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SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
RAMAPURAM CAMPUS
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
CONTINUOUS LEARNING ASSESSMENT - III



1600
G. Jayaraman

Sub Code/Name : ECO107F FIBER OPTICS & OPTOELECTRONICS Set: B
 Class/Sem/Course : II Yr / VI Sem / B. Tech -CSE (ALL DISCIPLINE) & IT Date: 06/05/2023 AN
 Max. Marks : 50 Duration: 90 mins

PART-A (10x1 = 10)

ANSWER ALL THE QUESTIONS

| Q.No | Question | Marks | C O | B L | PI |
|------|--|-------|--------|--------|-------|
| 1 | Induced birefringence is called (a) magneto optic effect (b) electro optic effect (c) acousto optic effect (d) thermal optic effect | 1 | 4 | 1 | 1.2.1 |
| 2 | Pockel effect occurs when? (a) electric field is zero (b) quadratic electro optic coefficient is smaller than linear electro optic coefficient. (c) quadratic electro optic coefficient is larger than linear electro optic coefficient. (d)magnetic field is zero. | 1 | 4 | 1 | 1.3.1 |
| 3 | The change in refractive index of a medium due to the presence of sound waves is called (a) acoustic optic effect (b) coulomb blockade effect (c) photo emissive effect (d) electro optic effect | 1 | 4 | 1 | 2.1.2 |
| 4 | In a longitudinal electro-optic modulator, half-wave voltage is that voltage which introduces the following phase shift between two polarization components: (a) $\pi/4$ (b) $\pi/2$ (c) π (d) 2π | 1 | 4 | 2 | 1.3.1 |
| 5 | In a transverse electro-optic modulator (a) V_p is independent of the length l and width d of the modulator crystal. (b) V_p is dependent on the length l but not on the width d of the crystal. (c) V_p is dependent on the width d but not on the length l of the crystal. (d) V_p is dependent on the ratio d/l | 1 | 4 | 2 | 1.3.1 |
| 6 | Monolithic integration for optical sources are confined to the use of semiconductors. a) III-V b) II-III c) I-II d) VII-VIII | 1 | 5 | 1 | 1.2.1 |
| 7 | The OEICs realization as compared to the other | 1 | 5 | 1 | 2.1.2 |

| | | | | | |
|----|--|---|---|---|-------|
| 8 | HF-MT based photodiode have a spot-size converter with a a) p-n junction diode b) p-i-n photoreceiver c) In PBT d) RFP | 1 | 5 | 1 | 1.3.1 |
| 9 | Hybrid integration demands IP circuit to be produced on a single substrate a) IP, single-layered b) IO, multi-layered c) IP, multi-layered d) IO, multi-layered | 1 | 5 | 1 | 1.3.1 |
| 10 | A four-port multimode fiber FBT coupler has $50 \mu\text{W}$ optical power launched into port 1. The measured output power at ports 2,3 and 4 are $0.003, 23.0$ and $24.5 \mu\text{W}$ respectively. Determine the excess loss. a) 0.22 dB b) 0.33 dB c) 0.45 dB d) 0.12 dB | 1 | 5 | 3 | 1.2.1 |

**PART B (4x4= 16)
ANSWER ANY 4 QUESTIONS**

| Q.No | Question | Marks | C O | B L | PI |
|------|---|-------|--------|--------|-------|
| 11 | How longitudinal electro optic modulator differs from transverse electro optic modulator? | 4 | 4 | 2 | 1.2.1 |
| 12 | Write a short note about Raman Nath Modulator. | 4 | 4 | 1 | 1.2.1 |
| 13 | Derive the expression for optical amplifier gain | 4 | 4 | 2 | 2.1.3 |
| 14 | What are the challenges met by optoelectronic integrated circuit? | 4 | 5 | 1 | 1.2.1 |
| 15 | Distinguish between Monolithic and Hybrid Integration | 4 | 5 | 1 | 2.1.2 |
| 16 | What do you mean by front end Photo receiver? | 4 | 5 | 1 | 1.2.1 |

**PART C (2x12= 24)
ANSWER THE QUESTIONS**

| Q.No | Question | Marks | C O | B L | PI |
|-------|---|-------|--------|--------|-------|
| 17. a | Explain with a neat diagram, the construction and working of electro optic effect based longitudinal electro optic modulator. (OR) | 12 | 4 | 3 | 2.1.3 |
| 17. b | Discuss the basic configuration, working principle and gain of Semiconductor optical amplifier (SOA). | 12 | 4 | 2 | 2.1.3 |
| 18. a | Elaborate on the working of Mach Zehnder Interferometers and comment on the applications. (OR) | 12 | 5 | 2 | 2.1.3 |
| 18. b | Discuss the materials and processing techniques of OEIC. | 12 | 5 | 3 | 2.1.2 |



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS LEARNING ASSESSMENT - 3 (2022-23)



| | | |
|-----------------|--|-------------------|
| Sub Code/Name | 18CSE479T - Statistical Machine Learning | Set A |
| Year/Sem/Branch | III /VI/AI/ML | Date : 05.23 |
| Max. Marks | 50 | Duration: 90 Mins |

PART A (10x1=10)

ANSWER ALL THE FOLLOWING QUESTIONS (MCQ)

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1 | Artificial Neural Network works a. Asynchronous b. Synchronously c. Dimensions d. Simultaneously | 1 | 4 | 1 | 1.7.1 |
| 2 | Linear separator, Hyperplane a. $f(x) \geq g(w \cdot x + b)$ b. $f(x) \leq g(w \cdot x + b)$ c. $f(x) = g(w \cdot x + b)$ d. $f(x) > g(w \cdot x + b)$ | 1 | 4 | 1 | 1.6.1 |
| 3 | ANN uses _____ for learning a. Gradient descent b. KNN c. Machine Learning d. Kernel | 1 | 4 | 1 | 2.5.1 |
| 4 | SVM, which best segregates classes into how many classes? a. 1 b. 2 c. 3 d. 4 | 1 | 4 | 1 | 1.7.1 |
| 5 | Neural Network was the first and simplest type of artificial neural network devised. a. Feedback neural Network b. Feedforward neural Network c. Feed Neural Network d. CNN | 1 | 4 | 1 | 2.6.3 |
| 6 | Singular Value Decomposition is some sort of generalization of _____ decomposition. a. singular b. eigen value c. eigen vector d. multi value | 1 | 5 | 1 | 1.7.1 |
| 7 | Which of the following algorithm is most sensitive to outliers? a. K-means clustering algorithm b. K-medians clustering algorithm c. K-modes clustering algorithm d. K-medoids clustering algorithm | 1 | 5 | 1 | 1.6.1 |

| | | | | | |
|----|---|---|---|---|-------|
| 8 | The most popularly used dimensionality reduction algorithm is Principal Component Analysis (PCA). Which of the following is/are true about PCA? 1. PCA is an unsupervised method 2. It searches for the directions that data have the largest variance 3. Maximum number of principal components <= number of features 4. All principal components are orthogonal to each other a. 1 and 2 b. 1 and 3 c. 2 and 3 d. 1,2,3,4 | 1 | 5 | 1 | 1.6.1 |
| 9 | Why do you have to drop unimportant features in PCA? a. find the correct clusters b. standardize the data c. To train the models faster d. Using the most important features will give better efficiency predicting the target | 1 | 6 | 1 | 1.7.1 |
| 10 | In which of the following cases will K-Means clustering fail to give good results? 1. Data points with outliers 2. Data points with different densities 3. Data points with round shapes 4. Data points with non-convex shapes a. 1 and 2 b. 2 and 3 c. 2 and 4 d. 1, 2 and 4 | 1 | 6 | 3 | 1.6.1 |

PART B (4x4= 16)

ANSWER ANY FOUR OUT OF SIX QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|--|-------|----|----|-------|
| 11 | Describe Principal Component Analysis working methodology from first principles with a suitable example. | 4 | 4 | 2 | 2.6.4 |
| 12 | Describe SVD applied on handwritten digits using scikit-learn | 4 | 4 | 1 | 2.5.1 |
| 13 | Discuss the Deep learning software | 4 | 4 | 2 | 2.5.2 |
| 14 | Explain about Support vector classifier | 4 | 5 | 1 | 2.5.1 |
| 15 | How do you evaluate cluster? | 4 | 5 | 1 | 2.7.1 |
| 16 | Represent Elbow method with suitable example | 4 | 6 | 1 | 2.6.4 |

PART C (2x12= 24)

ANSWER EITHER OR QUESTION IN EACH UNIT

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 17 | a) Discuss on Support Vector Machine working principles in detail. OR b) Illustrate Stochastic gradient descent for Optimization of neural networks with a neat diagram | 12 | 4 | 2 | 2.7.1 |
| 18 | a) Explain in detail on Forward and Backward Propagation in Artificial Neural Network with a neat diagram. OR b) Explain K-means clustering working methodology from first principles with a suitable example | 12 | 4 | 3 | 2.6.4 |
| | | 12 | 5 | 2 | 2.5.1 |
| | | 12 | 6 | 3 | 2.5.2 |

DIFFERENCE BETWEEN PERMUTATION AND COMBINATION:

PERMUTATION:

It means **arrangement of things**. the word arrangement is used if the order of things is considered.

