r$ $\therefore\sim r$	7	L2	CO1
	c.	For the following statements the universe comprises all non – zero integers. Determine the truth value of each statement. i) $\exists x, \exists y\ [xy=1]$ ii) $\exists x, \forall y\ [xy=1]$ iii) $\forall x, \exists y\ [xy=1]$ iv) $\exists x, \exists y\ [(2x+y=5)\wedge(x-3y=-8)]$ v) $\exists x, \exists y\ [(3x-y=17)\wedge(2x+4y=3)]$.	7	L2	CO1
		Module – 2			
Q.3	a.	Define the well ordering principle. By Mathematical induction, prove that $1+2+3+\ldots..+n=\frac{1}{2}n(n+1)$, $n\in z^+$.	6	L2	CO2
	b.	Prove that $F_n=\frac{1}{\sqrt{5}}\left[\left(\frac{1+\sqrt{5}}{2}\right)^n-\left(\frac{1-\sqrt{5}}{2}\right)^n\right]$. For F_0, F_1, F_2, …. are the Fibonacci numbers.	7	L2	CO2
	c.	Find the number of permutations of the letters of the word 'MASSASAUGA'. In how many of these all four A's are together? How many of them begin with S's?	7	L3	CO2
		OR			

Q.4	**a.**	Prove that $4n < n^2 - 7$ for all positive integers $n \geq 6$.	**6**	**L2**	**CO3**
	b.	Find the co-efficients of $x^9 y^3$ in the expansion of $(2x - 3y)^{12}$.	**7**	**L3**	**CO3**
	c.	Let $a_0 = 1$, $a_1 = 2$, $a_3 = 3$ and $a_n = a_{n-1} + a_{n-3}$ for $n \geq 3$, prove that $a_n \leq 3^n$ for all +ve integers n.	**7**	**L2**	**CO3**
		Module – 3			
Q.5	**a.**	State Pigeon hole principle. Prove that if 30 dictionaries in a library contains a total of 61,327 pages then atleast one of dictionaries must have atleast 2045 pages.	**6**	**L2**	**CO3**
	b.	Define power set. For any sets A, B, $C \leq U$, prove that $A \times (B \cup C) = (A \times B) \cup (A \times C)$.	**7**	**L2**	**CO3**
	c.	Let f and g be functions from R to R defined by $f(x) = ax + b$ and $g(x) = 1 - x + x^2$ if $(gof)(x) = 9x^2 - 9x + 3$, determine a & b.	**7**	**L3**	**CO3**
		OR			
Q.6	**a.**	Let $f : R \to R$ be defined by $f(x) = \begin{cases} 3x - 5, \text{if } x > 0 \\ 1 - 3x, \text{if } x \leq 0 \end{cases}$ Find $f^{1}(-5, 5)$ and $f^{1}(-6, 5)$.	**6**	**L2**	**CO3**
	b.	Let N be the set of Natural numbers. Let a relation R be defined by $R = \{(a, b) / a \in N , b \in N , a - b$ is divisible by $5\}$. Prove that R is an equivalence relation.	**7**	**L2**	**CO3**
	c.	For A = { a, b, c, d, e}, the Hasse diagram for the poset(A, R) is as shown below : i) Determine the relation matrix for R ii) Construct the diagraph for R. 	**7**	**L3**	**CO3**
		Module – 4			
Q.7	**a.**	Determine the number of integers between 1 and 250 that are divisible by 3 and not divisible by 5 and 7.	**6**	**L3**	**CO4**
	b.	Solve the recurrence relation $F_{n+2} = F_{n+1} + F_n$, where $n \geq 0$ and $F_0 = 0$, $F_1 = 1$.	**7**	**L2**	**CO4**
	c.	Define Derangement. Find the number of derangement of 1, 2, 3, and 4.	**7**	**L3**	**CO4**
		OR			

Q.8	**a.**	Find the Rook polynomial for the chess board contain 4 squares as shown in the Fig.Q8(a). **1** **2** **3** **4** Fig.Q8(a)	**6**	**L3**	**CO4**
	b.	Solve the recurrence relation $a_n = 5a_{n-1} + 6a_{n-2}$, $n \geq 2$, $a_0 = 1$, $a_1 = 3$.	**7**	**L2**	**CO4**
	c.	Find the distinct numbers which are multiples of at least one of 15, 40 and 35 not exceeding 1000.	**7**	**L3**	**CO4**
		Module – 5			
Q.9	**a.**	Define group and subgroup with example each.	**6**	**L1**	**CO5**
	b.	State and prove Lagrange's theorem.	**7**	**L2**	**CO5**
	c.	Define Klein 4 group. Verify A = {e, a, b, c} is a Klein 4 group.	**7**	**L2**	**CO5**
		OR			
Q.10	**a.**	Prove that the intersection of two subgroup of a group is a subgroup of the group.	**6**	**L2**	**CO5**
	b.	Prove that the cube roots of unity form a group under the multiplication.	**7**	**L2**	**CO5**
	c.	Let G = S_4, the symmetric group of order 4, for $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \end{pmatrix}$, find the subgroup H = < a >, determine the number of left cosets of H in G.	**7**	**L3**	**CO5**

