

May - 2016

QP Code : 26707

(3 Hours)

[Total Marks : 80]

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

1. Attempt any four. 20
 - (a) Describe abstract classes in JAVA.
 - (b) Differentiate between Struts 1.x versus Struts 2.x
 - (c) Explain features of JAVA language.
 - (d) Explain JSP Implicit objects.
 - (e) Differentiate between C++ and JAVA
2. (a) What is constructor? Explain the types of constructor. 8
(b) What is XML? Explain structure of XML DTD. 7
3. (a) Explain thread life cycle with neat labeled diagram. Write a program to demonstrate the thread life cycle. 8
(b) What is EJB? Explain the types of Bean. 7
4. (a) Explain Object Serialization and deserialization with suitable example. 8
(b) Explain event delegation model. Explain any two event listeners. 7
5. (a) What is Servlet? Explain the servlet life cycle. 8
(b) Describe the steps involved in a JAVA program in order to get connectivity to a database. Write a JAVA program to display all the value from the student database. 7
6. (a) What is package? Write a program to create **emp** package which includes Employee Class having following members: data fields such as EmpID, EmpName, DOJ, Designation, Basic_salary, Address and methods such as getData(), display(). And define a class Salary which extends **Employee** class of **emp** package and import emp package and calculate the salary of employee and display along with employee details. 8
(b) What is exception? Explain Steps to create your own exception with a suitable example. 7
7. (a) What is Cookie? Write a simple servlet program to design to page visit counter using cookie. 8
(b) What is Struts? Explain Struts architecture. 7

QP Code : 26709

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- N.B. : 1) Question No.1 is compulsory.
2) Attempt any four from the remaining six questions.

- Q1 : a) Write short notes on (any two) : 10
1. Distributed Catalog management
2. Web Mining
3. Bitmap and Join Index
- b) Compare followings (any two) 10
1. Semi join and Bloom join
2. Parallel database and Distributed database
3. Data Mining and OLAP
- Q2 : a) Explain Knowledge Discovery Process (KDD) in detail. What is the role of data mining in the KDD process. 08
- b) Explain various operations of OLAP 07
- Q3 : a) What are the various complex data types available in Object Relational DBMS ? Explain with suitable examples. 08
- b) What are frequent itemsets ? Describe an algorithm for finding frequent itemsets. 07
- Q4 : a) Explain the concept of parallel query evaluation. 08
- b) Explain ORDBMS Implementation challenges in detail. 07
- Q5 : a) Explain the features of XML and also differentiate between DTD and XML Schema 08
- b) What is datawarehouse and why it is needed ? Explain ETL (Extraction, Transformation and Loading) process in datawarehouse. 07
- Q6 : a) Use K-means algorithm to cluster the following 8 points into 3 clusters. 7
A1(2, 10) A2(2, 5) A3(8, 4) A4(5, 8) A5(7, 5) A6(6, 4) A7(1, 2),
A8(4, 9). Suppose that initial cluster centers (seeds) are: A1(2, 10),
A4(5, 8) and A7(1, 2). Run K-means algorithm for three iterations.
(The distance function between two points $a=(x_1, y_1)$ and $b=(x_2, y_2)$
is defined as: $d(a, b)$
 $= |x_2 - x_1| + |y_2 - y_1|$) 08
- huge
web-
roll up.

[TURN OVER

- b) What is the fundamental difference between MOLAP and ROLAP systems? Explain with suitable diagrams. 07
- Q7 a) What is the difference between synchronous and asynchronous replication? Why has asynchronous replication gained in popularity? 08
- b) Discuss in brief Time-in database and Spatial database. 07
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SEM-IV (CBSAS) / System Modeling & Simulation

QP Code : 26715 MAY-16

(3 hours)

(Total marks 80)

- N.B.** (1) Question No. 1 is compulsory and carries 20 marks.
 (2) Attempt any four questions out of remaining six questions.
 (3) Figures to the right indicate full marks.
 (4) Use of calculator is allowed

1. a) Discuss simulation application in any one of the following system [10]
 i) Book Counter analysis in a library
 ii) Cash Counter analysis in Supermarket
 iii) Customer flow analysis in a hotel

b) The sequence of numbers 0.54, 0.75, 0.98, 0.12, 0.68, 0.88, 0.41, 0.36, 0.27 and 0.91 has been generated. Use Kolmogorov-Smirnov test with $\alpha = 0.05$ to learn whether the hypothesis that the numbers are uniformly distributed on the interval [0,1] can be rejected. (Critical value $D_{\alpha} = 0.410$) [10]

2. a) Consider a single server system. Arrival is uniformly distributed between 1 and 8 minutes. Service distribution is as follows. [4+1+1+1+1=8]

Service Time (min)	1	2	3	4	5	6
Probability	0.17	0.15	0.32	0.20	0.06	0.10

Random digit for inter-arrival time and service are given below.