COMBINATION:

It means **selection of things**. the word selection is used when the order of things has no importance

Permutation can be defined in two words -> Selection and Arrangement

Example:

There are 6 people who will have to sit in 4 chairs. In how many ways is this possible?

| | | | |
|------------|-----------|-----------|-----------|
| - 6 ways | 5 ways | 4 ways | 3 ways |
| -1st Chair | 2nd Chair | 3rd Chair | 4th Chair |

Hence, the number of ways would be $= 6 \times 5 \times 4 \times 3 = 360$ ways

$$nP_r = \frac{n!}{(n-r)!} \quad \text{Now let's try to compute,}$$

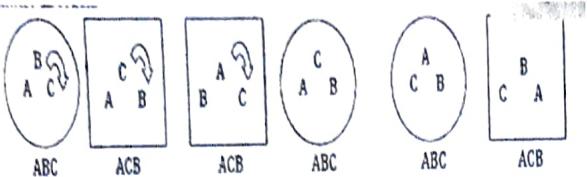
$$5P_2 = \frac{5!}{3!} = \frac{5 \times 4 \times 3 \times 2 \times 1}{3 \times 2 \times 1} = 5 \times 4 = 20$$

1. In how many ways can you form a committee of 4 from 5 men and 3 women?
 i) If repetition of alphabets is allowed?
 ii) Without repetition of alphabets?
 iii) Such that all the vowels are together?
 iv) Vowels and consonants should be together?
 v) No 2 vowels are together?
 $\sigma_{C_3} + (\sigma_{C_3} \times \sigma_{C_1}) + (\sigma_{C_2} \times \sigma_{C_2}) + C^{\sigma_{C_1}} \times \sigma_{C_3}$
2. In how many different ways can letters of the word "PRAISE" be arranged? $6^6, 6!, 4!, 2!$
3. In how many different ways can letters of the word "ENGAGEMENT" be arranged?
4. How many 5 digit numbers divisible by 4 can be formed using the digits 5,6,7,8 and 9 such that there is no repetition of digits?
5. If all the possible words using the letters of the word DRAW are formed without repetition and arranged in alphabetical order, what will be the position of the word WARD?

$A \underline{\quad \quad} \rightarrow 8!$
 $D \underline{\quad \quad} \rightarrow 3!$
 $R \underline{\quad \quad} \rightarrow 3!$
 $WA \underline{D} \underline{R} \rightarrow 1$
 $WA \underline{R} \underline{D} \rightarrow 1 \rightarrow 20^{\text{th}}$ Rep

6. The letter of the word LABOUR are permuted in all possible ways and the words thus formed are arranged as in a dictionary. What is the rank of the word LABOUR?
7. The letter of the word TESTS are permuted in all possible ways and the words thus formed are arranged as in a dictionary. What is the rank of the word TESTS ?
8. The letter of the word TASTES are permuted in all possible ways and the words thus formed are arranged as in a dictionary. What is the rank of the word TASTES?

CIRCULAR PERMUTATION



$(n-1)!$ Ways

If the objects can be able to turn it over.

[Example: Necklace, Garland, Bracelet]

$(n-1)! / 2$ Ways

9. In how many ways can 5 friends sit around a table?
 10. In how many ways can 4 boys and 4 girls sit around a table, if no two boys should sit together?
 11. In how many ways can a bracelet of 10 different beads be made?
- PRACTICE QUESTIONS:**
1. In how many ways can 7 people be seated in a row for a photograph, if two particular people always want to be together.
 2. How many 3 digit numbers can be formed using digits 1, 2, 5, 6, 8 so that the digits can be repeated.
 3. How many five digit positive integers that are divisible by 3 can be formed using the digits 0, 1, 2, 3, 4 and 5, without any of the digits getting repeating?
 4. How many integers, greater than 999 but not greater than 4000, can be formed with the digits 0, 1, 2, 3 and 4, if repetition of digits is allowed?
 5. How many words can be formed with the letters of the word 'PATALIPUTRA' without changing the relative order of the vowels and consonants?
 6. In how many ways can 10 examination papers be arranged so that the best & worst papers never come together

SRM AXIS INTELLECTS
18PDH201T - EMPLOYABILITY SKILLS AND PRACTICES
PERCENTAGE AND PROFIT LOSS
PRACTICE QUESTIONS

PERCENTAGE:

1. A fruit seller had some oranges. He sells 30% oranges and still has 140 oranges.
Originally, he had: **200 oranges**
2. The population of a town was 3600 three years back. It is 4800 right now. What will be the population three years down the line, if the rate of growth of population has been constant over the years? **6400**
3. Peter got 30% of the maximum marks in an examination and failed by 10 marks. However, Paul who took the same examination got 40% of the total marks and got 15 more than the passing marks in the examination. What were the passing marks in the examination? **85**
4. A vendor sells 60 percent of apples he had and throws away 15 percent of the remainder. Next day he sells 50 percent of the remainder and throws away the rest. What percent of his apples does the vendor throw?
23 apples

PROFIT AND LOSS:

5. If the cost price of a pen is Rs.150 and its selling price is Rs.137.50, then calculate the percentage loss on the pen. **8.33%**
6. Selling price of an article is Rs.120. If the gain is 50%, then what is the cost price of the given article? **80**
7. By selling an article for 72 rs , shopkeeper got 10 % loss, in order to get 5% gain what should be the selling price? **84**
8. A shop keeper gains 18% profit by selling a watch, if it had been sold for 222rs more he would get 22% profit. Find the cost price of the watch. **650**
9. A shop keeper got 5% loss by selling a watch, if it had been sold for 750rs more he would get 25% profit. Find the cost price of the watch. **2500**
10. Find the single discount equivalent to successive discounts of 30% and 50%. **98%**
11. A watch was priced at Rs.800. After 2 successive discounts, it was sold for Rs.640. If the first discount was 10%, find the rate of the second discount. **1.44**
12. If the cost price of 15 pencils is equal to the selling price of 20 pencils, find the gain/ loss percentage. **28%**
13. If the cost price of 88 apples is equal to the selling price of 64 apples, find the gain/ loss percentage
14. If the cost price of X apples is equal to the selling price of 40 apples, Profit is 75%, Find X.
15. If the cost price of 39 apples is equal to the selling price of X apples, profit is 62.5%. Find X

16. A reduction of 20% in the price of rice enables a person to buy 10kgs more for Rs.500. Find the reduced & original price per kg?
17. An increment of 25% in the price of rice enables a person to buy 10kgs less for Rs.400. Find the increased & original price per kg?
18. Cost price of 2 articles are same. A shop keeper gains 20% profit by selling Article A, and loss of 20% by selling Article B. Find the overall profit /loss.
19. Cost price of 2 articles are same. A shop keeper gains 20% profit by selling Article A, and loss of 40% by selling Article B. Find the overall profit /loss
20. A shopkeeper sells 2 shirts at the same price; on one he makes a profit of 20% and on the other, a loss of 20%. Find the loss or gain percentage on the whole transaction.
21. A shopkeeper sells 2 shirts at the same price; on one he makes a profit of 20% and on the other, a loss of 25%. Find the loss or gain percentage on the whole transaction.
22. A vendor sells a product for Rs.1800 after a discount of 25%. What is the list price of the product?
23. Anita sold her bike at 30% discount still she makes 20% profit. Find the cost price of bike if marked price is Rs.60000
24. A dishonest dealer decides to sell a product at cost price, but weighs 900gms for kg. Find his profit%.
25. A dishonest dealer decides to sell a product at cost price, but weighs x gms for kg, his profit is 25% find x.

FORMULA:



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FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CONTINUOUS LEARNING ASSESSMENT - I

SET B

G/15

Sub Code/Name: 18ECO107T – Fiber Optics and Optoelectronics

Class/Sem/Course: III Yr / VI Sem / B. Tech -CSE (ALL DISCIPLINE) & IT

Date : 23.02.2023

Max Marks: 25

Duration: 60 mins

PART-A (5x1= 5)

ANSWER ALL THE QUESTIONS

| Q.No | Question | Marks | CO | BL | PI |
|------|---|-------|----|----|-------|
| 1 | What is the frequency if the wavelength of light is 1350nm a)222THz b)232GHz c)242MHz d)252Hz | 1 | 1 | 1 | 1.4.1 |
| 2 | The refractive index of the diamond is a)1 b)1.33 c)1.5 d)2.4 | 1 | 1 | 1 | 1.3.1 |
| 3 | Find the acceptance angle in air, if Numerical aperture is 0.242 a)11° b) 12° c) 13° d) 14° | 1 | 1 | 1 | 1.4.1 |
| 4 | Interpret the Velocity of light in free space related to electromagnetic a) $1/\sqrt{\mu_0\epsilon_0}$ b) $1/\mu_0\epsilon_0$ c) $1/(\mu_0\epsilon_0)^2$ d) μ_0/ϵ_0 | 1 | 1 | 1 | 2.1.2 |
| 5 | What is the unit of luminous flux? a) Lumens b) Webber/m ² c) Ampere/m ² d) tesla | 1 | 1 | 1 | 1.3.1 |

PART B (2x4= 8)

ANSWER ANY TWO QUESTIONS

| Q.No | Question | Marks | CO | BL | PI |
|------|---|-------|----|----|-------|
| 6. | a) A step-index silica fiber with a core radius much longer than the operating wavelength of light has a core refractive index of 1.50 and a cladding refractive index of 1.48. Calculate the acceptance angle in water having a refractive index of 1.33. b) Differentiate between Single and Multi-mode fiber. | 2 | 1 | 2 | 1.4.1 |
| 7. | Using Snell's law define the relationship at interface between two different media. | 4 | 1 | 2 | 1.4.1 |

PART B (2x4= 8)

ANSWER ANY TWO QUESTIONS

| Q.No | Question | Marks | CO | BL | PI |
|------|--|-------|----|----|-------|
| 8. a | Infer in detail about various elements of optical fiber transmission link with necessary diagrams. | 12 | 1 | 3 | 2.1.3 |
| OR | | | | | |
| 8. b | Elaborate about ray optics and types of rays with necessary representations | 12 | 1 | 3 | 2.1.3 |



| | | | |
|-----------------|--------------------------------------|----------|----------|
| Sub Code/Name | 18CSE481T – Applied Machine Learning | Set | EVEN |
| Year/Sem/Branch | III Year / VI Sem / B. Tech CSE-AIML | Date | /02/2023 |
| Max. Marks | 25 | Duration | 60 mins |