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CBCS SCHEME

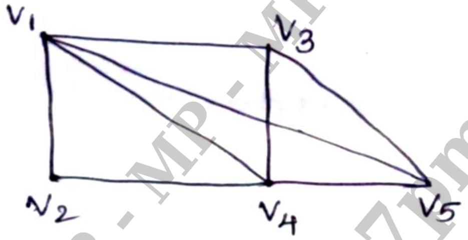
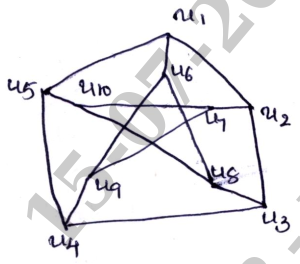
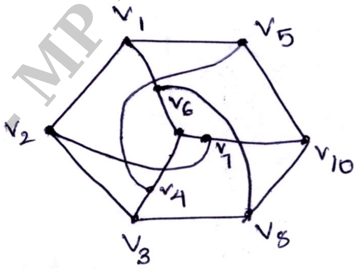
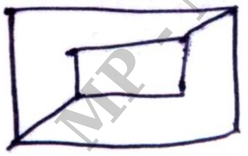
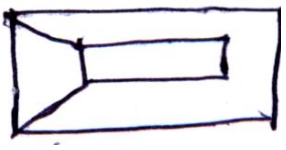
USN ☐☐☐☐☐☐☐☐☐☐ **BCS405B**

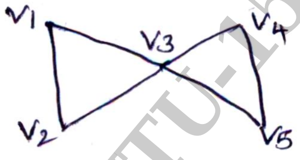
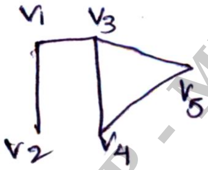
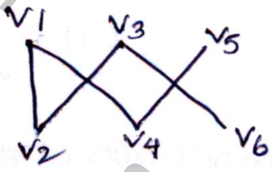
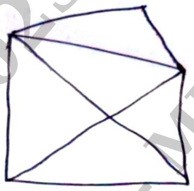
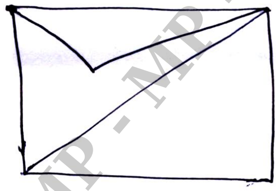
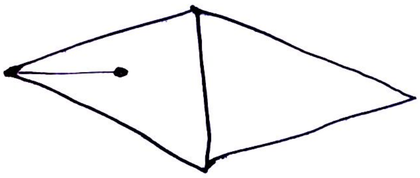
Fourth Semester B.E/B.Tech. Degree Examination, June/July 2025

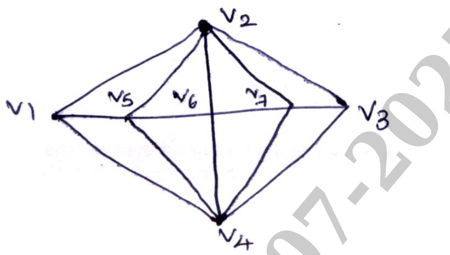
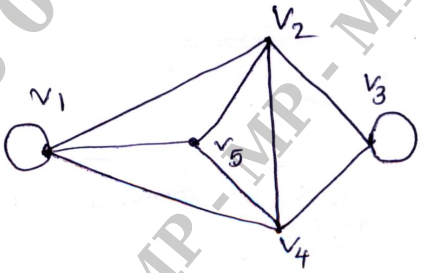
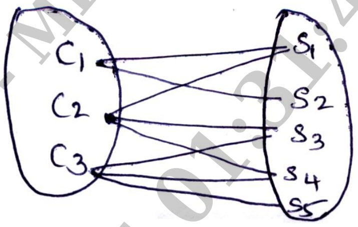
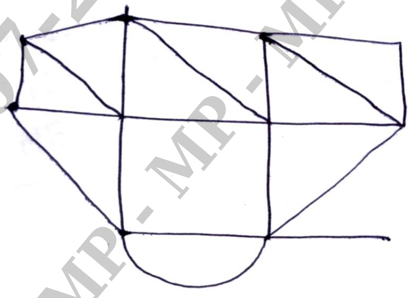
Graph Theory

