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Sixth Semester B.E. Semester End Examination, JULY SEPTEMBER 2022

ARTIFICIAL INTELLIGENCE

Time: 3 hrs.

Instructions :1. Answer any FIVE Full Questions selecting at least ONE Question from Each Unit.

Max. Marks :100

1a. Define AI. Explain the Turing Test with an example.

1b. Consider a water jug problem. You are given two jugs, a 4-gallon and a 3-gallon jugs. Neither has any measuring mark on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallon of water into a 4-gallon jug ? State the production rules for the water jug problem.

1c. Explain with neat diagram.

a) Simple Reflex agents

b) Goal based Agents



OR

2a. Briefly Explain the properties of task environment.

2b. For each of the following activities, give a P(performance), E(environment), A(Actuators), S(Sensors) description of the task environment.

a. Medical diagnosis system

b. Internet book shopping Agent

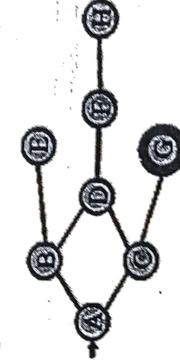
c. Taxi Driver

d. Part picking robot

2c. Briefly explain Agent, Agent function and Agent program.

MODULE 2

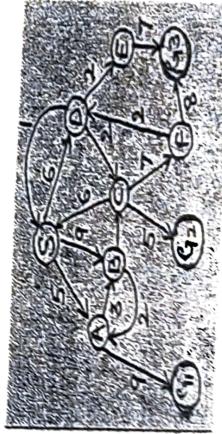
3a. Compare Uninformed search with Informed search. Consider the following graph. Starting from state A, execute Depth First Search. The goal node is G. Show the order in which the nodes are expanded. Assume that the alphabetically smaller node is expanded first to break ties



3b. Apply and Analyze Uniform Cost search algorithm on the given graph. Write the total cost to reach Goal Nodes.

Start Node: S

Goal Node : G1,G2,G3



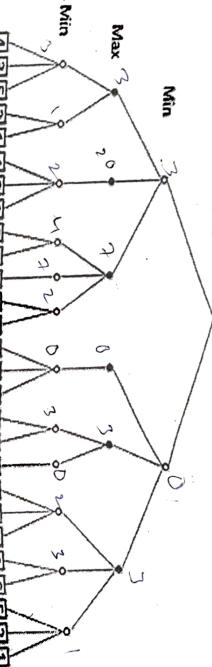
Search space

[3] [2] [2] [10]

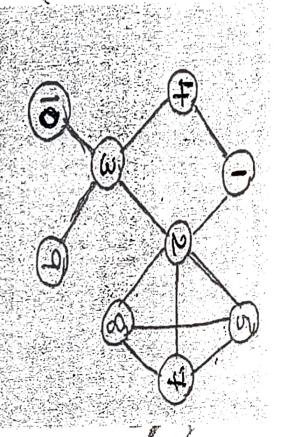
Course Code : 18IS61

4a. Apply and Analyze minimax algorithm on the given graph.

OR



4b. Write an Algorithm for Implementing Breadth First Search(BFS). Analyze the given tree using BFS. Starting from node 1 explore all nodes. What is the time complexity of BFS?



MODULE 3 [3] [2] [2] [10]

5a. Consider a knowledge base KB that contains the following propositional logic sentences:

$$Q \Rightarrow P$$

$$P \Rightarrow \neg Q$$

$$Q \vee R$$

Construct a truth table that shows the truth value of each sentence in KB and indicate the models in which the KB is true. Does KB entail R? Use the definition of entailment to justify your answer.

5b. Explain Knowledge Representation and Reasoning. Explain Propositional logic and First order predicate logic with an example.

OR [3] [2] [1, 2] [10]

6a. Explain the below terminologies with an example for each.