PART A (5x1 = 5)
ANSWER ALL THE QUESTIONS

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1 | A model of language consists of the categories which does not include _____ a) System Unit b) structural units. c) data units d) empirical units | 1 | 1 | 1 | 2.5.2 |
| 2 | Different learning methods does not include? a) Introduction b) Analogy c) Deduction d) Memorization | 1 | 1 | 2 | 2.5.2 |
| 3 | The model will be trained with data in one single batch is known as ? a) Batch learning b) Offline learning c) Both A and B d) None of the above | 1 | 1 | 1 | 1.7.1 |
| 4 | How do you handle missing or corrupted data in a dataset? a) Drop missing rows or columns b) Replace missing values with mean/median/mode c) Assign a unique category to missing values d) All of the above | 1 | 1 | 2 | 1.7.1 |
| 5. | Which of the following techniques can not be used for normalization in text mining? a) Stemming b) Lemmatization c) Stop Word Removal d) None of the above | 1 | 1 | 2 | 1.7.1 |

AD103
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PART B (2x4 = 8)

ANSWER ALL THE QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 6 | Why Data Normalization is necessary for Machine Learning models? | 4 | 1 | 3 | 2.5.2 |
| 7 | What's the difference between feature extraction and feature selection? When should each one be used? | 4 | 1 | 3 | 2.5.2 |

PART C (1x12 = 12)

ANSWER ANY ONE OF THE QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 8 | a) Summarize the best way to select features in supervised learning problems? OR | 12 | 1 | 1 | 1.7.1 |
| | a) Explain in detail about what dimensionality reduction is? | 12 | 1 | 2 | 5.6.2 |



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CONTINUOUS LEARNING ASSESSMENT-I (2022-23) - EVEN SEM



| | | | |
|------------------------|---|-----------------|-------------|
| Sub Code/Name | 18CSC305J-Artificial Intelligence | Set | EVEN |
| Year/Sem/Branch | III Year / VI Sem/ B.Tech (CSE, AIML, IOT, BDA, CS) | Date | |
| Max. Marks | 25 | Duration | 60 minutes |

PART A (5 X 1= 5)

ANSWER ALL THE QUESTIONS

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|--------------|---|--------------|-----------|-----------|-----------|
| 1. | Identify the problem that has the possibility of more than one answer and even a particular situation decides the correctness of the answer. a)Structured b)Well Structured c)ill-Structured d) Unstructured | 1 | 1 | 1 | 1.3.1 |
| 2. | An agent is composed of a) Architecture b) Agent Function c) Perception Sequence d) Architecture and Program | 1 | 1 | 1 | 1.3.1 |
| 3. | An _____ is the one which is flexible in terms to get the desired outcome. a)Intelligent agent b)Multi-agent c)Multi-Perspective agent d)Decision-Making agent | 1 | 1 | 2 | 1.3.1 |
| 4. | Which State is fully observable and it goes to one definite after any action. a)Deterministic b)Non-Observable c) Partially Observable d)Unknown State Space | 1 | 1 | 2 | 2.2.3 |
| 5. | The extraction of meaningful information that is previously unknown and can be very useful potential ahead is known as a)Knowledge Discovery b)Machine Learning c)Learning Theory d)Neural Computation | 1 | 1 | 1 | 1.3.1 |

PART B (2 X 4 =8)

ANSWER ALL THE QUESTIONS

| Q.No. | Questions | Marks | CO | BL | PI |
|--------------|---|--------------|-----------|-----------|-----------|
| 6. | Elaborate AI model with suitable example. | 4 | 1 | 3 | 1.2.2 |
| 7. | Discuss the ill structured and well-structured problem with neat diagram. | 4 | 1 | 3 | 2.6.1 |

PART C (1 X 12 = 12)

ANSWER THE QUESTION (A OR B)

| Q. No. | Questions | Marks | CO | BL | PI |
|---------------|--|--------------|-----------|-----------|-----------|
| 8. | a) With suitable diagrams explain the various types of agents. | 12 | 1 | 1 | 2.6.3 |
| | OR | | | | |
| | b) Solve the crypt arithmetic puzzle, CROSS+ROADS = DANGER | 12 | 1 | 2 | 2.6.2 |



| | | | |
|-----------------|--|----------|----------|
| Sub Code/Name | 18CSC303J-DATABASE MANAGEMENT SYSTEMS | Set | ODD |
| Year/Sem/Branch | III Year / VI Sem / B.Tech (CSE & Spl) | Date | .02.2023 |
| Max. Marks | 25 | Duration | 60 mins |

PART-A(5x1=5)
ANSWER ALL THE QUESTIONS

| Q.No | Question | Marks | CO | BL | PI |
|------|---|-------|----|----|-------|
| 1 | What refers to the correctness and completeness of the data in a database? (A) Data security (B) Data integrity (C) Data constraint (D) Data independence | 1 | 1 | 1 | 2.3.3 |
| 2 | In the architecture of a database system what is the external level _____ (A) Physical level (B) Logical level (C) Conceptual level (D) View level | 1 | 1 | 3 | 1.1.1 |
| 3 | What is also called as Hierarchical model? (A) Tree Structure (B) Plex Structure (C) Normalize Structure (D) Table Structure | 1 | 1 | 1 | 3.2.1 |
| 4 | Which of the following is example of Object based logical model? (A) Entity Relationship Model | 1 | 1 | 1 | 3.2.3 |

| | | | | |
|--|---|---|---|-------|
| (B) Hierarchical Model (C) Relational Model (D) Network Model | | | | |
| Which command allows the removal of all rows from a table but flushes a table more efficiently since no rollback information is retained: (A) Truncate command (B) Create command (C) Drop table command (D) Alter table command | 1 | 1 | 3 | 3.1.1 |

PART-B(2x4=8)
ANSWER ALL THE QUESTIONS

| Q.No | Question | Marks | CO | BL | PI |
|------|---|-------|----|----|-------|
| 6. | With a neat sketch describe about the views of data | 4 | 1 | 3 | 1.3.1 |
| 7. | List out the advantages of DBMS over File Processing System | 4 | 1 | 2 | 2.4.1 |

PART C (1 X 12 = 12)
ANSWER THE QUESTION (A OR B)

| Q.No | Question | Marks | CO | BL | PI |
|------|--|-------|----|----|-------|
| | a) Describe in detail about Database System Architecture | 12 | 1 | 2 | 3.2.2 |
| 8 | (OR) | | | | |
| | b) List out the DDL, DML and DCL Commands with Example | 12 | 1 | 1 | 1.2.2 |



FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS LEARNING ASSESSMENT-I (2022-23) - EVEN SEM

| | | | |
|------------------------|--|-----------------|---------------|
| Sub Code/Name | 18CSC301J / Compiler Design | Set | A |
| Year/Sem/Branch | III / VI / CSE – Core & Specializations | Date | |
| Max. Marks | 25 | Duration | 1 Hour |

PART A (5 X 1= 5)
ANSWER ALL THE QUESTIONS

| Q.No. | MCQ Questions | Marks | C O | BL | PI |
|--------------|---|--------------|------------|-----------|-----------|
| 1. | What is the output of lexical analyzer? a) A parse tree b) A list of tokens c) Intermediate code d) Machine code | 1 | 1 | 1 | 1.3.1 |
| 2. | An NFA's transition function returns a) A Boolean value b) A state c) A set of states d) An edge | 1 | 1 | 1 | 2.1.3 |
| 3. | When is the type checking usually done? a) Syntax directed translation b) lexical analysis c) code optimization d) syntax analysis | 1 | 1 | 1 | 2.1.3 |
| 4. | Transition function maps. a) $\Sigma^* Q \rightarrow \Sigma$ b) $Q^* Q \rightarrow \Sigma$ c) $\Sigma^* \Sigma \rightarrow Q$ d) $Q^* \Sigma \rightarrow Q$ | 1 | 1 | 1 | 2.1.3 |
| 5. | Which of the following is used for grouping of characters into tokens (in a computer) ? a) A parser b) Code optimizer c) Code generator d) Scanner | 1 | 1 | 1 | 1.3.1 |

PART B (2 X 4 =8)
ANSWER ALL THE QUESTIONS

| Q.No. | Questions | Marks | CO | BL | PI |
|--------------|--|--------------|-----------|-----------|-----------|
| 6. | Discuss Cousins of Compiler in detail. | 4 | 1 | 1 | 2.2.3 |
| 7. | What data used to evaluate NFA with DFA? | 4 | 1 | 3 | 2.2.4 |

PART C (1 X 12 = 12)
ANSWER THE QUESTION (A OR B)

| Q. No. | Questions | Marks | C O | BL | PI |
|---------------|---|--------------|------------|-----------|-----------|
| 8. | a) i)Describe the Role of Lexical Analyzer in the process of Compilation ii)Show the operation performed on Regular Languages with example | 6 | 1 | 1 | 3.1.1 |
| | OR | | | | |
| | b)Solve the given Regular Expression $(a/b)^*abb$ into DFA by Direct Method | 12 | 1 | 2 | 3.2.1 |



| | | | |
|-----------------|--|----------|--------|
| Sub Code/Name | 18CSE479T - Statistical Machine Learning | Set | Odd |
| Year/Sem/Branch | III Year /VI Sem/B.Tech | Date | |
| Max. Marks | 25 | Duration | 60 mts |