Customer No.	1	2	3	4	5	6	7	8	9	10
Random digit for interarrival time	--	751	303	106	94	606	747	339	877	454
Random digit for service time	74	52	16	82	94	61	87	35	29	99

- Develop the simulation table and analyze the system by simulating the arrival and service of 10 customers.
- What is the probability that the customer has to wait in queue?
- What is the average service time?
- What is the average waiting time?
- What is the expected service time?

- b) What do you mean by simulation? Explain different types of simulation models. [7]

3. a) Assume that the weight of all students is normally distributed. A sample data of 20 student's weight in kg. is collected.

53.14	45.56	48.18	60.71	53.21	39.86	70.18	51.21	49.54	41.15
56.71	53.35	47.20	46.75	62.34	54.25	52.76	47.87	44.90	49.18

Determine the maximum-likelihood estimator μ and σ^2 [8]

- b) Write short notes on [7]
 i. Properties of Random numbers
 ii. Steps of simulation study

[TURN OVER]

4. a) Use combined linear congruential method to combine three multiplicative generators with $m_1 = 32363$, $a_1 = 157$, $m_2 = 31727$, $a_2 = 146$, $m_3 = 31657$, and $a_3 = 142$. Generate one random number with the combined generator using initial seeds $X_{i,0} = 100, 300, 500$ for the individual generators $i=1,2,3$. [8]
- b) Discuss types of simulation with respect of output analysis with examples [7]
5. a) Derive the inverse transformation method for Exponential distribution. Life of a computer IC is exponentially distributed with mean 4. Generate two life times from this distribution where $R_1 = 0.762$ and $R_2 = 0.389$. [8]
- b) Describe time series input models? [7]
6. a) A NGO collected the records of monthly number of job related accidental injuries at an underground coal mine for study. The records for the past 100 months are as follows:

Accidental injuries per month	0	1	2	3	4	5	6	7
Frequency	30	20	15	5	5	10	4	10

Use the chi square test to test hypothesis that the underlying distribution is poisson and $\chi^2_{0.05,4} = 9.49$ [8]

- b) Mention the important points to be noted while collecting data. [7]
7. a) Consider the following sequence of 30 numbers [8]

0.22	0.11	0.33	0.38	0.99	0.41	0.74	0.38	0.93	0.03
0.09	0.25	0.43	0.45	0.01	0.51	0.70	0.37	0.85	0.98
0.78	0.59	0.15	0.53	0.05	0.68	0.29	0.46	0.79	0.97

Test whether the 2nd, 9th, 16th,numbers in the sequence are autocorrelated where $\alpha = 0.05$. (Given $Z_{0.025} = 1.96$)

- b) Explain Verification and Validation of Simulation Models. [7]

QP Code : 26713

(3 Hours)

[Total Marks : 80]

NB: (i)

Question No 1 is compulsory.

- (ii) Answer any **four (4)** of the remaining **six (6)** questions.
- (iii) Answers to the questions should be grouped and **written together**.
- (iv) Figures on the right indicate **full marks** assigned to the question.
- (v) **Do not reveal your identity** in the letters and reports

- Q1** (a) Write a job application letter to apply in XYZ Company for post of web developer. 10
Candidate should have expertise in HTML, Java Script and at least one year experience in web site development. Exposure to web administration and knowledge of DHTML, CSS would be an advantage. Walk in on April 17, 2014 between 11:00 am - 5:00 pm at XYZ Ltd, 17 Singh Road, Dadar, Mumbai 28.
- (b) Explain in brief the 7 C's of communication. 10
- Q2** (a) What is the difference between verbal and non-verbal communication? Discuss the importance of each. 8
- (b) Why is time management important? As a student what steps can be taken by you to manage your time? 7
- Q3** (a) The results of the college have been very poor for the last five years. The Management of College has asked the Principal to make a recommendatory report for improving the results. Write the report including a brief statement of the finance required. 8
- (b) What is the importance of listening in communication? Discuss the major barriers in the listening process. 7
- Q4** (a) What is Maslow's Theory of need? How significant is it in determining motivation level of a person? 8
- (b) What is stress? How can it be managed? What methods organizations can adopt to reduce stress levels of their employees? 7
- Q5** (a) Discuss some points to be remembered for meaningful participation in group discussion. 8
- (b) What is personality? What are the determinants of personality? 7
- Q6** (a) Write a notice along with agenda for a meeting of the Student's Council, to plan farewell for the passing out batch of your college. 8
- (b) What is the difference between a team and a group? What characteristics are required for a team to be effective? 7
- Q7** Write Short Note (Any three): 15
- (a) Emotional Intelligence
 - (b) Assertiveness
 - (c) Grapevine
 - (d) Smart goals

QP Code : 26713

(3 Hours)

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(3 Hours)

- N.B. : 1) Question No.1 is **compulsory**.
2) Attempt any **four** from the remaining **six** questions.