- 1) Tautology.
- 2) contradiction.
- 3) Contingency

6b. Prove that

- (P → Q) → P is tautology.
- (A ∨ B) → A ∨ B

MODULE 4

[3] [2] [2] [10]

7a. Describe the differences and similarities between problem solving and planning
7b. Explain Heuristics for state-space search.

OR

8a. Explain with examples.

- (i) Forward (progression) state-space search.

- (ii) backward (regression) relevant-states search

[2] [3] [1] [10]

in P
Explain the following:
(i) Propositional attitudes
(ii) Relational transparency
(iii) Modal logic
(iv) Accessibility relations
9b. Write a short note on

Explain PDDL? Write a PDDL description of simple spare tire problem.

MODULE 5

[2] [3] [1] [10]

- a. Explain the following
(i)Propositional attitudes
(ii)Referential transparency
(iii)Modal logic
(iv)Accessibility relations

b. Write a short note on Categories and Objects with examples.

[2] [4] [1] [10]

OR

- 10a. Write the Baye's Rule. Apply the same rule to calculate the probability for given problem. It is estimated that 50% of emails are spam emails. Some software has been applied to filter these spam emails before they reach your inbox. A certain brand of software claims that it can detect 99% of spam emails, and the probability for a false positive (non-spam email detected as spam) is 5%.Now if an email is detected as spam, then what is the probability that it is in fact a non-spam email?

10b. Explain bayesian network with an example

[3] [4] [2, 3] [10]

KLS GOGTE INSTITUTE OF TECHNOLOGY



Seventh Semester B.E FASTTRACK Examination, AUGUST SEPTEMBER 2021

ARTIFICIAL INTELLIGENCE

Time: 3 hrs

Max. Marks:100

Instructions : Data, if necessary, may be assumed. 3 Precise and accurate answers expected. 1 Sketches, when required, may be drawn. Answer any Five full Questions.

- 1a. Discuss the difference between strong methods and weak methods. Explain the Turing test in detail.

- 1b. Provide a brief overview of PROLOG and LISP languages and explain how they are used in Artificial Intelligence research.

- 2a. Explain simple semantic net with an example. Also represent the same using Frames demonstrating the inheritance.

- 2b. Explain the properties of Semantic tree. Define the search tree. Build the search tree for the given problem.

Three missionaries and three cannibals are on one side of a river, with a canoe. They all want to get to the other side of the river. The canoe can only hold one or two people at a time. At no time should there be more cannibals than missionaries on either side of the river, as this would probably result in the missionaries being eaten.

- 3a. Demonstrate constructing a goal tree for Towers of Hanoi problem with four disks.

- 3b. List and explain the Properties of Search Methods.

- 4a. Discuss the following in brief (i) Hill Climbing (ii) Beam searching

- 4b. Write the pseudocode for implementing of depth-first search and Breadth first search functions.

- 5a. Prove the following:- $(A \rightarrow B) \rightarrow (B \rightarrow C \rightarrow C \rightarrow D \rightarrow A \rightarrow D)$

- 5b. Explain the Deduction Theorem, with the rule:if $A \cup B \sqsupseteq C$ then $A \sqsupseteq (B \rightarrow C)$

- 6a. Translate from English to Logic notations, making use of symbols R=raining, T=tuesday, N=New York, S=sick, T=tired:

1."It is raining and it is Tuesday"

2."It is raining in New York"

- 3."It is raining in New York, and I'm getting sick or just very tired"

- 6b. Discuss briefly

1.Soundness

2.Completeness

3.Decidability

4.Monotonicity

- 7a. Solve the phrase to get Conjunctive Normal Form (CNF): $(A \rightarrow B) \rightarrow C$

[3] [2] [1] [10]

[2] [2] [1] [10]

7b. How to build a medical expert system using backward chaining in Rule-Based System.

8a. Demonstrate Proof by Reputation using an example.