PART A (5 X 1=5)
ANSWER ALL THE QUESTIONS

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|-------|--|-------|----|----|--------|
| 1. | If Linear regression model perfectly fit i.e., train error is zero, Analyze it a) Test error is always zero b) Test error is non zero c) Couldn't comment on Test error d) Test error is equal to Train error | 1 | 1 | 3 | 12.6.2 |
| 2. | Targeted marketing, Recommended Systems, and Customer Segmentation are applications in which of the following? Analyze it a) Supervised Learning: Classification b) Unsupervised Learning: Clustering c) Unsupervised Learning: Regression d) Reinforcement Learning | 1 | 1 | 1 | 12.4.1 |
| 3. | >>> train_data,test_data = train_test_split(original_data,train_size = 0.7, random_state=42) From the above code, Analyze the percentage of validation and testing of the data? a) 30% b) 70% c) 42% d) 60% | 1 | 1 | 3 | 12.6.2 |
| 4. | Which is widely used and effective machine learning algorithm based on the idea of bagging. a) Regression b) Classification c) Decision Tree d) Random Forest | 1 | 1 | 1 | 1.4.1 |
| 5. | What is the most significance phase in a genetic algorithm? a) Selection b) Mutation c) Crossover d) Fitness Function | 1 | 1 | 1 | 1.4.1 |

PART B (2 X 4 =8)
ANSWER ALL THE QUESTIONS

| Q.No. | Questions | Marks | CO | BL | PI |
|-------|--|-------|----|----|--------|
| 6. | Compare Statistical and Machine learning | 4 | 1 | 2 | 1.4.1 |
| 7. | Explain Confusion matrix | 4 | 1 | 3 | 12.6.2 |

PART C (1 X 12 = 12)
ANSWER THE QUESTION (A OR B)

| Q. No. | Questions | Marks | CO | BL | PI |
|--------|---|-------|----|----|--------|
| 8. | a) Steps in machine learning model development and deployment | 12 | 1 | 1 | 12.4.1 |
| | OR | | | | |
| | b) When to stop tuning machine learning models | 12 | 1 | 2 | 12.5.2 |

06



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS LEARNING ASSESSMENT-III

Sub Code/Name : 18CSE481T – Applied Machine Learning

Set : EVEN

Class : III Year / VI Sem / B.Tech CSE – AIML

Date : 05.05.2023

Max Marks : 50



Duration : 90 mins

PART A (10x1= 10)

ANSWER ALL THE QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1. | Which of the following is the pixel range for grayscale image? a) 1 to 256 b) 0 to 255 c) 1 to 255 d) 0 to 256 | 1 | 4 | 2 | 2.2.3 |
| 2. | Gradient computation equation is a) $ Gx + Gy $ b) $ Gx - Gy $ c) $ Gx / Gy $ d) $ Gx ^2/ Gy $ | 1 | 4 | 1 | 2.1.2 |
| 3. | What is the expanded form of JPEG? a) Joint Photographic Expansion Group b) Joint Photographic Experts Group c) Joint Photographs Expansion Group d) Joint Photographic Expanded Group | 1 | 4 | 2 | 2.1.2 |
| 4. | Zero crossing operator appears in which of the following a) Prewitt derivative b) Second derivative c) Sobel operator d) Gaussian operator | 1 | 4 | 1 | 4.1.1 |
| 5. | Laplacian is a a) First order derivative filter b) Sobel operator c) Canny operator d) Second order derivative filter | 1 | 4 | 2 | 2.2.3 |
| 6. | Designing a biometric system accuracy with respect to? a) FAR b) FRR c) FCR and FRR d) FAR and FRR | 1 | 4 | 1 | 4.1.1 |
| 7. | Viola-Jones algorithm uses _____ to find the best features and to train a classifier. a) Haar features b) Integral image c) AdaBoost d) Edges and Lines | 1 | 4 | 1 | 2.1.2 |
| 8. | Which method is used for face recognition? a) Holistic matching b) Segmentation c) Canny operator d) Sobel operator | 1 | 4 | 1 | 2.1.2 |
| 9. | _____ is the separation of a set of source signals from a set of mixed signals, without the aid of information about the source signals or the mixing process a) Segmentation b) Acquisition c) Blind Source Separation d) Gaussian noise removal | 1 | 4 | 3 | 4.1.1 |
| 10. | What PCA does at the end? a) Give you the highest number of features possible, to maximize the efficiency of your Machine Learning algorithm b) Predicts your target with high efficiency c) Reduce dimensionality of the data and create new features from features set given d) Create clusters in order to let you know what are the classes | 1 | 4 | 2 | 2.1.2 |

PART B (4x4= 16)

ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|--|-------|----|----|-------|
| 11. | Define Histogram with an example | 4 | 4 | 1 | 4.1.5 |
| 12. | Examine the importance of Sobel filter in edge detection | 4 | 4 | 2 | 2.2.3 |
| 13. | Analyze the role of vector quantization in image processing | 4 | 4 | 3 | 4.1.2 |
| 14. | Build the eye and nose detectors using python | 4 | 4 | 3 | 4.1.2 |
| 15. | Elaborate the conversion of dataset from a five-dimensional set to a two-dimensional set | 4 | 4 | 3 | 2.1.3 |
| 16. | Define Independent Components Analysis | 4 | 4 | 1 | 2.2.4 |

PART C (2x12= 24)

ANSWER ANY ONE OF THE FOLLOWING QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|--------|--|-------|----|----|-------|
| 17. a) | Demonstrate the steps involved in Canny edge detector | 12 | 4 | 3 | 2.2.3 |
| | OR | | | | |
| 17. b) | Explain SIFT feature detection | 12 | 4 | 1 | 4.2.2 |
| 18. a) | Discuss about building of face detector using Haar cascades | 12 | 4 | 2 | 4.3.3 |
| | OR | | | | |
| 18. b) | Describe the following i) Kernel PCA ii) Blind source separation | 6 | 4 | 2 | 4.3.3 |
| | | 6 | | | |

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CONTINUOUS LEARNING ASSESSMENT-3
ACADEMIC YEAR (2022-23)



[Signature]

| | | | |
|------------------------|---|-----------------|----------|
| Sub Code/Name | 18CSC304J/Compiler Design | Set | ODD |
| Year/Sem/Branch | III Yr/ VI Sem / B.Tech CSE, w/s AIML,BDA,IOT,CS | Date | |
| Max. Marks | 50 | Duration | 130 Hour |

PART A (10 X 1=10)
ANSWER ALL THE QUESTIONS

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|--------------|---|--------------|-----------|-----------|-----------|
| 1. | Generation of intermediate code based on a abstract machine model is useful in compilers because a. Implementation of lexical analysis and syntax analysis is made easier b. Writing for intermediate code generation c. Portability of the frontend of the compiler d. None of the mentioned | 1 | 4 | 1 | 12.1 |
| 2. | Input to code generator a. Source code b. Intermediate code c. Target code d. Code Optimization | 1 | 4 | 1 | 12.1 |
| 3. | Which of the following is an infix expression? a. $(a+b)*(c+d)$ b. $ab+c^2$ c. $+ab$ d. $ab\cdot c^2$ | 1 | 4 | 1 | 12.1 |
| 4. | Infix to postfix conversion algorithm, the operators are associated from? a. right to left b. left to right c. centre to left d. centre to right | 1 | 5 | 1 | 12.1 |
| 5. | One of the purposes of using intermediate code in compilers is to a. make parsing and semantic analysis simpler. b. improve error recovery and error reporting. c. increase the chances of reusing the machine-independent code optimizer in other compilers. d. improve the register allocation. | 1 | 5 | 1 | 12.1 |
| 6. | Consider the following C code segment. for (<i>i</i> =0; <i>i</i> < <i>n</i> ; <i>i</i> ++) { for (<i>j</i> =0; <i>j</i> < <i>n</i> ; <i>j</i> ++) { if (<i>i</i> %2){ { <i>x</i> += (4*i + 5*i); <i>y</i> += (7 + 4*i); } } } } | 1 | 6 | 2 | 12.1 |
| | Which one of the following is false? a. The code contains loop invariant computation b. There is scope of common sub-expression elimination in this | | | | |

| | | | | |
|-----|---|---|---|--------|
| | code c..There is scope of strength reduction in this code d..There is scope of dead code elimination in this code | | | |
| 7. | Local and loop optimization in turn provide motivation for a. Data flow analysis b. constant folding c. peep hole optimization d.DFA and constant folding | 1 | 6 | 1 12.1 |
| 8. | Specify the optimization technique used in the following code. //before elimination <i>c</i> = <i>a</i> * <i>b</i> <i>x</i> = <i>a</i> till <i>d</i> = <i>a</i> * <i>b</i> + 4 //After elimination : c = <i>a</i> * <i>b</i> till <i>d</i> = <i>a</i> * <i>b</i> + 4 a)Strength reduction b)Code motion c)Dead code elimination d)Common sub-expression elimination | 1 | 6 | 1 12.1 |
| 9. | _____ is used to keep track of the live procedure activations procedures whose execution have not been completed. a. Local variables b. Symbol table c. control stack d. Access log | 1 | 6 | 1 12.1 |
| 10. | The identification of common sub-expression and replacement of run computations by compile time computation is a. Local optimization b. Loop optimization c. Constant folding d. Data flow analysis | 1 | 6 | 1 12.1 |

PART B (4 X 4 =16)
ANSWER ANY FOUR OUT OF SIX QUESTIONS

| Q.No. | Questions | Marks | CO | BL | PI |
|--------------|--|--------------|-----------|-----------|-----------|
| 11. | Construct triples of an expression $a^* - (b + c)$ | 4 | 4 | 3 | 23.1 |
| 12. | What are the notations used to represent an intermediate language? | 4 | 4 | 2 | 23.4 |
| 13. | Give the structure of General Activation Record | 4 | 5 | 3 | 31.1 |
| 14. | Explain the concept of code optimization with an example. | 4 | 5 | 3 | 43.2 |
| 15. | List out the properties of reducible flow graph. | 4 | 6 | 1 | 23.2 |
| 16. | Give the block diagram of organization of code optimizer | 4 | 6 | 2 | 41.1 |

