CBCS SCHEME

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BIC401

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Elements of Cyber Security and IOT

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 symmetric encryption with one example.	10	L2	CO1
	b.	Explain the basic fire walled network.	10	L2	CO1
		OR			
Q.2	a.	Explain the hierarchical structure of the Domain Name System (DNS).	10	L2	CO1
	b.	Explain the concept of how to find the IP address manually and also explain IP address configuration.	10	L2	CO1
		Module – 2			
Q.3	a.	Explain the concept of centralized botnet infrastructures.	10	L2	CO2
	b.	Explain the race condition with an example.	10	L2	CO2
		OR			
Q.4	a.	Explain how victim interaction to fast flux infrastructure.	10	L2	CO2
	b.	Explain Brute Force and Dictionary Attacks.	10	L2	CO2
		Module – 3			
Q.5	a.	Explain the concept of Domain Name System (DNS) amplification attacks.	7	L2	CO3
	b.	Explain Charlie performs a man in the middle attacks against Bob and his bank.	7	L2	CO3
	c.	Explain the term virtual machine obfuscation.	6	L2	CO3
		OR			
Q.6	a.	Explain the concept of spyware.	7	L2	CO3
	b.	Explain the concept of token kidnapping.	7	L2	CO3
	c.	Explain the concept of load library steps and reflective injection steps.	6	L2	CO3

		Module – 4			
Q.7	**a.**	Justify how IOT and Digitization are having the key differences.	**8**	**L2**	**CO4**
	b.	Explain the concept of sensor network.	**7**	**L2**	**CO4**
	c.	Explain the different IOT challenges.	**5**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain the different IOT impacts on various technological aspects and environment.	**8**	**L2**	**CO4**
	b.	Define sensors and actuators also explain the different types of sensors.	**7**	**L2**	**CO4**
	c.	Explain design constraints for Wireless Smart Objects (WSO) with data aggregation.	**5**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	With the help of physical layer, MAC layer and security concept explain how 802.15.4 c/g differ from 802.15.4 zigbac.	**12**	**L2**	**CO5**
	b.	With the help of subscribe frame work explain Message Queuing Telemetry Transport (MQTT).	**8**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain Supervisory Control And Data Acquisition (SCADA) how it directly communicate over a raw socket and Ethernet interface.	**12**	**L2**	**CO5**
	b.	With the help of physical layer explain IEEE 1901.2a.	**8**	**L2**	**CO5**

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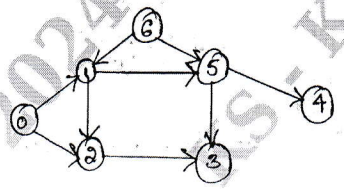
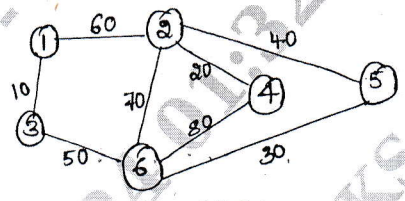
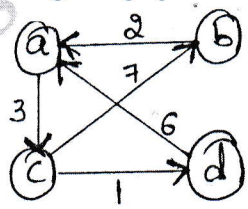
BCO402

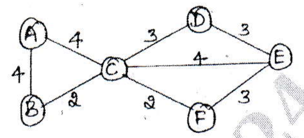
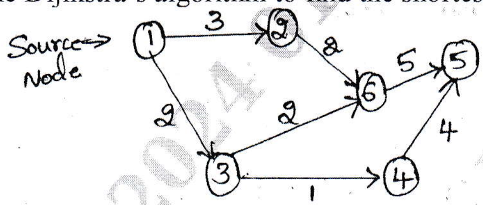
Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Analysis & Design of Algorithms