8b. Explain the Resolution Rule and using the Resolution Rule resolveA, B, (\neg B, C)

9a. Using block schematic, discuss why the blackboard architecture is an effective way to combine information from a number of knowledge sources. Also explain the main components of the blackboard architecture.

9b. Explain the architecture of the Copycat system. Solve the analogies using copycat system

i. AAB is to AACC as JJKK is to what?

ii. A3B is to ABCC as JKK is to what?

iii. AABC is to AABD as JJKK is to what?

iv. is to Z as EFG is to what?

v. F3F is to SFS as ABBBC is to what?

10a. Define an agent? List and explain five properties of agents. Explain briefly five types of agents.

10b. Explain with block diagram three-layer subsumption architecture for an agent.

[3] [2] [1] [2] [10]

[2] [1] [2] [10]

[2] [1] [2] [10]

[2] [1] [2] [10]

[2] [1] [2] [10]

[3] [2] [1] [2] [10]

[2] [1] [2] [10]

[2] [1] [2] [10]

[2] [1] [2] [10]

[2] [1] [2] [10]

Seventh Semester
Time: 3 Hours

Seventh Semester B.E. Semester End Examination, Dec./Jan. 2019-20

ARTIFICIAL INTELLIGENCE

Time: 3 Hours

Instructions: 1. Answer one full question each from the 4 units

Max. Marks: 100

UNIT - I

- | L | CO | PO | M |
|-----|-----|-----|------|
| (2) | (3) | (2) | (10) |

- a. Explain Turing test and Chinese room argument experiment. Compare and contrast.
- b. Convert the following information into semantic nets and frames:

Tom is a cat. Tom caught a bird. Tom is owned by John. Tom is ginger in color. Cats like cream. The cat sat on the mat. A cat is a mammal. A bird is an animal. All mammals are animals. Mammals have fur.

OR

- | L | CO | PO | M |
|-----|-----|-----|------|
| (3) | (2) | (2) | (10) |

- a. Explain the relationship between graphs, semantic nets, semantic trees, search spaces, and search trees.

- b. Design a suitable representation and draw the complete search tree for the following problem.

A farmer is on one side of a river and wishes to cross the river with a wolf, a chicken, and a bag of grain. He can take only one item at a time in his boat with him. He can't leave the chicken alone with the grain, or it will eat the grain, and he can't leave the wolf alone with the chicken, or the wolf will eat the chicken. How does he get all three safely across to the other side?

UNIT - II

- | L | CO | PO | M |
|-----|-----|-----|------|
| (2) | (3) | (2) | (10) |

- a. Explain how you implement Depth First Search and Breadth First Search with example code. Compare both search techniques.

- b. Explain with example how you use heuristics for search. Explain the criteria for selecting a good heuristic.

- (2) (3) (2) (10)

OR

- | L | CO | PO | M |
|-----|-----|-----|------|
| (2) | (3) | (2) | (10) |

- a. Explain different techniques to identify optimal paths.

- b. Implement a greedy-search algorithm. How well does it perform compared with the other methods you have implemented? Invent a 0-1 knapsack problem, and use your search tree implementation to model this problem. Can you model the fractional knapsack problem using a search tree?

UNIT - III

- | L | CO | PO | M |
|-----|-----|-----|------|
| (5) | (2) | (1) | (10) |

- a. Explain the following terms (i) Game Trees (ii) Minimax (iii) Alpha beta pruning.

- b. What is Logic? Explain Why Logic is used in Artificial Intelligence and explain Logical Operators.

- (2) (2) (3) (08)

- a. Explain the concepts of Translating between English and Logic Notation and explain the following Truth Tables of Not, And, Or, Implies, If, Complex Truth Tables.

- b. Explain deduction Theorem with an example.

- (2) (4) (4) (08)

UNIT - IV

- 7 a. Consider the following axioms and convert them to clausal form

- a) Every coyote chases some roadrunner.
- b) Every roadrunner who says "beep-beep" is smart.
- c) No coyote catches any smart roadrunner.
- d) Any coyote who chases some roadrunner but does not catch it is frustrated.
- e) (Conclusion) If all roadrunners say "beep-beep", then all coyotes are frustrated.