PART C (2 X 12 = 24)
ANSWER ANY TWO QUESTIONS

| Q.No. | Questions | Marks | CO | BL | PI |
|--------------|---|--------------|-----------|-----------|-----------|
| 17. | a) What is three address code? What are its types? How is it implemented? (OR) b) Using Backpatching, generate an intermediate code for the following expression $A < 5 \text{ OR } C < D \text{ AND } P < Q$ | 12 | 4 | 2 | 31.1 |
| 18. | a) Describe in detail about various loop optimization techniques with example. (OR) b) Explain the data flow analysis concept with suitable example. | 12 | 6 | 1 | 23.2 |

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS LEARNING ASSESSMENT – 3 (2022-2023) – EVEN SEMESTER

Sub Code/Name : 18CSC303J – Database Management Systems

Set: ODD

Year/Sem/Branch : III Year / VI Sem / B. Tech CSE & All Specialization

Max Marks : 50

Duration: 90 mins



PART A (10 x 1 = 10)

ANSWER ALL THE FOLLOWING QUESTIONS

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1 | The relational algebra is a _____ Query language. a) Structural b) Procedural c) Logical d) Unstructured | 1 | 5 | 1 | 1.7.1 |
| 2 | Which of the following can be violated by delete operation. a) Primary key b) Referential Integrity c) Super key d) Candidate key | 1 | 5 | 1 | 2.5.2 |
| 3. | The tuple relational calculus is based on specifying a number of _____ variables. a) String b) Column c) Relation d) Tuple | 1 | 5 | 1 | 1.7.1 |
| 4. | Consider the relation (ABCDEF) $A \rightarrow\!\!\!-\! FC$, $C \rightarrow\!\!\!-\! D$, $B \rightarrow\!\!\!-\! E$. Find the 2NF relations a) ACDF, AE b) ACDF, BE, AB c) BE, AB d) ACD, BE, AB | 1 | 5 | 2 | 2.5.2 |
| 5. | Third normal form (3NF) is based on the concept of dependency. a) Partial b) Multi-valued c) Join d) Transitive | 1 | 5 | 1 | 5.6.2 |
| 6. | The “all-or-none” property is commonly referred to as a, Isolation b, Durability c, Atomicity d, Consistency | 1 | 6 | 1 | 1.7.1 |
| 7. | Select which component of the database handles atomicity of the database system. | 1 | 6 | 1 | 2.5.2 |

- a) Storage Engine
- b) Log Manager
- c) Query Processor
- d) Recovery System

Serializability of schedules can be ensured through a mechanism called.

- a) Evaluation Control Policy
- b) Concurrency Control Policy
- c) Execution Control Policy
- d) Cascading Control Policy

Choose which phase a transaction is in if it may release locks but may not obtain any locks.

- a) Growing Phase
- b) Shrinking Phase
- c) Deadlock Phase
- d) Starving Phase

Determine which state of the system no longer reflects a real state of the world that the database is supposed to capture because of a failure.

- a) Active
- b) Dead
- c) Inconsistent
- d) Waiting

PART B (4x4 = 16)

ANSWER ANY FOUR OUT OF SIX QUESTIONS

| Q.No. | Questions |
|-------|---|
| 11. | What are the Pitfalls in Relational database design? |
| 12. | Write short note on normalization. |
| 13. | What is Denormalization? Give its advantages and disadvantages. |
| 14. | List the ACID properties. Explain the usefulness of each. |
| 15. | When do you say that the system is in deadlock? Explain. |
| 16. | Explain the purpose of the checkpoint mechanism. How often should checkpoints be performed? |

PART C (12x2 = 24)

ANSWER THE QUESTIONS (A OR B)

| Q.No. | Questions |
|-------|--|
| 17. | <p>a) Define Normalization. Explain about 1NF, 2NF with relevant examples.</p> <p>OR</p> <p>b) What are the problems caused by Redundancy? Explain about Normalization and need for normalization.</p> |
| 18. | <p>a) Explain the properties of transactions. Illustrate the states of transactions</p> <p>OR</p> <p>b) Explain testing for Serializability with respect to concurrency control schemes. How will you determine whether a schedule is serializable or not.</p> |



| | | | |
|-----------------|------------------------------------|----------|------------|
| Sub Code/Name | 18CSC305J- ARTIFICIAL INTELLIGENCE | Set | B |
| Year/Sem/Branch | III / VI / CSE, Specialization | Date | 04.05.2023 |
| Max. Marks | 50 | Duration | 1.30 Hour |

PART A (10 X 1=10)**ANSWER ALL THE QUESTIONS**

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1. | Which is not a property of an ADL? a. It allows positive literals. b. It makes use of quantified variables along with the disjunctions and the conjunctions. c. Conditional pre conditions are allowed d. Variable with different types at the same time are allowed. | 1 | 2 | 2 | 1.1.2 |
| 2. | The notion of mean end analysis is same as what is used in a. STRIPS b. ADL c. PDDL d. PPL | 1 | 2 | 2 | 1.1.2 |
| 3. | HTN expanded as— a. Hierarchical primitive-Task Network b. Hierarchical non primitive Task Network c. Hierarchical primitive-Task Networks d. Hierarchical Task Network | 1 | 2 | 1 | 1.1.2 |
| 4. | Decision making engines should minimize—positives and—negatives. a. True, False b. True, True c. False, True d. False, False | 1 | 2 | 3 | 1.1.2 |
| 5. | Rewards or Punishments involved in--- type of learning a. Adaptive b. Reinforcement c. Distributed d. Q-Learning | 1 | 2 | 2 | 1.1.2 |
| 6. | Which of the following is not a component of a frame based system? a. Frame name b. Relationship c. Distribution function d. Values or ranges | 1 | 2 | 2 | 1.2.1 |
| 7. | Which of the following is the example for an Information Retrieval (IR)? | 1 | 2 | 3 | 1.3.1 |

✓ ✓ ✓

| | | | | |
|-----|---|---|---|---------|
| | a. Search Engines b. Speech acts c. Morphological Analysis d. Pragmatics | | | |
| 8. | Shells are ----- a. Fuzzy expert system b. Knowledge acquisition tools c. Self explaining systems. d. Interpreters | 1 | 2 | 1 1.3.1 |
| 9. | ----- is a knowledge acquisition system. a. MOLE b. MYCIN c. SALT d. E-MYCIN | 1 | 2 | 2 1.3.1 |
| 10. | ----- indicate the degree of truth for the particular variable. a. Discount factor b. Confidence factor c. User input d. Rule set | 1 | 2 | 3 1.3.1 |

PART B (4 X 4 =16)**ANSWER ANY FOUROUT OF SIX QUESTIONS**

| Q.No. | Questions | Marks | CO | BL | PI |
|-------|--|-------|----|----|-------|
| 11. | What is the need of POP algorithms? | 4 | 4 | 2 | 3.1.1 |
| 12. | Differentiate search and planning. | 4 | 4 | 2 | 2.2.4 |
| 13. | Briefly explain about Block World Problem. | 4 | 4 | 1 | 2.1.1 |
| 14. | What is pattern analysis? Explain with an example | 4 | 3 | 1 | 2.2.2 |
| 15. | Why is there is need to have efficient knowledge acquisition systems? | 4 | 5 | 2 | 2.4.3 |
| 16. | What can be the possible benefits of having an expert system as machine rather than a human? List it down. | 4 | 3 | 2 | 2.2.2 |

PART C (2 X 12 = 24)**ANSWER ANY TWO QUESTIONS**

| Q. No. | Questions | Marks | CO | BL | PI |
|--------|---|-------|----|----|-------|
| 17. | a) Consider the scenario which involves a robot, a cup of coffee, guest and two rooms. Robot should get the tea and give it to the guest. What possible actions will you consider? Represent the action in STRIPS and also explain about the STRIPS. (OR) b) Discuss in detail about (i) Ensemble learning (ii) Distributed learning with an example. | 12 | 2 | 3 | 2.4.3 |
| 18. | a) Write a neat sketch; explain the architecture, characteristics and features roles of expert system. (OR) b) Nowadays, parking has always a very big issue. Imagine you have to reach to your friend's party and the venue is on the overcrowded street. You would be looking for a system that would assist you in parking the car, providing you with the details of the available parking and how long possibly you would have to walk down to the party place after your car is parked! Discuss the role of AI in solving the problem. | 12 | 5 | 2 | 2.4.3 |
| | | 12 | 5 | 3 | 2.2.3 |

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B.Tech. CSE-Specialization with AIML
CONTINUOUS LEARNING ASSESSMENT- 2
ACADEMIC YEAR 2022-2023

Sub Code/Name : 18CSE479T - Statistical Machine Learning **Set** : A
Class : III Year /VI Sem/B.Tech **Date** :
Max Marks : 50 **Duration** : 90mts

PART-A (10x1= 10)

