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BCO402

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

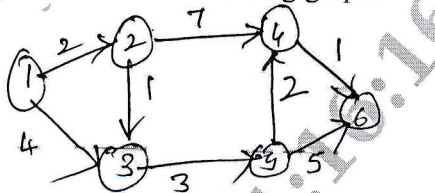Time: 3 hrs.   Max. Marks: 100

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.	What is an algorithm? What are the fundamentals of algorithm problem solving?	10	L2	CO2
	b.	Explain the asymptotic notations.	10	L2	CO2
		OR			
Q.2	a.	Explain the general plan of mathematical analysis of recurrence algorithm with example.	10	L2	CO3
	b.	Explain the general framework for analyzing the efficiency of algorithm.	10	L2	CO3
		Module – 2			
Q.3	a.	What is Exhaustive search? Explain the knapsack problem using exhaustive search.	10	L2	CO3
	b.	What is the general plan for divide and conquer? Explain merge sort algorithm apply the algorithm for the given elements 8, 3, 2, 9, 7, 1, 5, 4.	10	L3	CO4
		OR			
Q.4	a.	Write the algorithm for Quick sort with an example. What is the time complexity of quick sort?	10	L1	CO3
	b.	Explain the Strassen's matrix multiplication, with an example.	10	L3	CO3
		Module – 3			
Q.5	a.	What is AVL tree? Explain the rotation types of AVL tree.	10	L1	CO3
	b.	What is heap? Explain the algorithm for heapsort.	10	L2	CO3
		OR			
Q.6	a.	Explain sorting by comparision counting algorithm. Apply the algorithm for the array 62, 31, 84, 96, 19, 47.	10	L3	CO4
	b.	Explain Horspool algorithm. Apply it for the following string $S_0 \ldots\ldots C \ldots\ldots S_{n-1}$. JIM_SAW_ME_IN_A_BARBER_SHOP Pattern: To be searched is BARBER.	10	L2	CO4

		Module – 4			
Q.7	a.	Apply the Dijkstra algorithm for the following graph: Source vertex is ①	10	L2	CO4
	b.	Find the shortest path between every two nodes by Floyd's algorithm.	10	L2	CO4
		OR			
Q.8	a.	Apply the prims algorithm for the following graph and find minimum spanning tree.	10	L3	CO4
	b.	What is dynamic programming? Explain the coin row algorithm. Apply it for the problem: coin row of denominations 5, 1, 2, 10, 6, 2.	10	L3	CO4
		Module – 5			
Q.9	a.	What is Decision Tree? Write a Decision Tree for finding a minimum of three numbers and explain it.	10	L1	CO3
	b.	Explain the terms, P, NP and NP complete problems.	10	L2	CO3
		OR			
Q.10	a.	What is Backtracking? Explain the N-Queen problem with a board for the four Queens problem.	10	L2	CO3
	b.	Explain the knapsack using branch and bound. Apply the algorithm for the following data: Knapsack capacity W is 10.	10	L3	CO5
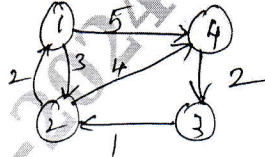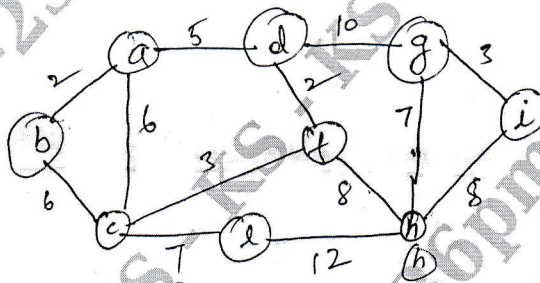
1 item	Weight	Value	Value/Weight
1	4	$40	10
2	7	$42	6
3	5	$25	5
4	3	$12	4

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BCS403

Fourth Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024
Database Management System