Prove the conclusion If all roadrunners say "beep-beep", then all coyotes are frustrated

- b. Explain with examples resolution in propositional logic.

OR

- 8 a. Explain with examples resolution in predicate logic. (2) (3) (2) (16)

- b. Explain with example backward chaining. (2) (3) (2) (16)

UNIT - V

- 9 a. Explain black board architecture with its implementation. (2) (3) (2) (16)
- b. Explain with example Dempster-Shafer theory of evidence. (2) (3) (2) (16)

OR

- 10 a. List and explain properties of agents. (2) (1) (2) (16)
- b. List and explain types of agents. (2) (1) (2) (10)

Sixth Semester B.E. Semester End Examination, JULY SEPTEMBER 2022

DATA SCIENCE

Time: 3 hrs.

Instructions : 1. Answer any FIVE full Questions selecting at least ONE Question from Each Unit.

MODULE 1

1a. What is datafication? Outline the similarities and differences in big data and data science

1b. Illustrate and explain the data analytics life cycle with a neat diagram.

2a. Explain the typical data analytic architecture with a neat diagram

2b. List and explain the different challenges that arise in processing big data.

2c. Summarize the main groups which contribute in the emerging big data ecosystem

3a. Explain the two different ways of sampling with suitable examples

3b. Write a brief note on

1. Measure of center

2. Measure of variation

3. Measure of relative standing

4. Confidence interval

[2] [2] [1] [10]

OR

4a. What is hypothesis testing? Explain any two hypothesis tests used for analysing means between two populations

[2] [2] [1] [8]

4b. What is exploratory data analysis. Demonstrate how it is helpful in data analytics.

[2] [2] [1] [7]

4c. What is point estimates? Explain the importance of point estimates in statistics

[2] [2] [1] [5]

MODULE 3

5a. Demonstrate how the linear regression is used in real estate business with suitable snippets.

[3] [3] [3] [10]

5b. Suppose we have 4 different students with their score in two subjects as mentioned below. Making use of K means algorithm group the below objects into 2 groups. Use $C_1=(1,1)$ and $C_2=(2,1)$ as initial clusters.

Students Subject 1 Subject 2

Students	Subject 1	Subject 2
1	1	1
2	2	1
3	4	3
4	5	4

[3] [3] [3] [10]

OR

6a. Illustrate logistic regression algorithm with an example. Also write a brief note on logit function

[2] [3] [3] [10]

6b. Demonstrate the use of K means algorithm in clustering along with an example

[2] [3] [1] [10]

MODULE 4

7.a. Illustrate the steps involved in text analysis with example [2] [3]

7b. The following dataset checks whether a person can play tennis or no depending on climatic conditions. [3]

Day	Outlook	Temperature	Humidity	Wind	Play Tennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High.	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	High	Weak	Yes
D6	Rain	Cool	Normal	Weak	Yes
D7	Overcast	Cool	Normal	Strong	No
D8	Sunny	Mild	Normal	Strong	Yes
D9	Sunny	Cool	High	Weak	No
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Weak	Yes
D12	Overcast	Mild	Normal	Strong	Yes
D13	Overcast	Hot	High	Strong	Yes
D14	Rain	Mild	Normal	Weak	Yes

Apply Naive Bayes algorithm on training dataset to check whether a person can play tennis (Or no for following test case:
Outlook=Sunny, Temperature=Mild, Humidity=High, Wind=Strong)

8a. Outline the importance of time series analysis. Explain any three applications of time series analysis [3] [3] [4] [10]

8b. Demonstrate the use of naive bayes classifier to classify the messages as spam or ham [2] [3] [1] [5]

8c. Illustrate the use of Box-Jenkins Methodology for time series analysis [3] [3] [4] [10]

