BE/INFT/Sem-VIII (CBSGS)/Storage Network Mgmt. & Retrieval/May-2017

Q.P. Code :13355

[3 Hours] **[80 Marks]**

Note: 1. Question number 1 is compulsory. Solve any three out of remaining.
2. Draw figure wherever necessary.
3. Assume suitable data wherever necessary.

1 Consider an application that requires 1TB of storage capacity and performs 4900 IOPS. Application I/O size is 4 KB. As it is business critical application, response time must be within an acceptable range. Specification of available disk drive: 10
Drive capacity = 73 GB;
For rotational latency RPMs: 15,000
rpm; Average seek time= 5ms;
Transfer rate: 40 MB/s;
Calculate the number of disks required?
Considering seek time (Rs=5ms) as given above and I/O request arrives at a rate 100 I/Os per second, Calculate Utilization of I/O controller (U), Total Response time (R), Average Queue size and Total time spent by request in a queue.

(b) An application that generates 3600 IOPs with 60% reads and 40% writes. Calculate the IOPS generated for RAID level 1, 4 and 6. Also calculate storage efficiency and usable capacity for RAID levels 3, 5 and 6 with number of disks available are 6 and each disk has storage capacity of 100 GB. 10

2 (a) Explain RAID levels along with the comparison of all RAID levels 10

(b) Explain Information Lifecycle Management for online order processing with the help of diagram 10

3 (a) Explain Intelligent Storage System and its types. 10

(b) Explain FC data transfer and control flow with the help of diagram. 10

4 (a) Explain SCSI communication and command model 10

(b) Explain BC planning lifecycle in detail. Give comparison between RPO and RTO. 10

5 (a) Explain Symmetric and asymmetric virtualization with the help of diagram. 10

(b) Differentiate Boolean based and probabilistic based matching process. 10

6 Write short notes on: (any four) 20
a. Zoned bit recording
b. Journaling and snapshot
c. Local file system and network file system
d. Components and parts of information System
e. Document Surrogates
f. Types of indexing

INFT / Sem-VIII [CBSGS] / T5128 / T1845 BIG DATA ANALYTICS / MAY-2017

Q.P. Code :16180

(3 Hours) Max. Marks: **80**

N.B.: (1) Question No. **1** is **compulsory**.
(2) Attempt any **Three** questions out of remaining **Five** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume suitable data if **necessary**.

Q.1 Answer the following: [20]

a. Explain Different Distance measures for Big Data.
b. Explain the Hadoop Architecture with its features.
c. Explain CAP Theorem? how it is different from ACID Properties.
d. What are the shortcomings of nearest neighbor technique in collaborative filtering method? Suggest some improvements.

Qu-2 a. Write a Map-Reduce Algorithm for Binary search tree. Explain the flow of execution. [10]

Qu-2 b. Suppose a stream consists of the integers 2,1,6,1,5,9,2,3,5. Let the hash functions all be of the form h(x)=ax+b mod 16 for some a & b. You should treat the result as a 4 bit binary integer. Determine the tail length for each stream element and the resulting estimate of the number of distinct elements if the hash function is : [10]

a) h(x) = 2x +3 mod 16
b) h(x) = 4x+1 mod 16
c) 5x mod 16

Qu-3 a. Explain Different types of recommendation system with real time examples. [10]

Qu-3 b. Consider the portion of a Web graph as shown in Figure-1 [10]

i) Compute the hub and authorities scores for all nodes
ii) Does this graph contain spider traps? Dead ends? If so, which nodes

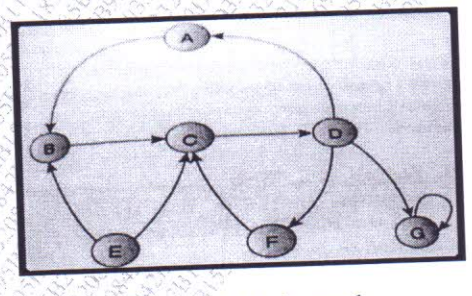

Figure-1 Web graph

Qu-4 a. Write a short note on [10]

i) PCY Algorithm
ii) CURE algorithm

Qu-4 b. Imagine there are 100 baskets, numbered 1, 2,…,100 items, similarly numbered. Item I is in basket J if and only if I divides J evenly. For example basket is 24 is the set of items { 1,2,3,4,6,8,12,24}. Describe all the association rules that have 100% confidence. [10]

Qu-5 a. Define Bloom Filter. Explain the concept of Bloom filter Algorithm with example. [10]

Qu-5 b. Explain HITS algorithm with example. [10]

Qu-6 Answer any two of the following [20]

a. NoSQL architectural pattern with example.
b. Matrix Multiplication by Map Reduce
c. List & explain Big data :- 1) Characteristics 2) Types 3) Challenges

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Revised Course

3 Hours Total Marks: 80

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

(2) Out of remaining five questions, attempt any three questions.

(3) Assume suitable data, if required but justify the same.

(4) Figures to the right indicate full marks.

(5) Use of Statistical Table is allowed.

Q1 (a) Explain steps in simulation study along with the flowchart. [10]

(b) Explain the properties of a Poisson Process. [05]

(c) Perform the simulation of the following inventory system, given daily demand is represented by the random numbers 4, 1, 8, 5, 2 and the demand probability is given by [05]

Demand	Probability
0	0.2
1	0.5
2	0.3

If the initial inventory is 4 units, determine on which day the shortage condition occurs.