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	**M**	**L**	**C**
1	a.	Consider the following graph G Fig.Q1(a). Write : i) Open walk which is not a trail ii) Trial which is not a path iii) Closed walk which is a cycle iv) Closed walk which is a circuit but not a cycle v) Closed walk neither circuit nor cycle vi) Path of length 4.  Fig.Q1(a)	**6**	**L3**	**CO1**
	b.	Define bipartite graph and complete bipartite graph can a bipartite graph have odd length cycles. Explain.	**7**	**L1**	**CO1**
	c.	Is there a simple graph with 1, 1, 3, 3, 3, 4, 6, 7 as the degree of vertices? Explain.	**7**	**L3**	**CO1**
		OR			
2	a.	Define spanning subgraph and induced subgraph. Draw a complete graph G with 5 vertices and spanning subgraph and induced subgraph of G.	**6**	**L1**	**CO1**
	b.	Verify the following : i) Fig.Q2(b)(i) and Fig.Q2(b)(ii) are isomorphic.  Fig.Q2(b)(i)  Fig.Q2(b)(ii) ii) Fig.Q2(b)(iii) and Fig.Q2(b)(iv) are not isomorphic.  Fig.Q2(b)(iii)  Fig.Q2(b)(iv)	**7**	**L2**	**CO2**
	c.	A simple graph with n vertices and k components can have at most (n – k) (n – k + 1)/2 edges.	**7**	**L3**	**CO2**

					BCS405B
		Module – 2			
3	a.	By specifying the walk draw two Euler graphs and unicursal graph.	**6**	**L2**	**CO1**
	b.	If all the vertices in a connected graph G are of even degree, then show that G is Eulerian.	**7**	**L3**	**CO2**
	c.	Define and find union, intersection and ring sum of $K_{2,3}$ and $K_{3,3}$.	**7**	**L1**	**CO2**
		OR			
4	a.	i) Define reflexive relation, symmetric relation and transitive relation ii) Draw a symmetric graph and complete asymmetric graph.	**6**	**L1** **L2**	**CO1** **CO1**
	b.	Distinguish between Hamiltonian graph and Eulerian graph with two examples by specifying the walk.	**7**	**L2**	**CO2**
	c.	Prove that a connected graph G has an Euler circuit if and only if G can be decomposed into edge-disjoint cycles.	**7**	**L3**	**CO2**
		Module – 3			
5	a.	Prove that a tree with n vertices has n-1 edges.	**6**	**L3**	**CO1**
	b.	i) Prove that a graph is connected if and only if it has a spanning tree ii) Identify cut vertices if any in graph Fig.Q5(b)(i),Fig.Q5(b)(ii), Fig.Q5(b)(iii).  Fig.Q5(b)(i)  Fig.Q5(b)(ii)  Fig.Q5(b)(iii)	**7**	**L3** **L2**	**CO2** **CO2**
	c.	Show that for any graph G, the vertex connectivity cannot exceed the edge connectivity and edge connectivity cannot exceed the degree of the vertex with the smallest degree in G.	**7**	**L3**	**CO3**
		OR			
6	a.	Prove that a connected graph G is a tree if and only if there is one and only one path between every pair of vertices.	**6**	**L3**	**CO2**
	b.	Define a tree and forest. Prove that with two or more vertices in a tree, there are at last two pendent vertices.	**7**	**L1**	**CO1**
	c.	Show that a Hamiltonian path is a spanning tree. Draw all the spanning trees of the graph Fig.Q6(c).  Fig.Q6(c)	**7**	**L2**	**CO2**
		Module – 4			
7	a.	i) State Kuratowski's theorem and draw Kuratowski's two graphs ii) Draw planar graphs of : i) Order 5 and size 8 ii) Order 6 and size 12.	**6**	**L1** **L3**	**CO2** **CO2**
	b.	Show that a connected planar graph with n vertices and e-edges has e-n+2 regions.	**7**	**L3**	**CO2**
	c.	Draw the geometric dual of graphs Fig.Q7(c)(i) and Fig.Q7(c)(ii).  Fig.Q7(c)(i)  Fig.Q7(c)(ii)	**7**	**L2**	**CO3**

		OR			
8	a.	i) Show that Kuratowski's first graph K_5 isnon planar ii) Show that every connected simple graph G contains a vertex of degree less than 6.	**6**	**L2** **L2**	**CO2** **CO2**
	b.	If G is a simple planar graph with at least three vertices then show that : (i) $e \leq 3n - 6$ ii) $e \leq 2n - 4$ if G is triangle free.	**7**	**L3**	**CO2**
	c.	Write down adjacency matrix, path matrix and circuit matrix for the given graphs Fig.Q8(c)(i) and Fig.Q8(c)(ii).  Fig.Q8(c)(i)  Fig.Q8(c)(ii)	**7**	**L2**	**CO3**
		Module – 5			
9	a.	Prove that a graph with at least one edge is 2-chromatic if and only if it has no circuits of odd length.	**6**	**L3**	**CO2**
	b.	Define chromatic number. Find chromatic polynomial of C_4 of length 4.	**7**	**L2**	**CO3**
	c.	State and prove 5 colour problems.	**7**	**L3**	**CO2**
		OR			
10	a.	Prove that every connected simple planner graph is 6-colourable.	**6**	**L3**	**CO3**
	b.	Define matching and complete matching. Find the two complete matching of :  Fig.Q10(b)	**7**	**L1**	**CO2**
	c.	Define covering and minimal covering of a graph. Obtain two minimal covering from the given graph.  Fig.Q10(c)	**7**	**L2**	**CO3**