MODULE 5 [2] [3] [1] [5]

9a. Give the syntax used in R programming for the following and demonstrate the same with suitable examples. [2] [4] [5] [10]

1.Creation of Vectors
2.Naming the columns in matrix with appropriate names

9b. For the following operations, give the syntax in R programming, explanation and example [2] [4] [5] [10]

- 1.Creation of data frame by reading data from file
- 2.Addition of new row to the data frame

10a. Demonstrate the steps to read a CSV file onto R studio with suitable snippets and example [3] [4] [3] [10]

10b. Demonstrate the use of row.names and col.names functions in R programming with suitable example [3] [4] [3] [8]

10c. Develop an R code to generate the data frame for marks of students in different subjects as given below. [3] [4] [5] [7]

Sl. No	English	Science	Maths
1	87	90	90
2	88	78	87
3	86	67	67
4	76	67	56

Sixth Semester B.E. Semester End Examination, JULY - SEPTEMBER 2022

DATA SCIENCE

Max. Marks : 100

Time: 3 hrs.

Instructions : 1. Answer any FIVE Full Questions selecting at least ONE Question from Each Unit.

MODULE 1

1a. Explain in brief the need of data analytics life cycle. Describe the data discovery phase of data analytics life cycle [2] [1] [1] [5]

1b. Illustrate the difference between Business Intelligence (BI) and Data Science [2] [1] [1] [5]

1c. Illustrate and explain the data analytics life cycle with a neat diagram [2] [1] [1] [10]

OR

2a. What is data science? Write a note on the applications of data science in different fields of applications [2] [1] [1] [8]

2b. List and explain the different challenges that arise in processing big data. [2] [1] [1] [4]

2c. Write a brief note on 1.Data Deluge [2] [1] [1] [8]

2.Skill set required to be a data scientist [2] [1] [1] [8]

MODULE 2

3a. Write a brief note on [2] [1] [1] [6]

1.Observational method of data collection [2] [1] [1] [6]

3b. What is hypothesis testing? Explain any two hypothesis tests used for analysing means between two populations [2] [1] [1] [6]

OR

4a. With suitable justification explain which method is best suited for sampling. [2] [1] [1] [5]

4b. With suitable justification illustrate the role of point estimates in measuring the population means, variances in statistics. [2] [1] [1] [8]

4c. What is exploratory data analysis. Demonstrate how it is helpful in data analytics. [2] [1] [1] [7]

MODULE 3

5a. The values of X and their corresponding values of Y are shown in the table below. [3] [3] [3] [10]

Subject	A	B
1	1.0	1.0
2	1.5	2.0
3	3.0	4.0
4	5.0	7.0
5	3.5	5.0
6	4.5	5.0
7	3.5	4.5

- 1..Determine β_0 and β_1 for the given data.
 2..Find least squared regression line $Y = \beta_0 + \beta_1 X$
 3. Find the regression line when $X=7$ and $Y=6$

5b. Consider the following data set consisting of the scores of two variables on each of seven individuals: [3] [3] [3] [10]

Apply k-means algorithm to group this data set into two clusters (Initial Clusters C1={2,4,1,5,2,0} and C2={7,3,5,4,5})

OR

oa. Demonstrate how the linear regression is used in real estate business with suitable snippets.

ob. Suppose we have 4 different medicines with their weight index and pH as mentioned below. Making use of K-means algorithm group the below objects into 2 groups. $C_1 = \{1, 1\}$ and $C_2 = \{2, 1\}$ as initial clusters.

Object	Weight index	pH
Medicine A1	1	1
Medicine B2	2	1
Medicine C4	4	3
Medicine D5	5	4

MODULE 4

7a. Demonstrate the use of naive bayes classifier to classify the messages as spam or ham time series analysis.

7b. Explain the necessity of time series analysis . Write a note on any three applications of time series analysis.