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.	Discuss different types of asymptotic notations that are used for analyzing the algorithm with an appropriate examples.	6	L2	CO1
	b.	Apply Backward substitution method to solve the following recurrence relations, (i) $T(n) = T\left(\frac{n}{2}\right) + T\left(\frac{n}{2}\right) + 2$ for $n > 2$ and $T(2) = 1$, $T(1) = 0$ (ii) $T(n) = T(n-1) + T(n-1) + 1$ for $n > 1$ and $T(1) = 1$	6	L3	CO1
	c.	Define a Brute force strategy. Solve the string matching problem using brute force approach and analyze its time complexity.	8	L3	CO1
		OR			
Q.2	a.	Discuss all the steps involved in mathematical analysis of Recursive algorithms. Design and analysis the time complexity for Tower of Hanoi problem.	6	L3	CO1
	b.	Devise an algorithm to check whether the given elements in an array are distinct or not. Analyse its time complexity.	6	L3	CO2
	c.	Design an algorithm for selection sort and find its time complexity. Trace it for n = 7 [19, 7, 23, 8, 56, 11, 2]	8	L3	CO2
		Module – 2			
Q.3	a.	Build an algorithm for performing the Insertion sort. Also sort the below elements in an ascending order using the same. n = 7 [18, 9, 26, 11, 43, 84, 7]	6	L3	CO2
	b.	Apply both DFS and Source Removal approach to perform the topological sorting for the below graph.  Fig. Q3 (b)	8	L3	CO2
	c.	Design an algorithm for Quicksort. Sort the below elements using the same. Also mention the best and worst time complexity of Quicksort algorithm. To sort : A L G O R I T H M S	6	L3	CO2
		OR			
Q.4	a.	Apply Strassen's matrix multiplication method to compute the product of following 2 metrices. $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix}$	6	L3	CO2

	b.	Build an algorithm for performing a merge sort. Analyze its time complexity and sort the below using the same. n = 9 [65, 70, 75, 24, 35, 12, 80, 20, 47]	8	L3	CO2
	c.	Apply Divide-and-Conquer approach for solving Binary Tree Traversal problem. Write a pseudocode / algorithm for the below : (i) To find the height of BT (ii) To count the number of nodes in a BT.	6	L2	CO2
		Module – 3			
Q.5	a.	Explain "Transform and Conquer" technique along with its three major variations of this idea.	5	L2	CO3
	b.	Define an AVL Trees? Explain 4 types of rotations used to construct AVL Tree. Construct the AVL Tree for the list of nodes below. [5, 6, 8, 3, 2, 4, 7]	10	L3	CO3
	c.	Briefly explain the concept of sorting by distribution counting technique.	5	L2	CO3
		OR			
Q.6	a.	Apply heapsort algorithm to sort the list below in an ascending order using Root deletion method. list = [19, 17, 12, 23, 9]	8	L3	CO3
	b.	Design and analyze the Horspool string matching algorithm for searching a given pattern in a main string.	6	L3	CO3
	c.	Sort the below elements using sorting by counting technique. S [17, 12, 15, 21, 10] C [0 0 0 0 0]	6	L3	CO3
		Module – 4			
Q.7	a.	Describe the Dynamic programming strategy. Design an algorithm to compute the maximum profit for the below knapsack instance using dynamic programming technique. n = 4 W = (2, 1, 3, 2) P = (12, 10, 20, 15) M = 5	7	L3	CO4
	b.	Design and Apply the Prim's algorithm to find the minimum spanning Tree for the given graph.  Fig. Q7 (b)	6	L3	CO4
	c.	Construct the Huffman Coding Tree for the below data: Character A B C D E Probability 0.05 0.1 0.15 0.2 0.5 Also Encode the text : EADECEB and Decode the text : 100010111001010	7	L3	CO4
		OR			
Q.8	a.	List all the differences between Dijikstra's and Floyd's algorithm. Compute all pair shortest path problem for the given graph.  Fig. Q8 (a)	7	L3	CO4

	b.	Define Minimum Spanning Tree. Compute the MST using Kruskal's algorithm with union ( ) – Find ( ) methods.  Fig. Q8 (b)	7	L3	CO4
	c.	Design and apply the Dijikstra's algorithm to find the shortest path.  Fig. Q8 (c)	6	L3	CO5
		Module – 5			
Q.9	a.	Distinguish between P, NP, NP complete problems, with an example for each.	6	L2	CO5
	b.	Apply back tracking algorithm to solve the following instance of the sum-of-subset problem. S = {2, 3, 4, 5} d = 11	8	L3	CO5
	c.	What are the Decision Trees? Demonstrate the uses of Decision trees with suitable example.	6	L3	CO6
		OR			
Q.10	a.	Write a short note on : (i) Backtracking technique. (ii) Branch and Bound technique.	6	L2	CO6
	b.	Apply backtracking approach to find the state-space tree for 4-Queen problem.	7	L2	CO6
	c.	Apply Branch and Bound technique to solve below knapsack instance. n = (1, 2, 3) W = (9, 5, 5) P = (27, 20, 10) M = 10	7	L3	CO6