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CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

BBOC407

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025

Biology for Engineers (CSE)

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
		Module – 1			
Q.1	**a.**	Define Cell. Explain function and structure of cell.	**7**	**L2**	**CO1**
	b.	List the various hormones and write the functions of them.	**7**	**L2**	**CO1**
	c.	Demonstrate the properties and function of lipids.	**6**	**L3**	**CO1**
		OR			
Q.2	**a.**	What are stem cells? Discuss the function of stem cells.	**7**	**L2**	**CO1**
	b.	List the vitamins and write the functions of them.	**7**	**L2**	**CO1**
	c.	Demonstrate the properties and function of nuclic acids.	**6**	**L3**	**CO1**
		Module – 2			
Q.3	**a.**	Define Biomolecule. List the classification of biomolecules with each one example in short in engineering application.	**7**	**L2**	**CO2**
	b.	Explain the applications of enzymes in biosensors and bio bleaching.	**7**	**L2**	**CO2**
	c.	What is DNA finger printing? Explain the process involved in DNA finger printing.	**6**	**L3**	**CO2**
		OR			
Q.4	**a.**	Explain the properties of cellulose as an effective water filter.	**7**	**L2**	**CO2**
	b.	List the properties of PHA and explain the engineering applications of PHA.	**7**	**L2**	**CO2**
	c.	Demonstrate whey as a protein.	**6**	**L3**	**CO2**
		Module – 3			
Q.5	**a.**	Define ECG. Explain in detail.	**7**	**L2**	**CO3**
	b.	How kidney will be used as a filteration system, explain with one type of dialysis example.	**7**	**L2**	**CO3**
	c.	Illustrate Brain as a CPU system.	**6**	**L3**	**CO3**

		OR			
Q.6	**a.**	Briefly discuss the various bio engineering solutions for muscular dystrophy.	**7**	**L2**	**CO3**
	b.	Explain robotic arms for Prosthetic device.	**7**	**L2**	**CO3**
	c.	Illustrate eye as a camera system.	**6**	**L3**	**CO3**
		Module – 4			
Q.7	**a.**	Compare the process of photo synthesis to the functioning of photo synthesis to the functioning of photovoltaic cells.	**7**	**L2**	**CO4**
	b.	Super hydrophobic and self cleaning surfaces. Explain in detail.	**7**	**L2**	**CO4**
	c.	Write a note on Lotus leaf effect.	**6**	**L3**	**CO4**
		OR			
Q.8	**a.**	Compare HBOC's and PEC.	**7**	**L2**	**CO4**
	b.	How shark skin and swim suits are using biological concepts.	**7**	**L2**	**CO4**
	c.	Write a note on GPS technology.	**6**	**L3**	**CO4**
		Module – 5			
Q.9	**a.**	Explain in detail flow AI will be used in all disease diagnosis.	**7**	**L2**	**CO5**
	b.	Demonstrate bioremediation and biomining.	**7**	**L3**	**CO5**
	c.	Explain muscular system as a scaffold.	**6**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain in detail electrical nose in food science.	**7**	**L2**	**CO5**
	b.	Demonstrate bioprinting technique list all of them.	**7**	**L3**	**CO5**
	c.	Explain DNA origami and Bio computing.	**6**	**L2**	**CO5**

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CBCS SCHEME

BUHK408/22BD47

USN ☐☐☐☐☐☐☐☐☐☐

Question Paper Version : A

Fourth Semester B.E./B.Tech./B.Design Degree Examination, June/July 2025

Universal Human Values

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. Human values are essential for
a) living in harmony with self, each other and nature
b) making life easy
c) living with friends and family
d) making money to fulfill desires.