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.**	What is DBMS? List the characteristics of database approach. Bring out major advantages of the database approach.	8	L2	CO1
	b.	Explain data independence. Draw 3 schema architecture and discuss the mapping.	7	L2	CO1
	c.	Define following : i) Database Administrator ii) Canned transaction iii) Weak entity iv) Meta data v) Database Instance.	5	L2	CO1
OR					
Q.2	**a.**	Describe components modules of DBMS and its interaction with neat diagram.	8	L2	CO1
	b.	Draw ER diagram of library database schema atleast 4 entities. Also specify primary keys, structural constraints and explain.	8	L3	CO2
	c.	Briefly discuss different types of end users of Database.	4	L2	CO2
Module – 2					
Q.3	**a.**	Briefly explain different types of update operation on relation database. Show an example of violation of referential and entity integrity in each of update operation.	10	L2	CO3
	b.	Consider following schema : Suppliers (SID , SName , address) Parts (PID , PName , Colour) Catalog (Sid , PID , Price) Write relational algebra expression for following queries : i) Find the names of all red parts. ii) Find all prices for parts that were red or green. iii) Find the SID's of all suppliers who supply part that is red or green. iv) Find the SID's of all supplier who supply part that is red and green.	10	L3	CO2
OR					
Q.4	**a.**	Describe the steps of ER – to – relational mapping with suitable examples and schema for each step.	10	L2	CO2
	b.	Explain with example : i) Division operation ii) Full outer join iii) Aggregate function iv) Project operation v) Cartesian product.	10	L2	CO2

		Module – 3			

Q.5	a.	What is the need for normalization? Explain 2nd normal form. Consider the relation EMP_PROJ = {SSn , Pnumber , Hours , Ename , Pname , Plocation}. Assume {SSn , Pnumber} as a primary key. The dependencies are
		
		       SSn ; Pnumber → {Hours}
		         SSn → {Ename}
		       Pnumber → {Pname, Plocation} ,
		Normalize above relation into 2NF.
			10	L3	CO4

	b.	Illustrate the informal design guidelines for relation schemes with examples.	10	L2	CO4
		OR			
Q.6	a.	Write syntax with example in SQL for the DDL and DML SQL statements.	10	L2	CO3
	b.	Consider the schema for college database. Student (USN , Sname , Address , Phone , Gender) SemSec (SSID , Sem , Sec) Class (USN , SSID) Subject (Subcode , Title , Sem , Credits) IAmarks (USN , Subcode , SSID , Test1 , Test2, Test3, Final IA) Write SQL Query. i) List all the students studying in 4th sem 'C' section. ii) Compute total number of male students in each semester. iii) List Test1 marks of all students in all subjects.	10	L3	CO3
		Module – 4			
Q.7	a.	How are triggers and assertion defined in SQL? Explain with example.	10	L2	CO4
	b.	Write the syntax and example of view in SQL. Explain efficient view implementation.	10	L2	CO4
		OR			
Q.8	a.	List the problems that occur during concurrency control and also explain them with supporting transaction diagrams.	10	L2	CO5
	b.	Explain the various DBMS – Specific Buffer replacement policies.	10	L2	CO5
		Module – 5			
Q.9	a.	Demonstrate with example deadlock in transaction. Discuss deadlock prevention algorithm.	10	L2	CO5
	b.	What are Binary locks? Explain with Lock and unlock operations with algorithm.	10	L2	CO5
		OR			
Q.10		Write a short note on : i) Properties of NOSQL system ii) The CAP theorem iii) Document based NO – SQL system iv) NOSQL Graph database.	20	L2	CO4