ANSWER ALL THE QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|--|-------|----|----|------|
| 1 | Suppose that we have N independent variables (X_1, X_2, \dots, X_n) and dependent variable is Y. Now Imagine that you are applying linear regression by fitting the best fit line using least square error on this data. You found that correlation coefficient for one of it's variable(Say X_1) with Y is -0.95. Which of the following is true for X_1 ? A) Relation between the X_1 and Y is weak B) Relation between the X_1 and Y is strong C) Relation between the X_1 and Y is neutral D) Correlation can't judge the relationship | 1 | 2 | 3 | 2.53 |
| 2 | We can also compute the coefficient of linear regression with the help of analytical method called "Normal Equation". Which of the following is true about Normal Equation? 1. We don't have to choose the learning rate 2. It becomes slow when number of features is very large 3. There is no need to iterate A) 1 and 2 B) 1 and 3 C) 2 and 3 D) 1,2 and 3 | 1 | 2 | 3 | 2.53 |
| 3 | Which of the following is used where the target variable is of categorical nature? A. Keras B. Knnme C. Logistic Regression D. MXNet | 1 | 2 | 3 | 2.53 |
| 4 | What Regression models a target prediction value based on _____. A) dependent variable B) independent variables C) independent value D) dependent value | 1 | 2 | 1 | 1.51 |
| 5 | Normalized data are centered at ____ and have units equal to standard deviations of the original data. a) 0 b) 5 c) 1 d) 10 | 1 | 2 | 1 | 1.51 |
| 6 | In activation dynamics is output function bounded? a) yes b) no c) May be d) based on situation | 1 | 3 | 1 | 1.51 |

| | | | | | |
|----|--|---|---|---|-------|
| 7 | If input is ' $a(l) + e$ ' where 'e' is the noise introduced, then what is the output in case of autoassociative feedback network? a) $a(l)$ b) $a(l) + c$ c) could be either $a(l)$ or $a(l) + e$ d) e | 1 | 3 | 2 | 12.51 |
| 8 | Naina receives emails that consists of 18% spam of those emails. The spam filter is 93% reliable i.e., 93% of the mails it marks as spam are actually a spam and 93% of spam mails are correctly labelled as spam. If a mail marked spam by her spam filter, determine the probability that it is really spam. a) 50% b) 84% c) 39% d) 63% | 1 | 3 | 3 | 12.51 |
| 9 | A meeting has 12 employees. Given that 8 of the employees is a woman, find the probability that all the employees are women? a) 1123 b) 1235 c) 29 d) 18 | 1 | 3 | 2 | 12.41 |
| 10 | Gradient Descent is an optimization algorithm used for, A) Certain Changes in algorithm B) minimizing the cost function in various machine learning algorithms C) maximizing the cost function in various machine learning algorithms D) remaining same the cost function in various machine learning algorithms | 1 | 3 | 1 | 1.51 |

PART-B (4x4= 16)
ANSWER ANY FOUR OUT OF SIX QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 11 | Compare Simple and Multiple Linear Regression | 4 | 2 | 3 | 2.43 |
| 12 | Demonstrate Random Forest | 4 | 2 | 2 | 1.51 |
| 13 | Explain Logistics Regression and its advantages | 4 | 2 | 2 | 1.51 |
| 14 | Define KNN voter example | 4 | 3 | 1 | 1.22 |
| 15 | What is a Joint probability? Explain it with a simple Venn Diagram. | 4 | 3 | 1 | 1.22 |
| 16 | Use of Conditional probability to build the Naive Bayesian | 4 | 3 | 3 | 12.51 |

PART-B (2x12 = 24)

ANSWER EITHER OR QUESTION IN EACH UNIT

| Q.No. | Question | Marks | CO | BL | PI | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|--|-------------|----------|-------|------|---|-----|---|-----|---|-----|---|-----|-------|---------|-------------|----------|-------|------|---|-------|-----|------|------|----|----|--|--|------|
| 17 (a) | Let us consider an example where the 5 weeks sales data (in Thousands) is given as shown below in Table. Apply linear regression technique to predict the 7 th and 9 th week sales. | 12 | 2 | 3 | 2.53 | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 (b) | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>x_i</td><td>y_i</td></tr> <tr><td>1</td><td>1.2</td></tr> <tr><td>2</td><td>1.8</td></tr> <tr><td>3</td><td>2.6</td></tr> <tr><td>4</td><td>3.2</td></tr> <tr><td>5</td><td>3.8</td></tr> </table> <p>(Or)</p> Construct the Decision tree for the below sample dataset using ID3 algorithm <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><th>S.No.</th><th>Outlook</th><th>Temperature</th><th>Humidity</th><th>Windy</th><th>Play</th></tr> <tr><td>1</td><td>Sunny</td><td>Hot</td><td>High</td><td>Weak</td><td>No</td></tr> </table> | x_i | y_i | 1 | 1.2 | 2 | 1.8 | 3 | 2.6 | 4 | 3.2 | 5 | 3.8 | S.No. | Outlook | Temperature | Humidity | Windy | Play | 1 | Sunny | Hot | High | Weak | No | 12 | | | 1.51 |
| x_i | y_i | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 2.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 3.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S.No. | Outlook | Temperature | Humidity | Windy | Play | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Sunny | Hot | High | Weak | No | | | | | | | | | | | | | | | | | | | | | | | | |



SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
RAMAPURAM CAMPUS
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS LEARNING ASSESSMENT-II (2022-23)



| | | | |
|-----------------|------------------------------------|----------|----------|
| Sub Code/Name | 18CSE481T/Applied Machine Learning | Set | Even |
| Year/Sem/Branch | IV/VII/AIML | Date | |
| Max. Marks | 50 | Duration | 90 Mins. |

PART A (10 X 1= 10)
ANSWER ALL THE QUESTIONS

| Q.No. | MCQ Questions | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1. | The signal that is used in speech recognition is known as? (A) Acoustic signal (B) Electric signal (C) Electromagnetic signal (D) Radar | 1 | 2 | 1 | 1.5.1 |
| 2. | Select the dominant modality for communication between humans? (A) Hear (B) Speech (C) Smell (D) None of these | 1 | 2 | 1 | 1.5.1 |
| 3. | MFCC uses (A) Filter banks and tan transform (B) Features and sine transform (C) Filter banks and cosine transform (D) Features and cosine transform | 1 | 2 | 1 | 1.5.1 |
| 4. | How we can describe the state of the process in HMM? (A) Literal (B) Single random variable (C) Single discrete random variable (D) None of these | 1 | 2 | 1 | 1.5.1 |
| 5. | Which of the following algorithm is applicable for solving temporal probabilistic reasoning? (A) Hill-climbing search algorithm (B) Hidden Markov model (C) Depth-first search algorithm (D) Breadth-first search algorithm | 1 | 2 | 1 | 1.5.1 |
| 6. | Which function is used to load the letters data? a. crf.load_data() b. loaddata() c. load() d. data() | 1 | 3 | 1 | 1.5.1 |
| 7. | What is the method used to train the CRF? a. train() b. crf() c. crf.train() d. crf_train() | 1 | 3 | 1 | 1.6.1 |
| 8. | Which one is not a form of time series data? a. int64 b. float64 c. bool d. Double | 1 | 3 | 1 | 1.5.1 |

| | | | | | |
|-----|--|---|---|---|-------|
| 9. | How to import numpy? a. import numpy as np b. import numpy c. import np d. import numpy as num. | 1 | 3 | 1 | 1.6.1 |
| 10. | How to convert the data into a pandas data frame? a. DataFrame() b. pd.DataFrame() c. pd_DataFrame() d. pdDataFrame() | 1 | 3 | 1 | 1.6.1 |

PART B (4 X 4= 16)
ANSWER ANY FOUR QUESTIONS

| Q. No. | Questions | Marks | CO | BL | PI |
|--------|---|-------|----|----|-------|
| 11. | What is the method to avoid overfitting? | 4 | 2 | 1 | 1.3.1 |
| 12. | Differentiate supervised and unsupervised machine learning. | 4 | 2 | 1 | 2.1.1 |
| 13. | Why instance-based learning algorithm sometimes referred to as Lazy learning algorithm? | 4 | 2 | 1 | 1.1.2 |
| 14. | Illustrate about Conditional Random Fields | 4 | 3 | 2 | 1.1.2 |
| 15. | How Hidden Markov Models performs in python | 4 | 3 | 2 | 1.3.1 |
| 16. | Write a program to display users selected year calendar on to the console. | 4 | 3 | 3 | 2.1.1 |

PART C (2 X 12= 24)
ANSWER THE QUESTIONS

| Q. No. | Questions | Marks | CO | BL | PI |
|--------|---|-------|----|----|-------|
| 17. | a) Explain the concept of transforming audio signals into the frequency domain. OR b) Build a Speech Recognition Model using Hidden Markov Model. | 12 | 2 | 2 | 2.5.2 |
| 18. | a) Describe the Time Series and Sequential Data with examples. OR b) Explain Analyzing stock market data using Hidden Markov Models. | 12 | 3 | 3 | 2.5.2 |
| | | 12 | 3 | 3 | 2.6.2 |

Sub Code/Name

: 18ECO107T FIBEROPTICS & OTOELECTRONICS

Set: B

Class/Sem/Course

: III Yr / VI Sem / B. Tech -CSE (ALL DISCIPLINE) & IT

Date : .2023

Max Marks

: 50

Duration: 90 mins

PART-A (10x1= 10)
ANSWER ALL THE QUESTIONS

| Q.No | Question | Marks | C O | B L | PI |
|------|---|-------|--------|--------|-------|
| 1 | In waveguide dispersion, refractive index is independent of a) Bit rate b) Index difference c) Velocity of medium d) Wavelength | 1 | 2 | 2 | 1.2.1 |
| 2 | Disturbance along the fiber such as vibrations, discontinuities, connectors, splices, source/detectors coupling result in a) Modal noise b) Inter-symbol interference c) Infrared interference d) Pulse broadening | 1 | 2 | 1 | 1.3.1 |
| 3 | Effects of intrinsic absorption can be minimized by a) Ionization b) Radiation c) Suitable choice of core and cladding components d) Melting | 1 | 2 | 2 | 2.1.2 |
| 4 | In the single mode fibers, the dominant dispersion mechanism is a) Intermodal dispersion b) Intra-modal dispersion c) Material dispersion d) Frequency distribution | 1 | 2 | 1 | 1.3.1 |
| 5 | Select the wavelength of the optical spectrum that produces maximum attenuation a) 850nm b) 900nm c)1400nm d)1300nm | 1 | 2 | 1 | 1.3.1 |
| 6 | Identify the device which converts electrical energy in the form of a current into optical energy. a) Optical source b) Optical coupler c) Optical isolator d) Circulator | 1 | 3 | 1 | 1.2.1 |
| 7 | The ratio of electron-hole pairs generated to the incident photons is a)Power efficiency b) Quantum efficiency c)Signal efficiency d)Carrier efficiency | 1 | 3 | 3 | 2.1.2 |
| 8 | Amount of radiance in planer type of LED structures is a) Low b) High c) Zero d) Negligible | 1 | 3 | 1 | 1.3.1 |
| 9 | In semiconductor injection laser, narrow line bandwidth is of the order. a) 5 nm b) 1 nm or less c) 4 nm d) 3 nm | 1 | 3 | 1 | 1.3.1 |
| 10 | The newly generated carriers accelerated by high electric field gaining enough energy to cause ionization known as a) Spontaneous rupture b) Narrow band effect c) Avalanche effect d) LED Effect | 1 | 3 | 3 | 1.2.1 |