Q2 (a) State the queueing notation, queue discipline and queue behavior. [10]

(b) Given the input parameters, simulation variable, output statistics for the queueing system. Calculate the output statistics for the queueing system whose inter-arrival and service times for ten arrivals are given below: [10]

Inter-arrival time	--	8	6	1	8	3	8	7	2	3
Service time	4	1	4	3	2	4	5	4	5	3

Q3 (a) Consider the following sequence of random numbers. How would you test it for independence based on runs above and runs below the mean for the significance level $\alpha = 0.05$ and the critical value $Z_{0.025} = 1.96$ [10]

0.12	0.01	0.23	0.28	0.89	0.31	0.64	0.28	0.33	0.93
0.39	0.15	0.33	0.35	0.91	0.41	0.60	0.25	0.55	0.88

(b) Explain Inverse transform technique for random variate generation. Support your answer with suitable example. [10]

Q4 (a) What is the purpose of model verification? What are the different ways available to verify a model? [10]

(b) Draw the flowchart for arrival and departure event in single server system. Compare event-scheduling, process interaction and activity scanning algorithms. [10]

Turn Over

Q5 (a) The following is set of single digit numbers from a random number generator. Using appropriate test check whether the numbers are uniformly distributed. N = 50, $\alpha = 0.05$, $\chi^2_{0.05,9} = 16.9$ [10]

{6, 7, 0, 6, 9, 9, 0, 6, 4, 6, 4, 0, 8, 2, 6, 6, 1, 2, 6, 8, 5, 6, 0, 4, 7, 1, 3, 5, 0, 7, 1, 4, 9, 8, 6, 0, 9, 6, 6, 7, 1, 0, 4, 7, 9, 2, 0, 1, 4, 8}

(b) The following data were available for the past 10 years on demand and lead time. [10]

Lead Time	6.5	4.3	6.9	6.0	6.9	6.9	5.8	7.3	4.5	6.3
Demand	103	83	116	97	112	104	106	109	92	96

Estimate correlation and covariance.

Q6 (a) Explain the batch means for interval estimation in steady state simulation. [10]

(b) What are the objectives of simulation in a manufacturing system? Give the block diagram and explain the sequence of operations in a manufacturing system. Suggest a suitable simulation language for the same. [10]

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BE / INFT / Sem-VIII (CBSGS) / Soft Computing / MAY-17

Q.P. Code :16176

[Time: Three Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. Question No. 1 is **compulsory.**
2. Attempt any **Three** questions out of remaining Five questions.
3. **Figures** to the **right** indicate **full** marks.
4. Assume suitable data if **necessary.**

Q.1 Answer the following: **20**

A) List different operators in GA. Explain any one in detail.

B) Define defuzzifzcation? Discuss any two methods of assigning membership value.

C) Explain how ANN, *Fuzzy* Login and GA can be combined for certain application.

D) Explain max-min and max-product composition with example.

Q.2 **A)** Design Hebb net to implement logical AND function? Use bipolar inputs and targets. **10**

B) How hybrid system is useful? Explain the concept of Neuro Fuzzy Hybrid system. **10**

Q.3 **A)** Explain error back propagation training algorithm with the help of flowchart. **10**

B) Explain McCulloch Pitts neuron model with example. **10**

A) What is neural network architecture? Explain logistic sigmoid function with example. **10**

B) What is associative memory? Explain it types. **10**

Q.5 **A)** The characteristics of the laundry load (inputs) include: The actual weight, fabric types and amount of dirt. The washing parameters (outputs) include: amount of detergent, washing time, agitation, water level and temperature. *The* cleaner laundry, conserving water, and saving detergent, electricity, time and money needs controlling the above different parameters. Give the initial stage of designing a fuzzy control for a hypothetical washing machine. **10**

B) Explain perceptron model with suitable examples. **10**

Q.6 Answer the following: **20**

A. Delta Learning Rule

B. Binary Hopfield Network

C. GA-Fuzzy system approach

D. Competitive Learning

BE / INFT / Sem-VIII (CBSGS) / Software Testing & Quality Assurance / MAY-17

Q. P. Code: 13496

(Time: 03 Hours) Marks: 80

Note: 1) Question no. 1 is compulsory.

2) Solve any three out of remaining five questions.

3) Assume suitable data wherever necessary.

Q.1 a) How does testing help in producing quality software? (05)

b) What are the types of errors detected by black-box testing (05)

c) Brief about Function Point Metric for software testing. (05)

d) Differentiate system testing and acceptance testing. (05)

Q.2 a) What is software testing? Describe software testing model with a neat diagram. (10)

b) Why do we need integration testing? Explain various approaches in integration testing. (10)

Q.3 a) Discuss the benefits of verification and validation in a project. (10)

b) What is static testing? Explain the types of static testing. (10)

Q.4 a) Brief about Software Quality Management (10)

b) What is the need for software measurement? Discuss the various types of software metrics. (10)

Q.5 a) What are the challenges in testing web based softwares? (10)

b) Consider the following program segment: (10)

```
#include <stdio.h>
main()
{       float x, y, z;
        clrscr();
        printf("enter the three variables x, y, z");
        scanf("%f %f %f ",&x, &y, &z);
        if(x > y)
            {
                if(x > y)
```

Turn Over

```
                printf("x is greatest");
            else
                printf("z is greatest");
        }
    else
        {
            if(y > z)
                printf ("y is greatest");
            else
        printf("z is greatest");
        }
    getch();
}
```

1. Draw the decision-to-decision graph or DD graph for the above program.
2. Calculate the cyclomatic complexity of the program using all the methods.
3. List all the independent paths.
4. Design test cases from independent paths.

Q.6 Write short notes on any two. (20)

a) Object-oriented Testing.

b) Regression Testing

c) Bug classification based on Software Development Life Cycle (SDLC)