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BCS403

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
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.	Define database. Elaborate component modules of DBMS and their interactions.	10	L2	CO1
	b.	Describe the three-schema architecture. Why do we need mappings among schema levels?	06	L2	CO1
	c.	Explain the difference between logical and physical data independence.	04	L2	CO1
		OR			
Q.2	a.	Draw an ER diagram for an COMPANY database with employee, department, project as strong entities and dependent as weak entity. Specify the constraints, relationships and ratios in the ER diagram.	10	L3	CO3
	b.	Define the following terms with example for each using ER notations: Entity, attribute, composite attribute, multivalued attribute, participation role.	10	L3	CO3
		Module – 2			
Q.3	a.	Discuss the update operations and dealing with constraint violations with suitable examples.	08	L2	CO2
	b.	Illustrate the relational algebra operators with examples for select and project operation.	06	L2	CO2
	c.	Discuss the characteristics of relations that make them different from ordinary table and files.	06	L2	CO2
		OR			
Q.4	a.	Perform (i) Student U instructor (ii) Student ∩ Instructor (iii) Student – Instructor (iv) Instructor – Student on the following tables: Student Fname | Lname Susan | Yao Ramesh | Shah Johnny | Kohler Barbara | Jones Amy | Ford Jimmy | Wang Ernest | Gilbert Instructor Fname | Lname John | Smith Ricardo | Browne Susan | Mao Francis | Johnson Ramesh | Shah	04	L3	CO2
	b.	Consider the following relational database schema and write the queries in relational algebra expressions: EMP(Eno, Ename, Salary, Address, Phone, DNo) DEPT(DNo, Dname, DLoc, MgrEno) DEPENDENT(Eno, Dep_Name, Drelation, Dage) (i) List all the employees who reside in 'Belagavi'. (ii) List all the employees who earn salary between 30000 and 40000 (iii) List all the employees who work for the 'Sales' department (iv) List all the employees who have at least one daughter (v) List the department names along with the names of the managers	10	L3	CO2

	c.	Consider the two tables T_1 and T_2 shown below: T_1 P | Q | R 10 | a | 5 15 | b | 8 25 | a | 6 T_2 A | B | C 10 | b | 6 25 | c | 3 10 | b | 5 Show the results of the following operations: (i) $T_1 \bowtie_{T_1.P=T_2.A} T_2$ (ii) $T_1 \bowtie_{T_1.Q=T_2.B} T_2$ (iii) $T_1 \bowtie_{(T_1.P=T_2.A \text{ AND } T_1.R=T_2.C)} T_2$	06	L3	CO2
		Module – 3			
Q.5	a.	Discuss the informal design guidelines for relation schema design.	08	L2	CO4
	b.	Define 1NF, 2NF, and 3NF with examples.	06	L2	CO4
	c.	Write the syntax for INSERT, UPDATE and DELETE statements in SQL and explain with suitable examples.	06	L2	CO3
		OR			
Q.6	a.	Discuss insertion, deletion and modification anomalies. Why are they considered bad? Illustrate with examples.	10	L2	CO3
	b.	Illustrate the following with suitable examples: (i) Datatypes in SQL (ii) Substring Pattern Matching in SQL.	10	L2	CO3
		Module – 4			
Q.7	a.	Consider the following relations: Student(Snum, Sname, Branch, level, age) Class(Cname, meet_at, room, fid) Enrolled(Snum, Cname) Faculty(fid, fname, deptid) Write the following queries in SQL. No duplicates should be printed in any of the answers. (i) Find the names of all Juniors (level = JR) who are enrolled in a class taught by I. Teach. (ii) Find the names of all classes that either meet in room R128 or have five or more students enrolled. (iii) For all levels except JR, print the level and rthe average age of students for that level. (iv) For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught. (v) Find the names of students not enrolled in any class.	10	L3	CO3
	b.	What do understand by correlated Nested Queries in SQL? Explain with suitable example.	04	L2	CO3
	c.	Discuss the ACID properties of a database transaction.	06	L2	CO4
		OR			
Q.8	a.	What are the views in SQL? Explain with examples.	04	L3	CO5
	b.	In SQL, write the usage of GROUP BY and HAVING clauses with suitable examples.	06	L2	CO3
	c.	Discuss the types of problems that may encounter with transactions that run concurrently.	10	L2	CO5

