M.C.A - Sem - IV (CBGS) dt: 24.5.17

Q.P. Code :01353

[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 four out remaining six.**
3. **Figures to the right indicate full marks.**

Q.1 A) Explain in detail Simulation application in any one of the following system:- (10)
i) Job flow analysis at a Job Shop for Repair Jobs
ii) Customer flow analysis at an Airport.
iii) Check-out counter at Super Market.

B) Using the multiplicative congruential method to find the period of the generator for two different seed values: $X_0 = 2, 3$. The multiplier and modulus are given respectively as: $a = 13$, and $m = 2^6 = 64$. (05)

C) Accidents at an industrial site occur one at a time, independently, and completely at random, at a mean rate of one per week. What is the probability that no accidents occur in the next three weeks? (05)

Q.2 A) Simulate Able-Baker Call Center Problem (an example of dual-channel queueing system) for 5 customer arrivals so as to compute the following measures of performance: a) Average Caller delay, b) Probability that Able is Idle, and c) Probability that Baker is Idle. Here Able is assumed as more experienced than Baker and thus can provide service faster than Baker. Therefore when both are idle Able should take the call. If both are busy the call goes on hold. Here it is assumed that the first customer arrives at clock time zero. The probability distributions for inter-arrival times and Able and Baker's service times are as zero. The probability distributions for inter-arrival times and Able and Baker's service time are as under: (08)

Table 1: Probability Distribution for Time between Calls (ranging from 1 to 4 minutes)

Inter-arrival Distribution of Calls	
Interarrival Time (in Minutes)	**Probability**
1	0.35
2	0.25
3	0.20
4	0.20

Table 2: Probability Distribution for Able's Service Times

Able's Service Time Distribution	
Service Time (in Minutes)	**Probability**
1	0.35
2	0.30
3	0.25
4	0.10

Table 3: Probability Distribution for Baker's Service Times.

Baker's Service Time Distribution	
Service Time (in Minutes)	**Probability**
2	0.40
3	0.23
4	0.20
5	0.17

Use the below random number sequences for generating service times and inter-arrival times:

Random Number seq for service Times	0.70, 0.38, 0.01, 0.66, 0.51
Random Number seq for inter-Arrival Times:	0.54, 0.04, 0.44, 0.88

(B) Explain in brief the general characteristics of Queueing System and some of the long run measures of performance used in evaluating queueing systems through simulations. (0

Q.3 A) Use inverse transform technique to develop a random-variate generator for random variable X having exponential distribution with parameter λ.Apply the developed random-variate generator to generate five exponential variates with $\lambda = 2$, using the following random numbers: 2.29, 0.94, 0.88, 0.85, and 0.66. (08)

B) Explain and illustrate with diagram the steps to be followed to conduct a sound simulation study. (07)

Q.4 A) The sequence of random numbers 0.45, 0.37, 0.89, 0.22 and 0.86 has been generated. Use the Kolmogorov Smirnov test, with level of significance $\propto = 0.05$ and critical value: $D_\alpha = 0.565$, to learn whether the hypothesis that the numbers are uniformly distributed on the interval [0, 1] can be rejected. (08)

B) What do you mean by "Goodness of Fit"? What is the purpose of statistical methods devised to test "Goodness of Fit" in the context of simulation modeling? Illustrate the working of Chi-Square test in this context. (07)

Q.5 A) Apply acceptance-rejection technique to generate poison variate with $\propto = 0.2$ using the following sequence of five random numbers: 0.2956, 0.9462, 0.3417, 0.1916, and 0.8783. How many poisson variate were you able to successfully generate? (08)

B) Illustrate and explain the iterative process of model building, verification and validation with a suitable diagram. (07)

Q.6 A) Explain Poisson Process. Prove that if arrivals occur according to Poisson process with mean rate λ then time between arrivals are exponentially distributed and independent with mean $1/\lambda$. (08)

B) A professor gives four problems on each exam. Each problem requires an average of 30 minutes grading time for the entire class of 15 students. The grading time for each problem is exponentially distributed, and the problems are independent of each other. (07)

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(a) What is the probability that the professor will finish the grading in 1.5 hours or less?

(b) What is the expected grading time?

Q.7 A) Write short notes on: (i) Input Modelling (ii) Time Series Input Models (08)

B) Lead times have been found to be exponentially distributed with mean 3.7 days. Generate five random lead times from this distribution using random numbers: 0.35, 0.68, 0.12, 0.30, and 0.95. (07)

Block No 101, 201, 309.