7c. Briefly discuss the ARIMA model of time series analysis

8a. The following dataset checks whether the car is stolen or no depending on the features of the car.

Example No. Color Type Origin Stolen?

1	Red	Sports	Domestic	Yes
2	Red	Sports	Domestic	No
3	Red	Sports	Domestic	Yes
4	Yellow	Sports	Domestic	No
5	Yellow	Sports	Imported	Yes
6	Yellow	SUV	Imported	No
7	Yellow	SUV	Imported	No
8	Yellow	SUV	Imported	Yes
9	Red	SUV	Domestic	No
10	Red	Sports	Imported	No

Apply Native Bayes algorithm on training dataset to check whether the car is stolen or no for following test case:

(Color = Red, Type = SUV, Origin = Domestic)

8b. Illustrate the steps involved in text analysis with example

MODULE 5

9a. Give the syntax used in R programming for the following and demonstrate the same with suitable examples.

1.Creation of Vectors

2.Naming the columns in matrix with appropriate names

9b. For the following operations, give the syntax using R program, explanation and examples

- 1.Creation of data frame by reading data from file [3] [3] [5] [10]
- 2.Addition of new row to the data frame [3] [4] [1] [10]

10a. Demonstrate the steps to read a CSV file onto R studio with suitable snippets and example [3] [4] [1] [10]

10b. Develop a R code to generate the following using data frames [2] [3] [10] [10]

Sl.No	Name	Age	Salary	Department
1	Ram	28	45000	Testing
2	Aneesh	26	44000	Development
3	Supreeta	30	45000	Administration
4	Vishalika	34	50000	Accounts

Seventh Semester B.E FASTTRACK Examination, AUGUST SEPTEMBER 2021

Time: 3 h

Mus. Mittlere : 199

- Instructions:- Answer any Five full Questions.**

1a. Define Data science. Write the differences between data science and Big data. [2] [10] [2] [10]

1b. Describe the different steps of data science life cycle. [2] [10] [2] [10]

2a. Define Datafication. Explain the different application of data science. [2] [10] [2] [10] [2] [10]

2b. Write a note on history of data science. Illustrate how data science is used in different fields. [2] [10] [2] [10]

3a. Describe the importance of exploratory data analysis in data science. [2] [10] [2] [10]

3b. Write the difference between sample and populations with an example. [2] [10] [2] [10]

3c. Define model. Explain statistical modeling with an example. [2] [10] [2] [10]

4a. Illustrate the data science process with a neat diagram. [2] [10] [2] [10]

4b. What is hypothesis testing? Explain some hypothesis test methods. [2] [10] [2] [10]

5a. Explain linear regression for predicting the house price with an example code. [2] [10] [2] [10]

5b. Explain the classification of machine learning algorithms. [2] [10] [2] [10]

6a. Explain KNN algorithm. List the different modeling assumptions to be made while using KNN algorithm. [2] [10] [2] [10]

6b. Describe K-means with an example diagram and suitable snippet. [2] [10] [2] [10]

7a. Demonstrate how naive bayes classifier is used to classify the messages as spam or ham. [3] [10] [3] [10]

7b. Explain the comparison between Naïve Bayes and KNN algorithm. [2] [10] [2] [10]

8a. Describe logistic regression for classification with an example. [2] [10] [2] [10]

8b. Write a note on

 - i) newton's Method [2] [10]
 - ii) Stochastic Gradient Descent [2] [10]

9a. Demonstrate how mapreduce can be used in word frequency count problems. [3] [10] [3] [10]

9b. List and explain the drawbacks of hadoop. [4] [10] [4] [10]

10a. Explain how modeling is done in data engineering.s [2] [10] [2] [10]

10b. Write a note on - i) Hadoop ii) Cloudera [2] [10] [2] [10]

DISTRIBUTED COMPUTING SYSTEM

Max. Marks : 100

Instructions : Answer any FIVE Full Questions selecting at least ONE Question from each Unit.