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CBCS SCHEME

Fourth Semester B.E./B.Tech. Degree Supplementary 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. Show that $[(p \vee q) \wedge (p \rightarrow r) \wedge (q \rightarrow r)] \rightarrow r$ is a tautology by constructing the truth table.	6	L1	CO1
	b.	Prove the following using the laws of logic: $P \rightarrow (q \rightarrow r) \Leftrightarrow (p \wedge q) \rightarrow r$	7	L2	CO1
	c.	Give i) Direct proof ii) indirect proof iii) proof by contradiction for the following statement: "If n is an odd integer then n + 9 is an even integer".	7	L3	CO1
		OR			
Q.2	a.	Test whether the following arguments are valid: $p \rightarrow q$ $r \rightarrow s$ $\underline{\sim q \vee \sim s}$ $\therefore \sim(p \wedge r)$	6	L2	CO1
	b.	Write the following argument in symbolic form and then establish the validity. If a triangle has two equal sides, then it is isosceles. If a triangle is isosceles, then it has two equal angles. The triangle ABC does not have two equal angles. $\overline{\therefore \text{ABC does not have two equal sides.}}$	7	L1	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) $\exists x \, \exists y \, [(3x - y = 7) \wedge (2x + 4y = 3)]$	7	L2	CO1
		Module – 2			
Q.3	a.	Prove that $1^2 + 3^2 + 5^2 + \ldots + (2n - 1)^2 = \dfrac{n(2n + 1)(2n - 1)}{3}$ by mathematical Induction.	6	L2	CO2

	b.	Prove that every positive integer n ≥ 24 can be written as a sum of 5's and / or 7's.	7	L3	CO2
	c.	Obtain a recursive definition for the sequence $\{a_n\}$ in each of the following cases: i) $a_n = 5n$ ii) $a_n = 3n + 7$ iii) $a_n = 2 - (-1)^n$	7	L3	CO2

OR

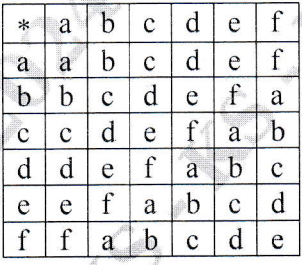|					
Q.4	a.	Prove that for any positive integer n, $\sum_{i=1}^{n} \frac{F_{i-1}}{2^i} = 1 - \frac{F_{n+2}}{2^n}$, F_n denote the fibonacci number.	6	L2	CO2
	b.	How many arrangement are there for all the letters in the word "SOCIOLOGICAL". In how many of these arrangements. i) A and G are adjacent ii) All vowels are adjacent.	7	L2	CO2
	c.	Determine the coefficient of $a^2b^3c^2d^5$ in the expansion of $(a + 2b - 3c + 2d + 5)^{16}$.	7	L2	CO2

Module – 3

Q.5	a.	Let A = {1, 2, 3, 4, 6} and R be a relation on A defined by $a^R b$ if and only if "a is a multiple of b". Write down the relation R, relation matrix M(R) and draw its digraph. List out its indegree and out degree.	6	L2	CO3
	b.	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 and b.	7	L3	CO3
	c.	State Pigeon hole principle. Show that if n + 1 numbers are chosen from 1 to 2n then atleast one pair add to 2n + 1.	7	L2	CO3

OR

Q.6	a.	Let f : R → R be defined by $f(x) = \begin{cases} 3x - 5, \text{if } x > 0 \\ 1 - 3x, \text{if } x \le 0 \end{cases}$ find f(-1), f(5/3), $f^1(0)$, $f^1(-3)$, $f^1([-5, 5])$ and $f^1([-6, 5])$.	6	L1	CO3
	b.	Let f, g, h be functions from Z to Z defined by f(x) = x – 1, g(x) = 3x, $h(x) = \begin{cases} 0, \text{if } x \text{ is even} \\ 1, \text{if } x \text{ is odd} \end{cases}$ Determine (fo(goh)) (x), ((fog)oh)(x) and verify that fo(goh) = (fog)oh.	7	L2	CO3
	c.	Draw the Hasse (POSET) diagram which represents positive divisors of 36.	7	L2	CO3

Module – 4

Q.7	a.	In how many ways 5 number of a's, 4 number of b's and 3 number of c's, can be arranged so that all the identical letters are not in a single block.	6	L3	CO4

	b.	Four 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 and P_4 will not sit at T_4 or T_5. Find the number of ways they can occupy the vacant chairs.	7	L2	CO4
	c.	Solve the recurrence relation $a_n = na_{n-1}$ where $n \geq 1$ and $a_0 = 1$.	7	L2	CO4