		Module – 5			
Q.9	**a.**	What is the two phase locking protocol? How does it Guarantee serializability.	**06**	**L2**	**CO5**
	b.	Describe the wait-die and wound-wait protocols for deadlock prevention.	**08**	**L2**	**CO5**
	c.	List and explain the four major categories of NOSQL system.	**06**	**L2**	**CO3**
		OR			
Q.10	**a.**	What is Multiple Granularity locking? How is it implemented using intension locks? Explain.	**10**	**L2**	**CO5**
	b.	Discuss the following MongoDB CRUD operations with their formats: (i) Insert (ii) Delete (iii) Read	**06**	**L2**	**CO4**
	c.	Briefly discuss about Neo4j data model.	**04**	**L2**	**CO4**

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BCS405A

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
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. Prove that for any propositions p, q, r the compound proposition. $[(p \wedge \neg q) \rightarrow r] \rightarrow [p \rightarrow (q \vee r)]$ is a tautology	06	L2	CO1
	b.	Test whether the following is a valid argument: If Ram studies then he will pass 12th. If Ram passes 12th then his father gifts him a bike. If Ram doesn't play video game then he will pass 12th. Ram did not get a bike. ∴ Ram played video game.	07	L3	CO1
	c.	Give direct proofs of the statements: i) If k and *l* are odd then k + *l* is even. ii) If k and *l* are odd then k*l* is odd.	07	L2	CO1
		OR			
Q.2	a.	Define (i) Proposition (ii) Open statement (iii) Quantifiers	06	L2	CO1
	b.	Using the laws of logic, prove the following logical equivalence: $[(\neg p \vee \neg q) \wedge (F_0 \vee p) \wedge p] \Leftrightarrow p \wedge \neg q$	07	L2	CO1
	c.	Write the following statement in symbolic form and find its negation: "If all triangles are right angled then no triangle is equilateral".	07	L2	CO1
		Module – 2			
Q.3	a.	Prove by using mathematical induction. $1^2 + 2^2 + \ldots\ldots + n^2 = \frac{n(n+1)(2n+1)}{6}$	06	L2	CO1
	b.	How many words can be made with or without meaning from the letters of the word "STATISTICS"? In how many of these a and c are adjacent? In how many vowels are together?	07	L3	CO2
	c.	Find the coefficient of x^3y^8 in the expansion of $(2x - y)^{11}$.	07	L2	CO2
		OR			
Q.4	a.	Obtain the recursive definition for the sequence in each of the following cases: (i) $a_n = 5n$ (ii) $a_n = 3n + 7$ (iii) $a_n = n^2$ (iv) $a_n = 2 - (-1)^n$	06	L2	CO2
	b.	A woman has 11 close relations and wishes to invite 5 of them to dinner. In how many ways can she invite them if (i) there is no restriction on her choice. (ii) 2 persons will not attend separately (iii) 2 persons will not attend together.	07	L3	CO2
	c.	In how many ways can we distribute 7 apples and 5 oranges among 3 children such that each child gets atleast one apple and one orange?	07	L3	CO2