2. "Knowing" means having
a) Self exploration b) right understanding c) evaluation d) none of these

3. Each human being is co-existance of the _____ and _____.
a) self , body b) cost , value c) mind , body d) only body

4. Selecting and desiring are activities of
a) body b) self c) material d) mind

5. The problems in our relationship with various entities are due to our
a) assumption b) misunderstandings c) difference d) negligence

6. Value education ensures ______ and _____ in every human being.
a) right understanding and right feeling b) right value and moral
c) right and wrong d) right path and needs

7. Process of value education is of
a) Self declaration b) Self exploration c) Self d) None of these

8. The activity of desires, thoughts and expecting together is called as
a) Imagination b) Interaction c) Conscious d) None of these

9. Any entity that has the activity of recognizing and fulfillment only can be called as
a) Material Entity b) Physical c) Physical identity d) Self

10. An individual people aspiring for the universal human order will be
a) more responsible socially & ecologically b) more rich
c) more powerful d) more well - traveled

11. Values important for the relationship are many ; they may include
a) Aggression b) Competition c) Integrity and character d) Arrogance

12. Happiness means
a) To be happy always b) To be in the state of harmony
c) To be joyful d) To live happily always

13. "Samridhi" means
a) fulfillness b) Prosperity c) Sacrifice d) Joy

14. Value education leads a human being to
a) Harmony b) Peace c) Prosperity d) (a) & (b)

15. It is the first level of living
a) Individual b) Family c) Society d) Nature

16. Expression of thought is in the form of _____
a) Behavior b) Work c) Realization d) Behavior & Work

17. Our participation at different levels in the larger order is known as ____
a) Behavior b) Values c) Efforts d) None of these

18. Values are the outcome of realization and _____, which are always definite.
a) Behavior b) Work c) Understanding d) Beliefs

19. It is the fourth level of living
a) Individual b) Family c) Society d) Nature

20. Value education helps us to correctly identify our _____
a) Goals b) Aspirations c) Desire d) All of these

21. A harmonious world is created by values at 4 levels. These are ______
a) Home , Family , Society , Country b) Individual , Family, Society , Existence
c) School , Home , Office , Temple d) None of these

22. To fulfill human aspirations ______ are necessary.
a) Both values and skills b) Values
c) Skills d) None of these

23. Values are the outcome of realization and understanding , which are always ______.
a) Indefinite b) Definite c) Constant d) Equilibrium

24. ______ means applicable to all the human beings irrespective of caste, creed , nationalities, religion , etc for all times and regions.
a) Rational b) Universal c) Leading to harmony d) Consciousness

25. The first dimension of human being is ____
a) Behavior b) Work c) Thought d) Realization

26. Developed Nations are the live examples of ?
a) Prosperity b) Wealth c) Happiness d) Health

27. The Third dimension of human being is _____
a) Behavior b) Work c) Thought d) Realization

28. What is the emotional state of being happy?
a) Happiness b) Joy c) Pleasure d) All of these

29. When we set our goal in right direction with the help of right understanding, it is called ___
a) Skill domain b) Value domain c) Prosperity d) Development

30. Education has two domains : Value domain and skill domain. Which of the following is true?
a) The value domain deals with the understanding part, while skill domain deals with the learning part.
b) The value domain deals with learning part, while skill domain deals with the understanding part.
c) Value domain conflicts with skill domain
d) Value domain is the part of skill domain.

31. ______ means harmony within myself.
a) Excitement b) Happiness c) Satisfaction d) Pleasure

32. Prosperity can be achieved by ______.
a) Relationship b) Physical facility only
c) Right understanding with physical facility d) None of these

33. Happiness is the state of _____
a) Excitement b) Harmony c) Satisfaction d) Pleasure

34. Continuous happiness and prosperity are the ______
a) Impractical thought b) Impossible desires
c) Basic human aspirations d) None of these

35. For prosperity, which of the following is not required?
a) Appropriate assessment of the physical needs.
b) Ensuring availability/production of more than required physical facility
c) Knowing the need of physical facilities as limited
d) Giving first priority to physical facilities in life.

36. The problems in our relationship with various entities are due to our
a) Assumptions b) Misunderstandings c) Difference d) Negligence

37. Society means
a) Family b) All human beings c) Few individuals d) None of these

38. The feeling of having more than required physical facility is ____
a) Happiness b) Prosperity c) Satisfaction d) Success

39. Basic requirements for fulfillment of aspirations of every human being with their correct priority are ____
a) Right understanding, Relationship and Physical Facilities
b) Physical Facilities, Relationship and Right understanding.
c) Right understanding, Physical facilities and Relationship.
d) Relationship, Right understanding and Physical Facilities.