1. A] What is E-Market? Explain Advantages and Disadvantages (10)
associated with E-Markets.
B] Discuss various E-Business models in brief with relevant (10)
examples.
2. A] What do you mean by Entrepreneurial Process? Explain with the (08)
help of a process diagram.
B] Explain various factors affecting E-Business success in detail. (07)
3. A] What is Organization? Explain why organization is a system with (08)
the help of Levitt's model.
B] What is the role of knowledge management systems in an (07)
enterprise?
4. A] What is EDI? Explain Business implications of EDI. (08)
B] What are various security issues in E-Business? List and explain (07)
various network and website security risks in detail.
5. A] What are the impacts of the internet on organizations and the (08)
process of organizational management?
B] Describe the relationship between ESS, MIS, and DSS. (07)
6. A] Explain the importance of information systems in a digital firm. (08)
List some of the new opportunities that Information Systems
provide for managing the organizations resources in a better way.
B] What are enterprise systems? How do they change the way, an (07)
organisation works?
7. Write Short Notes on any three:- (15)
a) Contents of MIS plan.
b) Impact of E-Business on society.
c) Dimensions of Information System.
d) IT in decision making.

(3 Hours)

NOTE: (1) Question No. 1 is compulsory.

(2) Attempt any four questions from the remaining questions.

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|---|---|--|----|
| 1 | A | Design an user interface for Automated Ticket Vending Machine for state road transport service, consider all necessary elements in your design | 15 |
| | B | Illustrate the concept of Web systems. | 5 |
| 2 | A | Differentiate between GUI and WUI. | 8 |
| | B | Explain various techniques used for requirement gathering in user interface? | 7 |
| 3 | A | What are the various distractions which affect the user in screen designs. | 8 |
| | B | Explain various graphical types of Menu. | 7 |
| 4 | A | Explain various visual composition for a screen design. | 8 |
| | B | What are the types of Windows? Explain it briefly. | 7 |
| 5 | A | Explain how to select a proper device controls to user for making selections and entries. | 8 |
| | B | Explain Window management for designing an interface? | 7 |
| 6 | A | What are various forms of guidance and assistance to a user for an effective User Interface? | 8 |
| | B | Justify training and documentation are an integral parts of any development effort. Explain in brief. | 7 |
| 7 | | Write notes on (Any three) | 15 |
| | a | Keyboard Equivalents Vs Keyboard Accelerators | |
| | b | Human Interaction speed | |
| | c | Performance versus Preference | |
| | d | Indirect Manipulation | |

- N. B:** (1) Question No 01 is **compulsory**. Attempt **any four** from remaining question.
(2) Figures to the **right** indicate **full marks**.
(3) Assume additional data if necessary but state the same clearly.
(4) Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
(5) Use of simple **calculators** and statistical tables is **allowed**.

- Q.1 (a) What is Geospatial Data? Compare them with other forms of data used in usual databases? 10
(b) Write a detailed note on various GIS operations. 10
- Q.2 (a) Why are projections important in GIS? What are the different types of Map projections used in GIS? 07
(b) Describe how are raster geographic data represented? What are its merits and demerits? 08
- Q.3 (a) Explain how geographic information system uses object-oriented representations? Give example to explain the concept. 07
(b) Highlight the usefulness of attribute data query and spatial data query in data exploration in GIS. 08
- Q.4 (a) What is the significance of buffering in GIS? Explain types of buffering. 07
(b) Explain how layering approach is useful in analyzing and updating information in GIS? 08
- Q.5 (a) What is map based feature manipulations? Explain various feature manipulation techniques. 07
(b) State and explain any four applications of GIS. 08
- Q.6 (a) What are shape files? What are its salient characteristics? 07
(b) What is meant by Geo-coding? Explain how the process of Geo-coding of a spatial feature with suitable example. 08
- Q.7 (a) Write note on **any three** 15
i. GIS for tracking and positioning
ii. Overlay methods
iii. Slivers
iv. Issues in implementing GIS
v. DEM