OR

Q.8	a.	In how many ways can the 26 letters of the English alphabet be permuted so that none of the patterns CAR, DOG, PUN or BYTE occurs?	6	L2	CO4
	b.	Find the rook polynomial for the 3 $*$ 3 board by using the expansion formula.	7	L2	CO4
	c.	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

Module – 5

Q.9	a.	Define Group. Show that fourth roots of unity is an abelian group under $\otimes$.	6	L2	CO5
	b.	Define Klein 4 group. Verify $A = \{1, 3, 5, 7\}$ is a Klein 4 group under $\otimes_8$.	7	L2	CO5
	c.	State and prove Lagrange's theorem.	7	L2	CO5

OR

Q.10	a.	If H, K are subgroups of a group G, prove that H∩K is also a subgroup of G. Is H∪K a subgroup of G?	6	L2	CO5
	b.	Define cyclic group and show that $(G, *)$ whose multiplication table is as given below is cyclic.	7	L2	CO5
	c.	Prove that the only left coset of a subgroup H of a group G which is also a subgroup of G is H itself.	7	L2	CO5

Table for Q.10 b:

*	a	b	c	d	e	f
a	a	b	c	d	e	f
b	b	c	d	e	f	a
c	c	d	e	f	a	b
d	d	e	f	a	b	c
e	e	f	a	b	c	d
f	f	a	b	c	d	e

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BBOC407

Fourth Semester B.E./B.Tech. Degree Supplementary 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.	Explain the structure and function of power house of cell and Endoplasmic reticulum with neat diagram.	10	L2	CO1
	b.	What are stem cells? Explain the properties classification and application of stem cells.	10	L1	CO1
		OR			
Q.2	a.	Explain the structures properties and function of nucleic acid focusing on DNA.	10	L2	CO1
	b.	Define Vitamins. Explain the properties, function, source and deficiency of vitamins.	10	L1	CO1
		Module – 2			
Q.3	a.	Illustrate the steps involved in biodiesel production. Add a note principle and limitation of biodiesel.	10	L2	CO2
	b.	Develop the protocol for PLA polymer synthesis. Add a note on engineering application of PLA.	10	L3	CO2
		OR			
Q.4	a.	Define Biosensor. Outline the principle, working and application of enzyme in glucose biosensor.	10	L2	CO2
	b.	Construct the procedure for the production of RNA vaccines against Covid-19. Add a note on how RNA vaccines different from DNA vaccines.	10	L3	CO2
		Module – 3			
Q.5	a.	Compare and contract brain as CPU system and eye as a camera.	10	L2	CO3
	b.	Explain the mechanism of filtration in Human Kidney.	10	L2	CO3
		OR			
Q.6	a.	Write in detail Heart Lung Machine.	10	L2	CO3
	b.	Explain how lung act as purification system. Add a note on principle and working of spirometry as a diagnostic tool for assessing lung function.	10	L2	CO3

		Module – 4			
Q.7	a.	Apply the concept of bioecholocation in the field of Navigation and detection. Write the principle, working and instrumentation and application of the technique.	10	L3	CO3
	b.	HBOCs and PFCs act as human blood substitutes. Explain.	10	L4	CO3
		OR			
Q.8	a.	Identify and explain the process, application of technique involved in conversion of light energy into electric energy.	10	L3	CO3
	b.	Velcro and friction less swimsuits are the nature bioinspired material. Explain the principle and engineering application of the technology.	10	L4	CO3
		Module – 5			
Q.9	a.	Apply the process of biomining via microbial surface adsorption for the removal of heavy metals.	10	L3	CO4
	b.	Analyze the principle, working and instrumentation of e-tongue, highlighting its application in food and beverage industries.	10	L4	CO4
		OR			
Q.10	a.	Develop the steps for 3D printing of skin. Highlight on materials used and application of 3D skin.	10	L3	CO4
	b.	Bio imaging and artificial intelligence technique plays important role in disease diagnosis. Explain the concept and add a note on its limitation.	10	L4	CO4