40. Human consciousness is ______
a) Giving weightage to physical facilities to the maximization of sensory pleasures to accumulation of wealth.
b) Giving weightage to relationship to the inherent feelings and right understanding.
c) Both
d) None of these

41. ______ helps the human being to transform from animal consciousness to human consciousness.
a) Right understanding b) Preconditioning c) Sensations d) None of these

42. Our natural acceptance is to be in which category of people _____
a) Suvidha Viheen Dukhi Daridra (SVDD)
b) Suvidha Sampanna Dukhi Daridra (SSDD)
c) Suvidha Sampanna Sukhi Samridh (SSSS).
d) All of these

43. To which category a prosperous person belong?
a) SVDD b) SSDD c) SSSS d) None of these

44. Right understanding with physical facilities brings _____
a) Deprivation b) Mutual prosperity c) Mutual fulfillment d) None of these

45. The third basic requirement for transformation from animal consciousness to human consciousness is ______
a) Mental discipline b) Sensory pleasure c) All of these d) None of these

46. Right understanding of relationship means _____
a) I am in harmony with everyone and everything.
b) I am in conflict with everyone and everything
c) I am in balance with everyone and everything
d) I am detached from everyone and everything.

47. The fourth basic requirement for transformation from animal consciousness to human consciousness is ______
a) Relationship b) Detachment c) Right understanding d) Sensory pleasure

48. When we are in harmony with everything and everyone, we can be in ____
a) Conflict b) Imbalance c) Detachment d) Peace

49. The human goal at the level of nature is
a) Prosperity b) Co – existence c) Fearlessness d) Right understanding

50. Self exploration is a process which help us to find out "What I am and What I really want to be". Two mechanisms involved in self exploration are :
a) Realization and understanding
b) Natural and verifiable
c) Natural acceptance and experimental validation
d) Correctable and identifiable.

* * * * *

CBCS SCHEME

BUHK408/22BD47

USN | | | | | | | | | | |

Question Paper Version : B

Fourth Semester B.E./B.Tech./B.Design Degree Examination, June/July 2025

Universal Human Values

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
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1. ______ means harmony within myself.
a) Excitement b) Happiness c) Satisfaction d) Pleasure

2. Prosperity can be achieved by ______.
a) Relationship b) Physical facility only
c) Right understanding with physical facility d) None of these

3. Happiness is the state of _____
a) Excitement b) Harmony c) Satisfaction d) Pleasure

4. Continuous happiness and prosperity are the ______
a) Impractical thought b) Impossible desires
c) Basic human aspirations d) None of these

5. For prosperity, which of the following is not required?
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b) Ensuring availability/production of more than required physical facility
c) Knowing the need of physical facilities as limited
d) Giving first priority to physical facilities in life.

6. The problems in our relationship with various entities are due to our
a) Assumptions b) Misunderstandings c) Difference d) Negligence

7. Society means
a) Family b) All human beings c) Few individuals d) None of these

8. The feeling of having more than required physical facility is ____
a) Happiness b) Prosperity c) Satisfaction d) Success

9. Basic requirements for fulfillment of aspirations of every human being with their correct priority are ____
a) Right understanding, Relationship and Physical Facilities
b) Physical Facilities, Relationship and Right understanding.
c) Right understanding, Physical facilities and Relationship.
d) Relationship, Right understanding and Physical Facilities.

10. Human consciousness is ______
a) Giving weightage to physical facilities to the maximization of sensory pleasures to accumulation of wealth.
b) Giving weightage to relationship to the inherent feelings and right understanding.
c) Both
d) None of these

11. Human values are essential for
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14. Selecting and desiring are activities of
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15. The problems in our relationship with various entities are due to our
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16. Value education ensures ______ and _____ in every human being.
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17. Process of value education is of
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19. Any entity that has the activity of recognizing and fulfillment only can be called as
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20. An individual people aspiring for the universal human order will be
a) more responsible socially & ecologically b) more rich
c) more powerful d) more well - traveled

21. ______ helps the human being to transform from animal consciousness to human consciousness.
a) Right understanding b) Preconditioning c) Sensations d) None of these

22. Our natural acceptance is to be in which category of people _____
a) Suvidha Viheen Dukhi Daridra (SVDD)
b) Suvidha Sampanna Dukhi Daridra (SSDD)
c) Suvidha Sampanna Sukhi Samridh (SSSS).
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23. To which category a prosperous person belong?
a) SVDD b) SSDD c) SSSS d) None of these

24. Right understanding with physical facilities brings _____
a) Deprivation b) Mutual prosperity c) Mutual fulfillment d) None of these

25. The third basic requirement for transformation from animal consciousness to human consciousness is ______
a) Mental discipline b) Sensory pleasure c) All of these d) None of these

26. Right understanding of relationship means _____
a) I am in harmony with everyone and everything.
b) I am in conflict with everyone and everything
c) I am in balance with everyone and everything
d) I am detached from everyone and everything.

