Paper / Subject Code: 37315 / Software Architecture (DLOC - II)

T.E / Info Tech / Sem - III / May - 2024

(3 Hours) [Marks: 80]

29.05.2024

N.B.: 1) Question No. 1 is compulsory.

2) Answer any three out of remaining questions.

3) Assume suitable data if necessary.

4) Figures to the right indicate full marks.

Q1. Attempt any FOUR 20

(a) List Connector types and their variation dimensions.

(b) What is Reference architecture? Explain in brief.

(c) Explain Goals of Analysis in brief.

(d) Explain Software Architects Roles.

(e) What are the advantages and disadvantages of pipe & filter.

Q2. (a) Discuss Software Architecture Model. 10

Q2. (b)Explain in brief system stakeholders. 10

Q3. (a) Explain in detail specific modeling techniques. 10

Q3. (b) List types of analysis and explain analysis techniques. 10

Q4. (a)Differentiate between Domain-Specific Software Engineering, Domain- Specific Architecture. 10

Q4. (b) Explain Service oriented Architectures. 10

Q5. (a) Distinguish between Distributed and Network Architectures. 10

Q5. (b) What is the deployment concept? Explain Deployment and Mobility Challenges. 10

Q6. Write short note on any TWO. 20

a) Aspect oriented Architecture
b) Architectures for Network Based Applications
c) Mobility Challenges

****

Icoe/Lib/T.E/SemVI/IT/WT/22/05/2024

Paper / Subject Code: 37313 / Wireless Technology

T.E./Sem.:VI/IT/17May.2024

22/05/2024

Time: 3 HRS Marks: 80

Note: 1. Q. No1 is compulsory
2. Solve any three questions out of the remaining five

Q.No1 Solve any four (20)

a) Give the Features of VANET and MANET
b) Compare Infrastructures based Network and an Adhoc Network
c) Outline the method that supports mobility in CISCO Unified Wireless Network
d) Explain WEP and the security standard used
e) Explain LoraWAN

2

a. Explain the spread spectrum and briefly outline DSSS and FHSS (10)
b. Illustrate and explain GSM architecture with its interfaces. Compare GSM and UMTS (10)

3. a. Outline the WSN architecture along with neat diagrams. State the various issues in WSN (10)

b. Illustrate the RF site survey process and their importance in the design process of designing a wireless network with Lightweight AP and WLC (10)

4. a. State different features of Zigbee and explain its protocol stack (10)
b. Draw and Explain Wi-Fi Architecture and Protocol Architecture (10)

5.

a. Draw and explain OFDMA with a neat diagram (10)
b. State the Features of Wi-MAX. Draw and explain the architecture of Wi-MAX (10)

6.

a. Explain UMTS and GSM security (10)
b. Compare and contrast 1G to 5G based on the technological differences and advancements. Write a short note on Massive MIMO (10)

****

P.E/ Sem. VI / IT / May. 2024
Date: 17/05/2024

Paper / Subject Code: 37312 / Web X.O

ICOE/ Lib/ T.E/ sem VI/ IT/ Web x.o/ 17/05/2024

(3 Hours.) Marks = 80

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions.
2. Assume suitable data if necessary.
3. Draw clean and neat diagrams.

Q1.		Attempt any four	
	a.	Compare and contrast Web 1.0, Web 2.0 and Web 3.0?	5
	b.	What is Content Management System (CMS)	5
	c.	Explain steps involved in Web Analytics Process.	5
	d.	State the advantages and disadvantages of Joomla.	5
	e.	State four significant N-Triples language.	5
Q2.	a.	What does REST Stand for? Explain REST API with a basic flow diagram.	10
	b.	Explain the following built in Angular JS Directives with example. a) ng-app b) ng-init	10
Q3.	a.	Discuss any 5 built-in helper functions in AngularJS.	10
	b	Explain Flask templates with an example.	10
Q4	a.	Explain the working of MongoDB and Applications of MongoDB.	10
	b.	With the help of diagram explain process involved in AJAX Asynchronous Model.	10
Q5	a.	What are the HTTP Methods provided by Python Flask?	10
	b.	Explain Drupal's architecture with its advantages.	10
Q6	a.	Explain different characteristics of RIA in details.	10
	b.	Discuss definite and indefinite loops with suitable examples in Typescript.	10

ICOE/Lib/TE/IT/Sem VI/C-Scheme/ 15/05/2024

Paper / Subject Code: 37311 / Data Mining & Business Intelligence

T.E / Info. Tech / Sem-VI / C-Scheme / 7 May-2024

Date:- 15.05.2024

Duration: 3hrs [Max Marks: 80]

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

Q.1 [20]

A List out stages in Data Mining with neat labelled diagram.