		Module – 3			
Q.5	**a.**	State pigeon hole principle. Using pigeon hole principle find the minimum number of persons chosen so that atleast 5 of them will have their birthday in the same month.	**06**	**L3**	**CO3**
	b.	Let A = {a, b, c, d} and B = {1, 2, 3, 4, 5}. Find the number of 1-1 functions and onto functions from (i) A to B (ii) B to A	**07**	**L2**	**CO3**
	c.	Let A = {1, 2, 3, 4, 5}. Define a relation R on A × A by (x_1, y_1) R (x_2, y_2) iff $x_1 + y_1 = x_2 + y_2$. (i) Verify that R is an equivalence relation (ii) Determine the equivalence class of [(2, 4)]	**07**	**L2**	**CO3**
		OR			
Q.6	**a.**	Consider the functions f and g from R to R defined by f(x) = 2x + 5 and g(x) = ½ (x – 5). Prove that g is inverse of f.	**06**	**L2**	**CO3**
	b.	Let A = {1, 2, 3, 4} and R be the relation on A defined by xRy if and only if x < y. Write down R as a set of ordered pairs. Write the relation matrix and draw the digraph. List out the in degrees and out degrees of every vertex.	**07**	**L2**	**CO3**
	c.	Let A = {1, 2, 3, 6, 9, 12, 18} and define R on A by xRy iff 'x divides y'. Prove that (A, R) is a POSET. Draw the Hasse diagram for (A, R).	**07**	**L2**	**CO3**
		Module – 4			
Q.7	**a.**	How many integers between 1 and 300 (inclusive) are divisible by (i) atleast one of 5, 6 or 8. (ii) None of 5, 6 and 8.	**06**	**L3**	**CO4**
	b.	At a restaurant 10 men handover their umbrellas to the receptionist, In how many ways can their umbrellas be returned so that (i) no man receives his own umbrella. (ii) atleast one gets his own umbrella. (iii) atleast two gets their own umbrellas.	**07**	**L3**	**CO4**
	c.	The number of virus affected files in a system is 1000 (to start with) and this increases by 250% every 2 hours. Use a recurrence relation to determine the number of virus affected files in the system after 12 hours.	**07**	**L3**	**CO4**
		OR			
Q.8	**a.**	In how many ways one can arrange the letters of the word "CORRESPONDENTS" so that there are (i) no pair (ii) atleast 2 pairs of consecutive identical letters.	**06**	**L3**	**CO4**
	b.	4 persons P_1 , P_2 , P_3 , P_4 who arrive late for a dinner party find that only one chair at each of five tables T_1 , T_2 , T_3 , T_4 and T_5 is vacant. P_1 will not sit at T_1 or T_2. P_2 will not sit at T_2. P_3 will not sit at T_3 or T_4. P_4 will not sit at T_4 or T_5. Find the number of ways they can occupy the vacant chairs.	**07**	**L3**	**CO4**
	c.	Solve the recurrence relation $a_n - 6a_{n-1} + 9a_{n-2} = 0$ for $n \geq 2$ with $a_0 = 5$, $a_1 = 12$.	**07**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	If * is an operation on Z defined by xy = x + y + 1 , prove that (Z, *) is an abelian group.	**06**	**L2**	**CO5**
	b.	Explain Klein-4 group with example.	**07**	**L2**	**CO5**
	c.	State and prove Lagrange's theorem.	**07**	**L2**	**CO5**
		OR			
Q.10	**a.**	Prove that intersection of two subgroups of a group G is also a subgroup of G.	**06**	**L2**	**CO5**
	b.	Prove that $(Z_4 , +)$ is a cyclic group. Find all its generators.	**07**	**L2**	**CO5**
	c.	Let G = S_4 for $\alpha = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \end{pmatrix}$ Find the subgroup H = $\langle \alpha \rangle$ determine the left cosets of H in G.	**07**	**L3**	**CO5**

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Question Paper Version : A

Fourth Semester B.E. Degree Examination, June/July 2024
UI/UX

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. Usability is an established, as a part of the _____
   a) Technology World b) Computation World
   c) Designer's World d) None of these

2. Example of extracting a requirement statement for _____
   a) Ticket Kiosk system b) Software system
   c) Website design system d) All of these

3. The term translate each user need into one or more introduction design that is ____
   a) Extracting statement b) Requirement statement
   c) Requirement structure d) Terminology statement

4. What UX encompasses of ____
   a) Only visual elements b) Only functional element
   c) Both visual and functional element d) Either visual nor functional element

5. A business – a – case a user experience typically includes
   a) Technical specification of the product
   b) Analysis of competitor pricing strategies
   c) Justification of investment based on quotation of ROI
   d) Historical data on employee turn over rate.

6. The primary goal of UI design is to _____
   a) To maximize user satisfaction and usability
   b) To optimize loading times
   c) To minimize user engagement
   d) All of these

7. Which of the following is not a usability principle?
   a) Learn ability
   b) Efficiency
   c) Memorability
   d) Cost-effectiveness

8. In concern to design UI stands for _____
   a) User involvement
   b) User interface
   c) User interaction
   d) User inspection

9. The difference between UI and UX is/are:
   a) UI focuses on virtual elements, while UX focuses on functionality and user satisfaction
   b) UI and UX are interchangeable terms
   c) UI focuses on functionality, while UX focuses on elements
   d) UI focus on functionality, while UX focuses on user satisfaction

10. Emotional impact is user experience design refers to:
    a) The psychological effects of color choices on users
    b) How user feel when they interact with a product or service
    c) The technical performance of the website or app
    d) The number of features available to users.