PART B (4x4= 16)
ANSWER ANY 4 QUESTIONS

| Q.No | Question | Mark s | C O | B L | PI |
|------|---|--------|-----|-----|-------|
| 11. | Compare intra and inter modal dispersion. | 4 | 2 | 1 | 1.2.1 |
| 12 | Give the principle of photo detection in semiconductor. | 4 | 2 | 2 | 1.2.1 |
| 13 | What is the maximum core radius allowed for a glass fiber having $n_1 = 1.465$ and $n_2 = 1.46$ if the fiber is to support only one mode at wavelength of 1250nm. | 4 | 2 | 1 | 2.1.3 |
| 14 | Define Quantum efficiency? | 4 | 3 | 2 | 1.2.1 |
| 15 | List the factors that cause Rayleigh scattering in optical fibers. | 4 | 3 | 1 | 2.1.2 |
| 16 | Compare fluorescence and phosphorescence | 4 | 3 | 1 | 1.2.1 |

PART C (2x12= 24)
ANSWER THE QUESTIONS

| Q.No | Question | Mark s | C O | B L | PI |
|-------|--|--------|-----|-----|-------|
| 17. a | Illustrate micro bending and macro bending losses with suitable diagram. (OR) | 12 | 2 | 3 | 2.1.3 |
| 17. b | Explain the scattering and bending losses that occur in an optical fiber with relevant diagrams and expressions. | 12 | 2 | 2 | 2.1.3 |
| 18. a | Discuss the construction and working of Surface emitting LED also list its advantages. (OR) | 12 | 3 | 2 | 2.1.3 |
| 18. b | Sketch the structure of LASER and explain its working principle. | 12 | 3 | 3 | 2.1.2 |



PART A (10x1= 10 Marks)

ANSWER ALL THE FOLLOWING QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1 | A _____ in a table represents a relationship among a set of values. A. Column B. Key C. Row D. Entry | 1 | 2 | 1 | 1.6.1 |
| 2 | The _____ operation allows the combining of two relations by merging pairs of tuples, one from each relation, into a single tuple. A. Select B. Join C. Union D. Intersection | 1 | 2 | 1 | 1.2.1 |
| 3 | _____ is a special type of integrity constraint that relates two relations & maintains consistency across the relations. A. Entity Integrity Constraints B. Referential Integrity Constraints C. Domain Integrity Constraints D. Domain Constraints | 1 | 2 | 1 | 1.2.1 |
| 4 | The _____ relationship may also be referred to as a superclass-subclass relationship. A. Generalization B. Partialization C. Specialization D. Aggregation | 1 | 2 | 1 | 2.5.1 |

| | | | | | |
|----|--|---|---|---|-------|
| 5 | The attribute name could be structured as an attribute consisting of first name, middle initial and last name. This type of attribute is called A. Simple attribute B. Composite attribute C. Multivalued attribute D. Derived attribute | 1 | 2 | 1 | 1.6.1 |
| 6 | Which command will remove the records from the table, but not affect the structure of the table? A. REMOVE B. DELETE C. DROP D. TRUNCATE | 1 | 3 | 1 | 1.6.1 |
| 7 | Difference between GRANT & REVOKE command is/are? A. The GRANT command can be used to grant a user access to databases and tables whereas The REVOKE command can be used to revoke all access privileges already assigned to the user. B. The REVOKE command can be used to grant a user access to databases and tables whereas The GRANT command can be used to revoke all access privileges already assigned to the user. C. A transaction can be rolled back to its last saved state. D. The privileges that can be granted to the users. | 1 | 3 | 1 | 1.6.1 |
| 8 | A Sub query is an SQL expression that is placed another SQL statement. A. Before B. After C. Inside D. Outside | 1 | 3 | 1 | 1.6.1 |
| 9 | Where are exceptions used in PL/SQL? A. Only in an anonymous block B. Only in the body of a subprogram C. Only in a package D. Only in an anonymous block and the body of a subprogram | 1 | 3 | 1 | 1.7.1 |
| 10 | How many types of triggers are present in SQL Server? A. 4 B. 5 C. 8 D. 9 | 1 | 3 | 1 | 1.6.1 |

PART-B (4x4 = 16)

ANSWER ANY FOUR OUT OF SIX QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 11 | List the steps to reduce the ER diagram to ER database schema. | 4 | 2 | 1 | 2.5.2 |
| 12 | What is an entity type? What is an entity set? Explain the differences among an entity, an entity type, and an entity set. | 4 | 2 | 1 | 1.6.1 |
| 13 | Illustrate the two alternatives for specifying structural constraints on relationship types? What are the advantages and disadvantages of each? | 4 | 2 | 1 | 1.6.1 |
| 14 | Summarize about nested queries with an example. | 4 | 3 | 2 | 2.6.4 |
| 15 | Brief about 3 basic clauses of SQL. | 4 | 3 | 2 | 2.7.1 |
| 16 | Build a PL/SQL code to print largest number from three numbers (accept three numbers from user) | 4 | 3 | 3 | 4.5.1 |

PART -C (2x12=24)

ANSWER EITHER OR QUESTION IN EACH UNIT

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 17(a) | Draw an Entity Relation diagram for the Hospital Management System. Consider the different types of patients with respect to Disease and In-Patient and Out-Patient Department in the design. Consider the availability of all well qualified Doctors. Consider various types of tests and operations to be conducted. Explain the mapping cardinality used. Assume suitable attributes. Use generalization and Specialization. | 12 | 2 | 3 | 2.5.1 |
| OR | | | | | |
| 17(b) | Illustrate in detail about Key Constraints and Constraints on NULL Values with examples. | 12 | 2 | 2 | 2.5.1 |

Write a SQL statements for the following:

Student(sno,sname, course_id, email_id, phone_no,CGPA)

Course(courseid, courseno,duration)

(i) Add a column 'city' in student table.

(ii) Find out the list of students who have enrolled in 'computer' course.

(iii) List name of all students who have got > 9.5 CGPA.

(iv) List email_id and phone_no of all mechanical engineering students.

OR

Outline the concept of PL/SQL triggers with an example program.

12 3 3 4.5.1

12 3 2 4.5.1



A
103

| | | | |
|-----------------|---|----------|---------|
| Sub Code/Name | 18CSC305J-Artificial Intelligence | Set | ODD |
| Year/Sem/Branch | III Year / VI / B.Tech-CSE and its Specialization | Date | |
| Max.Marks | 50 | Duration | 90 Mins |

PART(A)(10x1= 10)
ANSWER ALL THE QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 1 | Choose the data structure used in standard implementation of Breadth First Search? | 1 | 2 | 1 | 1.3.1 |
| a) | Stack | | | | |
| b) | Queue | | | | |
| c) | Linked List | | | | |
| d) | Tree | | | | |
| 2 | i) A person wants to visit some places. He starts from a vertex and then wants to visit every place connected to this vertex and so on. What algorithm he should use? a) Depth First Search b) Breadth First Search c) Trim's algorithm d) Kruskal's algorithm | 1 | 2 | 2 | 1.2.1 |
| 3 | What is the space complexity of Depth first search? where b is the branching factor and m is the maximum depth of the search tree. a) O(b) b) O(b ^m) c) O(m) d) O(bm) | 1 | 2 | 1 | 1.2.1 |
| 4 | Which search implements stack operation for searching the states? a) Depth-limited search b) Depth-first search c) Breadth-first search d) Best-first search | 1 | 2 | 1 | 2.2.3 |
| 5 | Which is used to compute the truth of any sentence? a) Semantics of propositional logic b) Alpha-beta pruning c) First-order logic d) Semantic net | 1 | 2 | 1 | 2.2.3 |
| 6 | Translate the following statement into FOL. "For every a, if a is a philosopher, then a is a scholar" a) $\forall a \text{ philosopher}(a) \rightarrow \text{scholar}(a)$ b) $\exists a \text{ philosopher}(a) \text{ scholar}(a)$ c) $\exists a \text{ philosopher}(a) \text{ scholar}(a)$ d) $\forall a \text{ philosopher}(a) \exists \text{ scholar}(a)$ | 1 | 3 | 2 | 1.2.1 |
| 7 | Which system is used to demonstrate, on a purely syntactic basis, that one formula is a logical consequence of another formula. a) Deductive Systems | 1 | 3 | 3 | 1.3.1 |

b) Inductive Systems

c) Reasoning with Knowledge Based Systems

d) Search Based Systems

The adjective "first-order" distinguishes first order logic from _____ in which there are predicates having predicates or functions as arguments are permitted.

- 8
a) Representational Verification
b) Representational Adequacy
c) Higher Order Logic
d) Inferential Efficiency

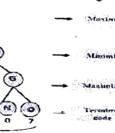
Show the representation of Fuzzy logic

- 9
a) IF-THEN-ELSE rules
b) IF-THEN rules
c) Both IF-THEN-ELSE rules & IF-THEN rules
d) None of the mentioned

Inter the following algorithm learns from more complex environments to generalize, approximate and simplify solution logic.