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| Question Paper Version : | A |

Fourth Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024
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. Value education addresses issues related to
   a) How to do   b) What to do   c) Both a and b   d) None of these

2. The understanding of one's participation in the larger order and ensuring it in Living is called
   a) Skill Education
   b) Value Education
   c) Hollistic Education
   d) None of these

3. Which among the statement is not an implication of self exploration?
   a) Knowing oneself
   b) Knowing Human conduct
   c) Process of self evolution
   d) Not being in harmony within

4. Right understanding can be recognized with
   a) It is assuring   b) It is satisfying   c) Its Universal   d) All of these

5. Which of the following is NOT a component of fulfilling human aspirations?
   a) Right understanding
   b) Accumulating material wealth
   c) Relationship and harmony
   d) Physical facility

6. Holistic development involves the transformation from
   a) Human consciousness to Animal consciousness
   b) Ignorance to knowledge
   c) Animal consciousness to Human consciousness
   d) Materialism to Spirituality

7. The purpose of value education is to
   a) Foster universal core values
   b) Make the syllabus easy
   c) Develop values in individuals
   d) Both a and c

8. The continuity of prosperity can be ensured only if our production system is in harmony with the
   a) Individual
   b) Society
   c) World
   d) Nature

9. Self exploration uses two mechanism – Natural Acceptance and
   a) Experimental validation
   b) Reason
   c) Logical thinking
   d) Theoretical concepts

10. Right understanding + Physical facilities in Human being
    a) Mutual property
    b) Mutual happiness
    c) Mutual fulfillment
    d) Mutual benefit

11. What Quality is the significance of relationship building in value education?
    a) Relationships are a distraction and hinder individual growth
    b) Relationships are solely based on material benefits
    c) Healthy relationships promote emotional well – being and empathy
    d) None of these

12. Beside physical facilities Human beings want
    a) Name
    b) Fame
    c) Relationship
    d) None of these

13. Which of the characteristics does not relate to self?
    a) Qualitative
    b) Continuous
    c) Temporary
    d) Quantitative

14. Which of the response is common to both Self and Body?
    a) Knowing
    b) Accepting
    c) Recognizing
    d) Assuming

15. Activities like desiring, thinking, imaginary are of the
    a) I
    b) Body
    c) Self
    d) Me

16. How are the needs of the body and self distinguished?
    a) They are the same
    b) They are unrelated
    c) They must be fulfilled simultaneously
    d) They need to be fulfilled separately

17. What term is used to describe the activities of desire, thought and expectation collectively?
    a) Imagination
    b) Intuition
    c) Reality
    d) Instinct

18. What is the relationship between the Body and Self?
    a) Body dominates the self
    b) Self dominates body
    c) Body is an instrument of the self
    d) Body and self are separate entities

19. What ensures harmony between the Self and Body?
    a) Competition
    b) Self regulation and health
    c) Ignoring bodily needs
    d) Constant desire fulfillment

20. There is an exchange of _____ between self and body.
    a) Food   b) Thought   c) Air   d) Information

21. What amongst the option is not said by the consciousness?
    a) Seer   b) Doer   c) Experiencer   d) Protector

22. Sah – Astitva means
    a) Co-existence   b) Co-operation   c) Co-option   d) Corporate identity

23. Harmony in the self is achieved when imagination is aligned with
    a) Material possession   b) Natural Acceptance
    c) Social Norms   d) Random Ideas

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

25. What is activity of the power "Expectation"?
    a) Imaging   b) Analysing   c) Selecting/Testing   d) Distributing

26. Living on the basis of preconditioning or sensation refers to
    a) Enslaved   b) Self organized   c) Independent   d) Svantrata

27. Which values serves as the foundational pillar of a strong relationship in the Family?
    a) Trust   b) Ambition   c) Competition   d) Material wealth

28. Which one is known as Pranic order?
    a) Material order   b) Plant/Bio order   c) Human order   d) Animal order

29. How does harmony in the family contribute to a healthy society?
    a) It promotes competition and rivalry among family members
    b) It fosters a sense of co-operation and stability in the community
    c) It isolates individuals from society
    d) It encourages a disregard for societal norms.