11. Design concept includes _____
    a) Usability
    b) Accessibility
    c) Both (a) and (b)
    d) None of these

12. _____ is a human centered approach to problems solving that emphasizes empathy, creativity and collaboration.
    a) Design
    b) Design thinking
    c) User perspectives
    d) User collaboration

13. Generation of new idea is _____
    a) Critiquing
    b) Designing
    c) Idea creation
    d) Sketching

14. Interaction perspective is _____
    a) How the system work
    b) How the user operate the system
    c) How the system communicate
    d) How a system interface

15. The long term design documentation is _____
    a) Sketching
    b) Design
    c) Drawing
    d) ideation

16. Critiquing is about _____
    a) Review and judgment
    b) Joy and enjoyment
    c) Idea creation
    d) Theme or ideas

17. Rapid creation of freehand drawing is _____
    a) Drawing
    b) Sketching
    c) Designing
    d) Intellectual drawing

18. Story board is a sequence of _____
    a) Frame clips
    b) Visual frames
    c) Sketches
    d) Graphics frames

19. Ideation is an _____
    a) Active
    b) Fast moving
    c) Collaboration
    d) All of these

20. Use mental model is a description of
a) How the system work
b) Explanation of someone's thought
c) Something works in the real world
d) None of these

21. The purpose of wire framing in UI/UX design is to _____
a) to create a final polished design
b) to communicate layout and functionality
c) to select color schemes
d) to add animations

22. UX measure is _____
a) Usage of your interaction design
b) Usage of conceptual design
c) Usage of design thinking
d) Usage of ideations

23. Measuring instrument is a description of _____
a) Providing values for the particular UX measure
b) Providing values for the UX targets
c) Providing values for the UX metrics
d) Providing values for UX goals.

24. Detailed design includes _____
a) Visual frames
b) Visual clips
c) Visual comps
d) Visual wire frames

25. Bread and butter tool of interaction design is _____
a) Sketching
b) Wireframes
c) Detailed design
d) None of these

26. In which software tool is used in wireframe _____
a) Adobe XD
b) Keil
c) Xlinx
d) None of these

27. Subjective of the UX design is ____
a) UX metrics
b) UX goals
c) UX measure
d) UX target

28. Quantitative statement is ____
a) UX metrics
b) UX goals
c) UX measure
d) UX target

29. Wire frames are _____ frames
a) Low fidelity wire frames
b) High fidelity wireframes
c) Median fidelity wireframes
d) None of these

30. The drawing aspects of wireframes are user of _____ boxes
a) Square boxes
b) Paralleogram boxes
c) Rectangular boxes
d) None of these

31. A sense is a design representation is
a) Interaction design
b) Wire frame
c) Prototype
d) Design thinking

32. The ideas of prototyping is _____
a) Timeless and universal
b) Build and real thing
c) Choice and approach
d) all of these

33. Which prototype is demonstrating the product concept and for conveying an early product overview?
a) Vertical prototype
b) Upper prototype
c) Horizontal prototype
d) None of these

34. In which prototype combines the advantages of both horizontal and vertical, offering a good compress for system evaluation?
a) 'R' prototype
b) 'Y' prototype
c) 'T' prototype
d) 'D' prototype

35. A vertical prototype is associated with _____
a) User actions, in depth
b) Customer actions, in depth
c) Stake holder actions in depth
d) All of these

36. Prototype that are not faithful representations of the details of look, feel and behavior is _____
a) Vertical prototype
b) Local prototype
c) Horizontal prototype
d) Low fidelity prototype

37. In which prototype are more detailed representation of designs _____
a) High fidelity prototype
b) Local prototype
c) Horizontal prototype
d) Low fidelity prototype

38. Which one of the fidelity is not independent _____
a) Interactivity of prototype
b) Local prototype
c) Horizontal prototype
d) Low fidelity prototype

39. Paper prototype can act as _____
a) Coding blocker
b) View blocker
c) Prototype blocker
d) All of these

40. A 'T' prototype combines _____
a) Both paper and local prototype
b) Both horizontal and local prototype
c) Both low fidelity and high fidelity
d) None of these

41. Some of the guidelines and much of practical user performance depend on
a) The concepts of over satisfaction
b) The concepts of UX guidelines
c) The concepts of human working memory
d) All of these

42. Sensory memory is of _____
a) Small brief duration
b) Large brief duration
c) Very brief duration
d) None of these

43. The selected UX design guidelines are generally organized by the _____
a) UAF structure
b) API structure
c) GUI structure
d) All of these

44. Design examples of UX guidelines from everyday things such as
a) Hair dryers
b) Automobiles
c) Public doorways
d) All of these

45. Planning guidelines are the support _____
a) Users b) Servants c) Public d) None of these

46. User actions to determine _____
a) When tasks or steps to do
b) What tasks or steps to do
c) How tasks or step to do
d) Why tasks or steps to do

47. Translation guidelines are to support _____
a) Users b) Customers c) Peoples d) None of these

48. Including human memory support in the task structure _____
a) Design simplicity
b) Flexibility
c) Efficiency
d) Concurrency

49. Physical actions guidelines support users is doing physical actions including _____
a) Typing
b) Clicking
c) Dragging in a GUI, scrolling on a web page
d) All of these

50. The outcomes part of the interaction cycle is about supporting _____
a) Users through complete and correct "backend" functionality
b) User's interaction cycle functionality
c) Dragging in a GUI, scrolling on a web page functionality
d) All of these

* * * * *

CBCS SCHEME

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

BBOC407

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
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.