27. The fourth basic requirement for transformation from animal consciousness to human consciousness is ______
a) Relationship b) Detachment c) Right understanding d) Sensory pleasure

28. When we are in harmony with everything and everyone, we can be in ____
a) Conflict b) Imbalance c) Detachment d) Peace

29. The human goal at the level of nature is
a) Prosperity b) Co – existence c) Fearlessness d) Right understanding

30. Self exploration is a process which help us to find out "What I am and What I really want to be". Two mechanisms involved in self exploration are :
a) Realization and understanding
b) Natural and verifiable
c) Natural acceptance and experimental validation
d) Correctable and identifiable.

31. A harmonious world is created by values at 4 levels. These are ______
a) Home , Family , Society , Country b) Individual , Family, Society , Existence
c) School , Home , Office , Temple d) None of these

32. To fulfill human aspirations ______ are necessary.
a) Both values and skills b) Values
c) Skills d) None of these

33. Values are the outcome of realization and understanding , which are always ______.
a) Indefinite b) Definite c) Constant d) Equilibrium

34. ______ means applicable to all the human beings irrespective of caste, creed , nationalities, religion , etc for all times and regions.
a) Rational b) Universal c) Leading to harmony d) Consciousness

35. The first dimension of human being is ____
a) Behavior b) Work c) Thought d) Realization

36. Developed Nations are the live examples of ?
a) Prosperity b) Wealth c) Happiness d) Health

37. The Third dimension of human being is _____
a) Behavior b) Work c) Thought d) Realization

38. What is the emotional state of being happy?
a) Happiness b) Joy c) Pleasure d) All of these

39. When we set our goal in right direction with the help of right understanding, it is called ___
a) Skill domain b) Value domain c) Prosperity d) Development

40. Education has two domains : Value domain and skill domain. Which of the following is true?
a) The value domain deals with the understanding part, while skill domain deals with the learning part.
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c) Value domain conflicts with skill domain
d) Value domain is the part of skill domain.

41. Values important for the relationship are many ; they may include
a) Aggression b) Competition c) Integrity and character d) Arrogance

42. Happiness means
a) To be happy always b) To be in the state of harmony
c) To be joyful d) To live happily always

43. “Samridhi” means
a) fulfillness b) Prosperity c) Sacrifice d) Joy

44. Value education leads a human being to
a) Harmony b) Peace c) Prosperity d) (a) & (b)

45. It is the first level of living
a) Individual b) Family c) Society d) Nature

46. Expression of thought is in the form of _____
a) Behavior b) Work c) Realization d) Behavior & Work

47. Our participation at different levels in the larger order is known as ____
a) Behavior b) Values c) Efforts d) None of these

48. Values are the outcome of realization and _____, which are always definite.
a) Behavior b) Work c) Understanding d) Beliefs

49. It is the fourth level of living
a) Individual b) Family c) Society d) Nature

50. Value education helps us to correctly identify our _____
a) Goals b) Aspirations c) Desire d) All of these

* * * * *

CBCS SCHEME

BUHK408/22BD47

USN ☐☐☐☐☐☐☐☐☐☐

Question Paper Version : C

Fourth Semester B.E./B.Tech./B.Design Degree Examination, June/July 2025

Universal Human Values

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
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5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. A harmonious world is created by values at 4 levels. These are ______
a) Home , Family , Society , Country b) Individual , Family, Society , Existence
c) School , Home , Office , Temple d) None of these

2. To fulfill human aspirations ______ are necessary.
a) Both values and skills b) Values
c) Skills d) None of these

3. Values are the outcome of realization and understanding , which are always ______.
a) Indefinite b) Definite c) Constant d) Equilibrium

4. ______ means applicable to all the human beings irrespective of caste, creed , nationalities, religion , etc for all times and regions.
a) Rational b) Universal c) Leading to harmony d) Consciousness

5. The first dimension of human being is ____
a) Behavior b) Work c) Thought d) Realization

6. Developed Nations are the live examples of ?
a) Prosperity b) Wealth c) Happiness d) Health

7. The Third dimension of human being is _____
a) Behavior b) Work c) Thought d) Realization

8. What is the emotional state of being happy?
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9. When we set our goal in right direction with the help of right understanding, it is called ___

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10. Education has two domains : Value domain and skill domain. Which of the following is true?

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d) Value domain is the part of skill domain.

11. ______ helps the human being to transform from animal consciousness to human consciousness.

a) Right understanding b) Preconditioning c) Sensations d) None of these

12. Our natural acceptance is to be in which category of people _____

a) Suvidha Viheen Dukhi Daridra (SVDD)
b) Suvidha Sampanna Dukhi Daridra (SSDD)
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d) All of these

13. To which category a prosperous person belong?

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14. Right understanding with physical facilities brings _____

a) Deprivation b) Mutual prosperity c) Mutual fulfillment d) None of these

15. The third basic requirement for transformation from animal consciousness to human consciousness is ______

a) Mental discipline b) Sensory pleasure c) All of these d) None of these

16. Right understanding of relationship means _____

a) I am in harmony with everyone and everything.
b) I am in conflict with everyone and everything
c) I am in balance with everyone and everything
d) I am detached from everyone and everything.