- 10
a) Fuzzy Relational DB
b) Ecorithms
c) Fuzzy Set
d) None of the mentioned

PART-B(4x4= 16)
ANSWER ANY FOUR QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|----|-------|
| 11. | Illustrate the heuristic estimation function for A* search? | 4 | 2 | 2 | 1.3.1 |
| 12. | Identify the termination condition for the Hill-Climbing algorithm. | 4 | 2 | 2 | 1.2.1 |
| 13. | Develop the min-max algorithm for the given example and find the optimal path for MIN to win the game | 4 | 2 | 2 | 2.1.1 |
| |  | | | | |
| 14. | Utilize the fact which you represent in propositional and predicate logic with an example. | 4 | 3 | 2 | 2.1.1 |
| 15. | Construct first order logic for the following English statements: a) Every boy or girl is a child b) Every child gets a doll or a train or a lump of coal | 4 | 3 | 3 | 2.1.1 |
| 16. | Identify objects, properties, functions and relations for the given example. "EVIL KING JOHN BROTHER OF RICHARD RULED ENGLAND IN 1200" | 4 | 3 | 1 | 2.1.1 |

PART-C(2x12= 24)

ANSWER ALL THE QUESTIONS

| Q.No. | Question | Marks | CO | BL | PI |
|-------|---|-------|----|-------|-------|
| 17. | a. Draw the State Space diagram for Hill Climbing search problem. Identify the problems in different regions in Hill climbing and give reason. OR b. Describe the Alpha-Beta pruning algorithm with example and how the Shortfalls of Min-max algorithm is eliminated by using Alpha -Beta pruning. | 12 | 2 | 1 | 1.2.1 |
| | | | | 2 | 1.3.1 |
| 18. | a. Apply how the forward chaining algorithm work for the following problem: The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy of America, has some missiles, and all of its missiles were sold to it by Col. West, who is an American. Prove that Col. West is a criminal OR b. Explore the use of predicate logic as a way of representing knowledge by looking at a specific example and prove that Marcus hate Caesar by Consider the following set of sentence for converting in to CNF. 1. Marcus was a man. 2. Marcus was a Pompeian. 3. All Pompeians were Romans. 4. Caesar was a ruler. 5. All Pompeians were either loyal to Caesar or hated him. 6. Every one is loyal to someone. 7. People only try to assassinate rulers they are not loyal to. 8. Marcus tried to assassinate Caesar. | 12 | 3 | 2.1.1 | |
| | | 3 | | 1.2.1 | |
| | | 12 | 3 | | |

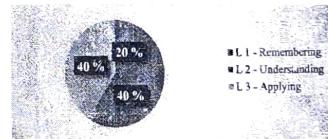
Outcome Alignment Matrix:

| Questio n No. | CO distribution | | | | |
|---------------|-----------------|-----|-----|-----|-----|
| | CO1 | CO2 | CO3 | CO4 | CO5 |
| 1 | 1 | | | | |
| 2 | | 1 | | | |
| 3 | | 1 | | | |
| 4 | | 1 | | | |
| 5 | | 1 | | | |
| 6 | | | 1 | | |
| 7 | | | 1 | | |
| 8 | | | 1 | | |
| 9 | | | 1 | | |
| 10 | | | 1 | | |
| 11 | | 4 | | | |
| 12 | | 4 | | | |
| 13 | | 4 | | | |
| 14 | | | 4 | | |
| 15 | | | 4 | | |
| 16 | | | 4 | | |
| 17(a) | | 12 | | | |
| 17(b) | | 12 | | | |
| 18(a) | | | 12 | | |
| 18(b) | | | 12 | | |
| Total | 41 | 41 | | | |
| % | 50% | 50% | | | |

Quality Matrix:

| Question No. | BL Distribution | | |
|--------------|-----------------|-----|-----|
| | L1 | L2 | L3 |
| 1 | 1 | | |
| 2 | | 1 | |
| 3 | 1 | | |
| 4 | 1 | | |
| 5 | 1 | | |
| 6 | | 1 | |
| 7 | | | 1 |
| 8 | | 1 | |
| 9 | | 1 | |
| 10 | | | 1 |
| 11 | | 4 | |
| 12 | | 4 | |
| 13 | | 4 | |
| 14 | | 4 | |
| 15 | | | 4 |
| 16 | 4 | | |
| 17(a) | 12 | | |
| 17(b) | 12 | | |
| 18(a) | | 12 | |
| 18(b) | | 12 | |
| Total | 20 | 32 | 30 |
| % | 20% | 40% | 40% |

Bloom's level Distribution:



Prepared by: *E. meny*

Art

Scrubinised by: *Dr. S. Ganguly*

Verified and approved by HOD *21/13/23*

Department of Computer Science and Engineering

18CSC304J – COMPILER DESIGN (2022 – 2023)

CONTINUOUS LEARNING ASSESSMENT – 2

Branch: CSE & Specialization (Except CSBS)

Set : A

Year/Sem: III/VI

Date:

Max. Marks: 50

Duration: 90mins

PART-A (10x1=10)

ANSWER ALL THE QUESTIONS

| Q.No | Questions | Marks | CO | BL | PI |
|------|---|-------|----|----|-------|
| 1 | Which of the following function is called the canonical collection of LR(0) item? a) FIRST() b) GOTO() c) COMPUTE() d) FOLLOW() | 1 | 2 | 1 | 2.8.1 |
| 2 | Identify which of the following tree is the pictorial identification of the derivation? a) The oct tree b) The parse tree c) The binary tree d) The derivation tree | 1 | 2 | 1 | 1.7.1 |
| 3 | Identify which of the following derivations does a top-down parser use while parsing an input string? a) Leftmost derivation b) Leftmost derivation in reverse c) Rightmost derivation d) Rightmost derivation in reverse | 1 | 2 | 1 | 1.7.1 |
| 4 | What is the TRAILING(S) for the following grammar? $S \rightarrow S - B B$ $B \rightarrow B^* A A$ $A \rightarrow (S)id$ a) TRAILING(S)={-,*,).id} b) TRAILING(S)={-,*,(.)} c) TRAILING(S)={-,*,(,id} d) TRAILING(S)={-,*,()}} | 1 | 3 | 2 | 2.8.2 |
| 5 | Reverse of a right most derivation is called -----. a) reduction b) production c) handle d) base | 1 | 3 | 1 | 1.7.1 |
| 6 | Which of the following derivations does a top-down parser use while parsing an input string? a) Leftmost derivation b) Leftmost derivation in reverse c) Rightmost derivation d) Rightmost derivation in reverse | 1 | 2 | 1 | 1.7.1 |
| 7 | Which one of the following is a top-down parser? a) Recursive descent parser b) Operator precedence parser c) An LR(k) parser d) An LALR(k) parser | 1 | 2 | 1 | 1.7.1 |
| 8 | Identify why the grammar $A \rightarrow AA (A) \in$ is not suitable for predictive-parsing? a) Ambiguous b) Left recursive c) Right recursive d) An operator grammar | 1 | 2 | 1 | 2.8.1 |

| | | | | | |
|---|--|---|---|---|-------|
| | LEADING(S) for the following grammar? $S \rightarrow S-B B$ $B \rightarrow B^*A A$ $A \rightarrow (S) id$ a) LEADING(S) = { -, *, (,) , id } b) LEADING(S) = { -, *, (,) } c) LEADING(S) = { -, *, (, id) } d) LEADING(S) = { -, *, () } | 1 | 3 | 3 | 2.8.1 |
| 9 | which of the following grammar rules violate the requirements of an operator grammar? P, Q, R are nonterminal and s, r, s, t are terminals. 1. $P \rightarrow QR$ 2. $P \rightarrow Qsr$ 3. $P \rightarrow \epsilon$ 4. $P \rightarrow QtRr$ a) 1 only b) 2 and 3 only c) 3 and 4 only d) 2 and 4 only | 1 | 3 | 2 | 1.7.1 |

PART-B (4x4=16)

ANSWER ANY FOUR OUT OF SIX QUESTIONS

| Q.No | Questions | Marks | CO | BL | PI |
|------|--|-------|----|----|-------|
| 11 | Define a context free grammar. | 4 | 2 | 1 | 1.7.1 |
| 12 | Solve the grammar by eliminating Left Recursion: $E \rightarrow E + T T$ $T \rightarrow T * F F$ $F \rightarrow (E) id$ | 4 | 2 | 2 | 2.8.1 |
| 13 | Perform Shift Reduce Parsing for the following $S \rightarrow (L) a$ $L \rightarrow L, S S$ for the input string: (a,(a,a)) | 4 | 3 | 2 | 2.8.1 |
| 14 | Distinguish between Top-down and Bottom-up parser. | 4 | 2 | 1 | 1.7.1 |
| 15 | Enumerate the concepts of Operator Precedence parser with an example | 4 | 3 | 1 | 2.8.1 |

PART-C (2x12=24)

ANSWER ALL THE QUESTIONS

| Q.No | Questions | Marks | CO | BL | PI |
|--------|---|-------|----|----|-------|
| 17(a) | Define Recursive Descent Parser. Discuss the steps involved in Recursive Descent Parsing. Construct Recursive Descent Parser for the following grammar: $E \rightarrow i E'$ $E' \rightarrow + i E' \epsilon$ | 12 | 2 | 2 | 2.8.1 |
| | (OR) | | | | |
| 17 (b) | Construct a Predictive Parsing Table for the following grammar: $E \rightarrow TE'$ $E' \rightarrow +TE' \epsilon$ $T \rightarrow FT'$ $T' \rightarrow FT' \epsilon$ $F \rightarrow (E) id$ | 12 | 2 | 3 | 2.8.1 |
| 18(a) | Construct the parsing table for SLR parser for the following $S \rightarrow L=R$ $S \rightarrow R$ $L \rightarrow *R$ $L \rightarrow id$ $R \rightarrow L$ Show the parsing action for "id=id" | 12 | 3 | 3 | 2.8.1 |
| | (OR) | | | | |
| 18 (b) | Consider the grammar given below. $S \rightarrow CC$ $C \rightarrow aC$ $C \rightarrow d$ Construct a CLR parsing table for the above grammar | 12 | 2 | 2 | 2.8.1 |

70
12/10