		Module – 1	M	L	C
Q.1	a.	Discuss the various components of Eukaryotic cells.	10	L3	CO1
	b.	Identify the applications of stem cells.	5	L2	CO1
	c.	Explain the functions of vitamins.	5	L2	CO1
		OR			
Q.2	a.	Compare Prokaryotic and Eukaryotic cells.	10	L3	CO1
	b.	Explain the properties of Carbohydrates.	5	L2	CO1
	c.	Explain the functions of Lipids.	5	L2	CO1
		Module – 2			
Q.3	a.	Highlighting the properties of cellulose, justify cellulose as an effective water filter.	10	L3	CO1
	b.	Explain the working and development of DNA vaccines by taking suitable example.	10	L2	CO1
		OR			
Q.4	a.	What are Bioplastics? Justify the use of PHA as Bioplastic mentioning its properties and applications.	10	L3	CO1
	b.	Discuss the following : (i) Meat analogs of protein. (ii) Lipids as cleaning agents.	10	L2	CO1
		Module – 3			
Q.5	a.	What is Electro Encephalogram (EEG)? Discuss the types of Brain activity detected with EEG. Write any three applications.	10	L3	CO2
	b.	What are Pace Makers? Explain basic design and construction of Pace Makers.	10	L2	CO2
		OR			
Q.6	a.	Justify Lungs as purification system.	10	L3	CO2
	b.	Explain architecture of Rod and Core cells with suitable diagram.	10	L2	CO2
		Module – 4			
Q.7	a.	What is ultrasonography? Explain the uses and working principle.	10	L2	CO3
	b.	What is lotus leaf effect? Explain the mechanism and applications of super Hydrophobic effect.	10	L2	CO3
		OR			
Q.8	a.	The structure and design of Kingfisher beak lead to the design of Bullet trains. Explain.	10	L2	CO3
	b.	Explain the working and applications of Bionic Leaf Technology.	10	L2	CO3

		Module – 5			
Q.9	a.	Explain the use of Electrical tongue in food science.	10	L2	CO4
	b.	Explain the advantages and limitations of Artificial Intelligence for disease diagnosis.	10	L2	CO4
		OR			
Q.10	a.	Explain Bioengineering solutions for muscular dystrophy and Osteroporosis.	10	L2	CO4
	b.	Explain most commonly used Bioprinting Techniques.	10	L2	CO4

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CBCS SCHEME

BUHK408

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

Question Paper Version : C

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
Universal Human Values Course

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 All the units of nature can be classified into _____ orders
a) Two b) Three c) Four d) Six

2 Which of the following does not form an order in nature?
a) BIO b) Animal c) Consciousness d) Human

3 Which of the following statements is true,
a) Material units have only two kinds of activities recognizing and fulfilling
b) Material units have three kinds of activities assuming, recognizing and fulfilling
c) Material units have only four kinds of activities knowing, assuming, recognizing and fulfilling
d) None of the statement

4 Which of the following statement is not true?
a) There is inter connectedness in nature
b) There is recyclability and self regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

5 According to quantity, which of the following is true for the orders in nature
a) Bio order >> Physical order >> Animal order >> Human order
b) Animal order >> Bio order >> Physical order >> Human order
c) Physical order >> Bio order >> Animal order >> Human order
d) None of the above

6 What are the fundamental components of ecosystems?
a) Plants and Animals b) Air and water
c) Rocks and minerals d) All of these

7 The third order of nature is
a) Material order b) Animal order c) Plant order d) Human order

8 The activities in human body are
a) Composition b) Decomposition c) Respiration d) All of these

9 The systems in nature are
a) Cyclic b) Mutually fulfilling c) Both a and b d) None of these

10 The natural characteristics/Svabhava of a human being are
a) Perseverance b) Bravery c) Generosity d) All of these

11 The purpose of value –Education is to
a) Foster universal core values b) Make syllabus easy
c) Develop values in individual d) Both A and C