S.P.I.T Exam <exam@spit.ac.in>

Fwd: Correction in Program Code:T8624 Subject Name:System Modeling and Simulation Q.P Code :01353

1 message

Hemant Vasaikar <vasaikarhb@spit.ac.in> Wed, May 24, 2017 at 3:52 PM
To: exam@spit.ac.in

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University of Mumbai

Correction in Program Code:T8624 Subject Name:System Modeling and Simulation Q.P Code :01353

Read As,

Q.3) A) Random Number:0.29 instead of 2.29

2:A
7:B
4:B

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22/5/17

T8624 / T0217 SOFT SKILL DEVELOPMENT

Q. P. Code : 10440

MCA - SEM IV (CBGS)

(3 Hours) **[Total Marks: 80**

N. B.: (1) Question number 1 is compulsory.
(2) Attempt any 4 from question Nos. 2 to 7.
(3) Illustrate answers with sketches wherever necessary.
(4) Do not reveal your identity in the letters and reports.

1. A] Discuss the strategies for bringing about effectiveness in communication for business purposes. **10**

   B] Define the process of perception in detail with suitable examples. **10**

2. A] Explain various communication barriers and suggest a few measures to overcome them. **08**

   B] Explain the process of communication through a diagram depicting the essential components of the process. **07**

3. A] What is the importance of Non-verbal Communication techniques in effective business communication? Justify your answer with suitable examples. **08**

   B] Define personality and its determinants? Explain personality types and its impact on career growth. **07**

4. A] 'Listening is an art and like any other art, it has to be cultivated consciously'. Discuss **08**

   B] What the SMART goals? Explain with suitable examples. **07**

5. A] Elaborate the merits of using technology in business communication. **08**

   B] Discuss various conflict resolution techniques which can be used for managing conflicts in organizations. **07**

6. A] Define the term 'Resume' and write the do's and don'ts of writing a resume? **08**

   B] Elucidate the principles of effective business writing. **07**

7. Write short notes on: (**any three, all carry equal marks**) **15**
   a) Kinesics
   b) Diagonal Communication
   c) Personality and Values
   d) Components of Attitude

MCA sem IV (CBGS) 16/5/07 (76)

Core - and Adv. JAVA

Q.P. Code :02411

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. **Question No.1 is compulsory**
2. **Attempt any four questions out of the remaining Q.2 to Q.7**

Q.1) Write short notes on any four of the following 20
- a) Compare servlet and CGI.
- b) Compare Applet and Application
- c) Difference between strut 1.X and strut 2.X
- d) Object serialization and Descrialization.
- e) Difference between AWT and swing.

Q.2
- a) What is layout? Explain different types of Layout Manager in Java? 08
- b) What are the Different types of EJB and explain EJB Architecture with neat diagram? 07

Q.3
- a) What are available drivers in JDBC? What does classforName() method do? 08
- b) What is cookie? Write a simple servlet program to design to page visit counter using cookie. 07

Q.4
- a) Explain how Exception handling is done in java. Write a program to demonstrate use of throw and throws keyword. 08
- b) What is directives? Explain different types of directives in JSP? 07

Q.5
- a) What is static Method and variable Explain with suitable Example? 08
- b) Explain the different resultset constant and resultset types? 07

Q.6
- a) What are servlets? Explain servlets life cycle in detail with example? 08
- b) Explain thread life cycle in detail. Write a program to create two threads. 07

Q.7
- a) Explain why java don't support Multiple inheritance. Write a program to demonstrate use of Interface. 08
- b) Explain Event delegation Method. Explain ItemListener and Mouselistner interface. 07

Sem-IV - M.C.A. (CBSGS) 18/5/17 (81)

Advanced Database Theory & Applications.

Q.P. Code :02853

[Time:3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B: 1. **Question No.1 is compulsory.**
2. **Attempt any Four questions from the remaining Six questions.**

Q1. a) Write short notes on (ant three): 12
1. Shared Nothing Architecture
2. Metadata
3. Bloomjoin
4. Clustering

b) Compare following (any two) 08
1. ROLAP and MOLAP
2. OODBMS and ORDBMS
3. OLAP and Data Mining

Q2. a) What are the various complex data types available in object Relational DBMS? Explain with suitable example. 08

b) Define the terms fragmentation and replication in terms of where data in stored and also how the object are uniquely identified in distributed database? 07

Q3. a) What are frequent item sets? Describe an algorithm for finding frequent itemsets. 08

b) Explain the features of XML and also differentiate between DTD and XML Schema. 07

Q4. a) Explain concurrency control and recovery in Distributed Database Management System. 08

b) What is datawarehouse and why it is needed? Explain ETL (Extraction, Transformation and Loading) process in data warehouse. 07

Q5. a) Explain various operation of OLAP. 08

b) Explain ORDBMS Implementation challenges in detail. 07

Q6. a) Find out the association rules with minimum support 20 percent and confidence atleast 50 percent from the following sample data: 08

Transitions	Items
T1	Pen, Pencil, ink, chalk
T2	Pen, Eraser, Notebook
T3	Pen, Notebook, Eraser, chalk
T4	Pencil ,paper ,Pen ,ink
T5	Ink, pen

b) Explain Bitmap index and bitmap join index with example. 07

Q7. a) What is Classification technique in Data Mining? Discuss decision tree based ID3 algorithm for classification. 08

b) Discuss deadlock detection in a distributed database. 07