17. The fourth basic requirement for transformation from animal consciousness to human consciousness is ______

a) Relationship b) Detachment c) Right understanding d) Sensory pleasure

18. When we are in harmony with everything and everyone, we can be in ____

a) Conflict b) Imbalance c) Detachment d) Peace

19. The human goal at the level of nature is

a) Prosperity b) Co – existence c) Fearlessness d) Right understanding

20. Self exploration is a process which help us to find out "What I am and What I really want to be". Two mechanisms involved in self exploration are :
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24. Continuous happiness and prosperity are the ______
a) Impractical thought b) Impossible desires
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25. For prosperity, which of the following is not required?
a) Appropriate assessment of the physical needs.
b) Ensuring availability/production of more than required physical facility
c) Knowing the need of physical facilities as limited
d) Giving first priority to physical facilities in life.

26. The problems in our relationship with various entities are due to our
a) Assumptions b) Misunderstandings c) Difference d) Negligence

27. Society means
a) Family b) All human beings c) Few individuals d) None of these

28. The feeling of having more than required physical facility is ____
a) Happiness b) Prosperity c) Satisfaction d) Success

29. Basic requirements for fulfillment of aspirations of every human being with their correct priority are ____
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30. Human consciousness is ______
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31. Values important for the relationship are many ; they may include
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32. Happiness means
a) To be happy always b) To be in the state of harmony
c) To be joyful d) To live happily always

33. "Samridhi" means
a) fulfillness b) Prosperity c) Sacrifice d) Joy

34. Value education leads a human being to
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35. It is the first level of living
a) Individual b) Family c) Society d) Nature

36. Expression of thought is in the form of _____
a) Behavior b) Work c) Realization d) Behavior & Work

37. Our participation at different levels in the larger order is known as ____
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38. Values are the outcome of realization and _____, which are always definite.
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43. Each human being is co-existance of the _____ and _____.
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a) more responsible socially & ecologically b) more rich
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* * * * *

CBCS SCHEME

BUHK408/22BD47

USN | | | | | | | | | | |

Question Paper Version : D

Fourth Semester B.E./B.Tech./B.Design Degree Examination, June/July 2025

Universal Human Values

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
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---

1. ______ helps the human being to transform from animal consciousness to human consciousness.
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2. Our natural acceptance is to be in which category of people _____
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8. When we are in harmony with everything and everyone, we can be in ____
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9. The human goal at the level of nature is
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35. The problems in our relationship with various entities are due to our
a) assumption b) misunderstandings c) difference d) negligence

36. Value education ensures ______ and _____ in every human being.
a) right understanding and right feeling b) right value and moral
c) right and wrong d) right path and needs

37. Process of value education is of
a) Self declaration b) Self exploration c) Self d) None of these

38. The activity of desires, thoughts and expecting together is called as
a) Imagination b) Interaction c) Conscious d) None of these

39. Any entity that has the activity of recognizing and fulfillment only can be called as
a) Material Entity b) Physical c) Physical identity d) Self

40. An individual people aspiring for the universal human order will be
a) more responsible socially & ecologically b) more rich
c) more powerful d) more well - traveled

41. A harmonious world is created by values at 4 levels. These are ______
a) Home , Family , Society , Country b) Individual , Family, Society , Existence
c) School , Home , Office , Temple d) None of these

42. To fulfill human aspirations ______ are necessary.
a) Both values and skills b) Values
c) Skills d) None of these

43. Values are the outcome of realization and understanding , which are always ______.
a) Indefinite b) Definite c) Constant d) Equilibrium

44. ______ means applicable to all the human beings irrespective of caste, creed , nationalities, religion , etc for all times and regions.
a) Rational b) Universal c) Leading to harmony d) Consciousness

45. The first dimension of human being is ____
a) Behavior b) Work c) Thought d) Realization

46. Developed Nations are the live examples of ?
a) Prosperity b) Wealth c) Happiness d) Health

47. The Third dimension of human being is _____
a) Behavior b) Work c) Thought d) Realization

48. What is the emotional state of being happy?
a) Happiness b) Joy c) Pleasure d) All of these

49. When we set our goal in right direction with the help of right understanding, it is called ___
a) Skill domain b) Value domain c) Prosperity d) Development

50. Education has two domains : Value domain and skill domain. Which of the following is true?
a) The value domain deals with the understanding part, while skill domain deals with the learning part.
b) The value domain deals with learning part, while skill domain deals with the understanding part.
c) Value domain conflicts with skill domain
d) Value domain is the part of skill domain.

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