12 Self exploration uses two mechanisms i) Natural Acceptance ii) ---------?
a) Experiential validation b) Reason
c) Logical Thinking d) Theoretical concept

13 Once we know what is valuable to us, these values becomes the basis, the anchor for _____
a) Knowledge b) Actions c) Society d) None of these

14 To fulfill Human Aspirations, what are necessary
a) Both values and skills b) Values
c) Skills d) None of these

15 Which the following are the encompassing principles underlying the successful implementation of value education?
A) Conviction B) Connection C) Critical thinking D) Commitment
choose the most appropriate answer from the options given below :
a) A, C and D only b) B, C and D only c) A, B and D only d) None of these

16 Value and skills should go hand in hand
a) True b) False c) Cannot tell d) None of these

17 Are the content of self – exploration
a) Program b) Desire c) Both a and b d) None

18 Human life is lived at four levels individual, Family, Society and _____
a) Nature b) Nurture c) World d) Universe

19 Any course content on value education needs to be
a) Universal b) Rational c) Natural d) All of these

20 Value education enables us to
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

21 The only effective way to ensure professional ethics is by developing
a) Knowledge b) Ethical conduct
c) Ethical competence d) Professional activities

22 How does unethical practices in various professions can be resolved
a) Through skills b) Through knowledge
c) Through practical d) Via right understanding

23 What provides clear guidance and policy frame work conducive to the development of an un-fragmented human society and a universal human order
a) Humanistic education b) Humanistic constitution
c) Profession d) Ethical Human conduct

24 The right understanding gained through self exploration also enables us to identify the definitiveness of human conduct. What is this called?
a) Ethical Human conduct b) Values
c) Policy d) Utility values

25 Primary step to move towards the holistic alternative is to develop the right understanding among humans and the commitment to
a) Do practical b) Remain calm c) Live accordingly d) Teach others

26 The right understanding helps us identify the comprehensive human goal in terms of
a) Samadhan b) Samridhi c) Sah-astitva d) All of these

27 The humanistic education will facilitate the process of self exploration which will lead to continuous
a) Education b) Self evolution c) Development d) People friendly

28 The values of human being can be enumerated as
a) Nine b) Thirty c) Eighteen d) Twenty four

29 Which of the following is not a characteristic of professionalism?
a) Kindness b) Competency c) Morality d) Complacency

30 There are six characteristics of a professional style which is not a professional style?
a) Ethical b) Emotional c) Responsible d) Intellectual.

31 Harmony should be maintained in
a) Between body and life
b) Between self and society
c) Between life and environment
d) All of the above

32 The foundational value in relationship is
a) Respect b) Love c) Trust d) Glory

33 Ensuring right understanding and feeling in the others is called
a) Care b) Affection c) Gratitude d) Guidance

34 Harmony in the family is the building block for harmony in the
a) Society b) Individual c) Friend d) Relative

35 The total numbers of feelings in human relationship
a) 5 b) 10 c) 9 d) 8

36 Comprehensive human goal is right understanding prosperity, trust (fearlessness) and
a) Co-existance b) Happiness c) Abhay d) None

37 There is justice in relationship when there is
a) Mutual fulfillment b) Self regulation c) Freedom d) None

38 The extension of family is
a) Self b) Body c) Society d) Nature

39 The feeling of relatedness to all human beings is called
a) Love b) Affection c) Gratitude d) Respect

40 Acceptance of excellence in others is called
a) Reverence b) Glory c) Gratitude d) Guidance

41 Harmony should be maintained in
a) Between body and life
b) Between self and society
c) Between life and environment
d) All of these

42 I being the
a) does, seer and Enjoyer b) doer
c) seer d) enjoy

43 Which of the following is NOT response of the self?
a) Knowing b) Assuming
c) Recognizing d) Preconditioning

44 Activities of self (I) are
a) Happiness b) Prosperity
c) Desire, thought and expectation d) None

45 The requirement of body is right utilization and nurturing
a) Desire b) Protection c) Thought d) Expectation

46 The _____ is an instrument of _____
a) I, Body b) Body, I c) Both a and b d) None

47 The activity of desire, thought and expecting together is called as
a) Body b) Health c) Imagination d) Future

48 Imaging is _____ with time
a) Continuous b) Discontinuous c) Random d) Different

49 Where there is harmony among the parts of the body it is known as
a) Swasthya b) Sanyam c) Prosperity d) None

50 Knowing means having the
a) Assumption
b) Right understanding
c) Right feeling
d) None

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