30. There is _____ among all 4 orders.
    a) Recyclability   b) Justice
    c) Inter connectedness   d) Conformance

31. Which one is limited in size?
    a) Space   b) Values   c) Unit   d) All of these

32. The basis for movement of all animal , birds and fishes is provided by
    a) Animal order   b) Material order   c) Plant/Bio order   d) Human order

33. The activity in Human order are?
    a) Composition / Decomposition
    b) Composition / Decomposition + Respiration
    c) (Composition / Decomposition , Respiration) in body + Selection in I
    d) (Composition / Decomposition , Respiration) in Body + (Selection, thought , desire) in I and need for realization and understanding.

-A3-

34. The relationship across all 3 order are in the order of
   a) Material order, Plant / Bio order , Animal order
   b) Plant/Bio order, Animal order , Human order
   c) Animal order, Plant / Bio order , Human order
   d) Human order, Plant / Bio order, Animal order

35. Right utilization of one's professional skills towards the fulfillment comprehensive human goals and thus meaningfully participate in the larger order refers to
   a) Profession
   b) Unprofessional
   c) Unethical conduct
   d) Ethical conduct of profession

36. What is the basis of mutual fulfillment among the 4 orders of nature?
   a) Dominance and control
   b) Competition for resources
   c) Right utilization and understanding
   d) Indifference towards other orders

37. Competence in Professional ethics needs.
   a) Clarity about comprehensive Human goals
   b) Confidence in oneself as well as in the harmony, Co-existence, Self-regulation
   c) Competence of mutual fulfilling behavior
   d) All of these

38. Developing _____ in the individuals (professionals) is the only effective way to ensure professional ethics.
   a) Ethics   b) Professional   c) Competence   d) Ethical competence

39. Broad holistic criteria of evaluation of technology is/are
   a) Catering to appropriate needs and lifestyles
   b) People friendly
   c) Eco friendly
   d) All of these

40. What doe profession imply in relation to the larger order?
   a) Isolation from society and nature
   b) Participation in the comprehensive Human goal
   c) Maximization of personal benefits
   d) Pursuit of economic profits.

41. What is the main emphasis of holistic development?
   a) Economic prosperity
   b) Spiritual enlightenment
   c) Scientific enlightenment
   d) Shift from inhuman to humane society

42. How can the urgency of the transformation be addressed?
   a) Ignoring the need for change
   b) Introducing punitive measures
   c) Implementing mass – scale value education
   d) Focusing solely on technological advancements.

43. What is the role of value competence in ethical professional conduct?
    a) Promoting competition
    b) Aligning actions with societal norms
    c) Guiding actions with comprehensive human goals
    d) Focusing on personal achievements.

44. The concept of :Humanistic Constitution" in professional ethic refers to
    a) A set of rigid rules and regulations for professional conduct
    b) Neglecting the well – being of individuals in the workplace
    c) Ignoring the impact of ethical decisions on society
    d) Recognizing the importance of Human values and dignity in professional settings.

45. What is the basis for ethical Human conduct?
    a) Definiteness of values and character   b) Fear of punishment
    c) Economic motives   d) Social pressure

46. What is the role of R & D in the context of holistic technologies and systems?
    a) Promote profit maximization
    b) Focus on individual success
    c) Encourage competition
    d) Develop systems aligned with right understanding.

47. What should professionals be sensitive towards in their interactions?
    a) Individual success   b) Mutual enrichment
    c) Technological advancements   d) Financial gain

48. What is the main driver behind unethical practices in professions?
    a) Lack of technological advancement
    b) Neglecting comprehensive human goal
    c) Societal pressure
    d) Personal satisfaction

49. _____ is called foundation value.
    a) Respect   b) Affection   c) Love   d) Trust

50. Feeling for those who have made effort for excellence is
    a) Excellence   b) Reverence   c) Glory   d) None of these

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