1a. Explain client-server and peer to peer architecture with a neat diagram [or each] [2] [1] [1] [10]

1b. Explain intranet with a neat diagram along with the issues arising in design of components. [2] [1] [1] [10]

2a. Discuss the challenges Heterogeneity and Scalability in Distributed Systems. [2] [1] [1] [10]

2b. Explain Security model in detail with neat diagrams. [2] [1] [1] [10]

MODULE 1

3a. With the help of a neat diagram explain client server communication involving request reply protocol along with the message structure. [2] [2] [1] [10]

3b. Explain UDP datagram communication w.r.t message size, blocking/time outs, receive from any failure model and use of UDP. [2] [2] [1] [10]

OR

4a. Explain the term marshalling and unmarshalling. Write the CORBA CDR message (flattened form) for the Person struct with value {'Boris', 'Greece', 1945}. [3] [2] [2] [10]

4b. Explain the implementation of RMI in detail with a neat diagram. [2] [2] [1] [10]

MODULE 3

5a. Solve using RSA algorithm to obtain the Cipher texts using encryption and get back the plain text using decryption for the Plain text numbers (i) M=2 (ii) M=3. Assume p=5, q=11, d=7. [3] [3] [2] [10]

5b. Discuss the Distributed file system requirements in detail. [2] [3] [1] [10]

OR

6a. Discuss in detail the concept of Access Control and File groups. [2] [3] [1] [10]

6b. Apply the concept of certificates to show secure transaction between Alice (customer), Bob (bank) and Carol (Vendor). [3] [3] [3] [10]

MODULE 4

7a. Explain Lamport's happened-before relation with an example. [2] [4] [1] [10]

7b. Explain Ring based algorithm with a neat diagram [2] [4] [1] [10]

OR

8a. Explain Central Server algorithm with a neat diagram. [2] [4] [1] [10]

8b. Explain NTP architecture with a neat diagram along with the 3 modes of synchronization. [2] [4] [1] [10]

MODULE 5

9a. With the help of a neat diagram of the structure of the 3 delivery models, compare the services of the 3 models SaaS, PaaS and IaaS. [2] [5] [1] [10]

9b. Discuss the ethical issues and major challenges in cloud computing. [2] [5] [1] [10]

OR

10a. Discuss the characteristics and advantages of Network-centric computing and Network-centric content. [2] [5] [1] [10]

10b. Discuss the reasons for the success of cloud computing along with its obstacles. [2] [5] [1] [10]

Sixth Semester B.E Makeup Examination, Sept._Oct._2020

DISTRIBUTED COMPUTING

Max.Marks :100

Time: 3 hrs
Instructions : 1. Answer any Five full Questions selecting at least One Full Question from Each Unit. 2. Each Question carry Equal Marks. 3. Missing Data may be suitably assumed. 4. Draw Figures wherever necessary.

MODULE 1

L CO PO M

1a. Define Distributed System & discuss its characteristics. [2] [1] [4] [5]

1b. List the various challenges in Distributed Systems. Explain any four in brief. [2] [1] [4] [5] [10]

1c. With appropriate example explain Distributed system with a neat diagram. [2] [1] [4] [5] [10]

OR

2a. Illustrate with an example & explain the following: i) Web cache & proxy server ii) Thin clients [2] [1] [1] [10]

2b. Summarize the following design requirements for Distributed Architectures [2] [1] [1] [10]

i) Performance Issues ii) Dependability issues [2] [1] [1] [10]

MODULE 2

L CO PO M

3a. Explain Characteristics and issues related to stream communication [2] [1] [2] [1] [10]

3b. Define Marshalling. Construct a marshaled form that represents an Organization with instance variable values : { 'KLSGIT', 'BENGALURU', 1979 } by using CORBA-CDR & Java Serialization. [2] [1] [1] [10]

OR

4a. Discuss RMI invocation semantics and also tabulate failure handling mechanism for each. [2] [2] [1] [10]