B A sales firm has reported following sales figures for FY 23-24 (i.e. March 23 to Feb 24):
2300, 435, 675, 543, 454, 7877, 5434, 345, 2342, 654, 567, 545.
Show how to normalize this data series using Min-Max scaling.

C With an example explain Star Versus Snowflakes schema in dimensional modelling

D What is market basket analysis? Explain with a real use case.

Q.2 A Draw and list the components of a typical Data warehouse architecture [10]

B Consider we have age of 35 participants in a survey given to us in sorted order. [10]
5, 10, 13, 13, 15, 16, 16, 20, 20, 20, 21, 22, 22, 22, 25, 25, 25, 25, 30, 30, 33, 33, 33, 35, 35, 35, 35, 36, 40, 45, 46, 52, 52, 70, 85.
Draw histograms for this data taking bin size as 5 and 8. Explain the effect of bin size on the histograms you obtain.

Q.3 A What is OLAP? Explain various OLAP operations with neat labeled diagram [10]

B Explain working of decision tree based classifier? With an example explain steps for inducting tree using ID3 algorithm. [10]

Q.4 A Use the Apriori algorithm to identify the frequent item-sets in the following database. [10]

Tid	a	b	c	d	e	f	g
Items	1,2,4,5,6	2,3,5	1,2,4,5	1,2,4,5	1,2,3,4,5,6	2,3,4	1,2,4,5

Consider Minimum Support as 75% and confidence at 85% level. Write down all strong association rules.

B What is an outlier? Explain various methods for performing outlier analysis. [10]

Q.5 A Explain steps in hierarchical Clustering algorithm. Perform hierarchical clustering on following data that represents 10 points in 2 D space [10]
(2,3), (5,4), (9,6), (4,7), (8,1), (7,2), (6,3), (1,9), (3,6), (4,8).
Consider you require 3 clusters.

B Explain mining of Multilevel association rules and Multidimensional association rules. [10]

Q.6 Write short note on following (Any 4) [20]

A Navie Bayes Classifier.

B Boot Straping

C BIRCH Algoirthm.

D BI Architecures

E Types of attributes

****

55218

Paper / Subject Code: 37314 / AI and DS - 1

T.E./IT/Sem.VI/May.2024

27/05/2024

Duration: 3Hours **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.
(5) Use of Statistical Tables are allowed

Q1. Attempt any four [20]

a Formulate the problem for 8 queens.

b What is the difference between unification and Skolemization?

c Define over fitting and under fitting in detail with a diagram.

d Explain utility based agent architecture with diagram.

e Compare box-plot and scatter-plot.

f Explain working of Forward and Backward Chaining algorithms

Q2. a Consider following 5*5 grid where S represents start and G goal position, # represents an obstacle. .(dot) represents free to move in cell. consider agent can follow four standard moves in this puzzle world. [10]

S	.	.	#	.
#	.	#	.	.
.	.	.	#	.
.	#	.	.	.
.	.	.	.	G

Represent this puzzle as state space search problem. Apply Hill Climbing Search. Does the algorithm stuck in Local Minima ?

b Write note on following supervised learning techniques: a) SVM b) ID3 [10]

Q3. a What do you mean by data analytics? What are the different types of data analytics? [10]

b What is linear regression? Explain its significance in ML. Compare it with logistic regression [10]

Q4. a Perform t-test on following data about choice of customers who peferred either tea or coffee. The experiment was repeated 5 times and results are tabulated below. Comment weather the mean of two sets are same based on test result? (Consider α=0.05, t(0.05,3)=3.182, t(0.05,4)= 2.776, t(0.05,8)=2.306 t(0.05,9)=2.262 t(0.05,10)=2.228) [10]

Tea	4	5	7	6	9
Coffee	3	8	6	14	7

Clearly mention Null and Alternate hypothesis. Also comment weather t-test fails or succeeds in rejecting Null Hypothesis.

b What are the different uni-variate plots in EDA? Explain them in detail [10]

Q5. a What are the different issues in ML algorithms? [10]

b Compare Z-Test, T-Test and ANOVA in detail. [10]

Q6. a Describe the architecture of ML application. Explain with a diagram. [10]

b Describe any four uninformed search strategies. Compare them with time complexity, space complexity, optimality and completeness. [10]