4b. Define RPC and how it can be implemented. [1] [2] [1] [1] [10]

MODULE 3

L CO PO M

5a. With a neat diagram explain the components of file service architecture in brief w. r. t. following: i) Flat File Service ii) Directory Service iii) Client Module [2] [3] [1] [10]

5b. List and explain out the transparencies in a distributed file system. [2] [3] [1] [10]

OR

6a. Write the steps of RSA Algorithm. Illustrate with an example given P=3,Q=11 & message(m)=3. [4] [3] [3] [10]

6b. Analyze the following uses of Cryptography with suitable scenarios. [4] [3] [3] [10]

i) Secrecy and integrity ii) Digital Signatures

MODULE 4

L CO PO M

7a. Explain Berkeley algorithm for internal synchronization. [2] [4] [1] [10]

7b. With the neat diagram. Explain the concept of implementation. [2] [4] [2] [10]

OR

8a. Define the following terms [2] [4] [1] [10]
i) Physical clock ii) Clock skew and clock drift iii) Coordinated Universal Time
[1] [4] [1] [10]

8b. Explain Cristian's method for synchronizing clocks. [2] [4] [1] [10]

MODULE 5

9a. With the neat diagram explain cloud computing delivery models and services [2] [5] [1] [10]
[1] [5] [1] [10]
9b. Explain network-centric computing and differentiate it with network content computing [2] [5] [1] [10]

OR

10a. Define cloud computing. Explain different types of clouds [2] [5] [1] [10]
[2] [5] [1] [10]

10b. Discuss ethical issues encountered in cloud computing [2] [5] [1] [5]

10c. Explain cloud vulnerabilities [2] [5] [1] [5]

Sixth Semester B.E. Makeup Examination, June 2018

DISTRIBUTED COMPUTING

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit I and III are compulsorily.
2. Draw diagrams neatly wherever applicable.

UNIT - I

- 1 a. Explain client-server and peer to peer architecture with a neat diagram for each case. (Level [2], CO [1], PO [1]) **10 M**
- b. With suitable diagrams explain intranet, mobile and ubiquitous computing. (Level [2], CO [1], PO [1]) **10 M**

UNIT – II

- 2 a. Explain the characteristics of inter process communication. (Level [2], CO [2], PO [3]) **06 M**
- b. Explain the UDP datagram communication, along with its issues and failure model. (Level [2], CO [2], PO [1]) **08 M**
- c. Illustrate the use of events with an example of dealing room system. (Level [2], CO [2], PO [2]) **06 M**

OR

UNIT – III

(Level [2], CO [2], PO [1,2])

- b. Explain the TCP stream communication, along with the related issues and failure model. (Level [2], CO[2], PO [1]) **08 M**

- c. Summarize the role of client and server/stub procedures in RPC. (Level [2], CO [2], PO [1,2]) **06 M**

UNIT – IV

- 4 a. Solve using RSA algorithm to obtain the Cipher texts using encryption and get back the plain text using decryption for the Plain text numbers P1=18 and P2=19. Assume P=5, Q=11, d=7. Compute A, e, C (cipher text) and P (Plain text). (Level [1,3], CO [3], PO [2]) **10 M**

- b. With the help of a neat diagram explain the file service architecture and the flat file service operations involved. (Level [1,2], CO [3], PO [1]) **10 M**

UNIT – IV

- 5 a. Explain the architecture of Network Time Protocol with suitable diagram. (Level [2], CO [3], PO [2]) **10 M**

- b. What is a logical clock? Explain how to synchronize logical clocks in Lamport's algorithm. (Level [2], CO [3], PO [2]) **10 M**

OR

- 6 a. Explain the Cristian's method for synchronizing clocks. (Level [2], CO [3], PO [2,12]) **10 M**

- b. What is an Election algorithm? Explain a ring-based Election algorithm. (Level [2], CO [3], PO [2]) **10 M**