

Total No. of Questions : 12]

P2358

May-2017

SEAT No. :

[Total No. of Pages : 2

[5156] - 301

SYMCA

Engg Advanced Java
(2013 Course) (Semester-III)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right side indicate full marks.
- 3) Assume Suitable data if necessary

Q1) a) What are the steps to connect oracle 10g server with JDBC in netbeans. [5]

b) Illustrate with diagram the JDBC driver models. [4]

OR

Q2) a) What is JDBC? Explain its advantages and features. [6]

b) What is J2EE and what makes J2EE suitable for distributed multitier applications? [3]

Q3) a) Write a Java program on showing the demonstration of servlet config interface. [6]

b) State the difference between sessions and cookies in servlets. [2]

OR

Q4) a) Define the Servlet Life Cycle diagrammatically. [4]

b) What is the difference between ServletContext and ServletConfig? [4]

Q5) a) Explain in details. [4]

i) JSP directives

ii) JSP implicit objects

b) State the JSP action elements. And explain <jsp:forward>? element. [4]

OR

Q6) a) How the JSP pages are processed on the web server? [2]

b) What is session bean? What are the two types and when to use session Beans. Illustrate? [6]

P.T.O.

- Q7) a) What are Java Beans? What are the uses of introspection in Java Beans? [4]
b) Write the SimpleBean code for "Student details? [5]

OR

- Q8) a) Write a note on: (any three) [6]
i) JNDI context
ii) Initial context
iii) Session context and
iv) EJB context
b) Explain the use of session facade? [3]

- Q9) a) What is spring? List out the advantages of spring framework? [6]
b) Write a note on "Aspect Oriented Programming (AOP)" [2]

OR

- Q10) a) Describe spring MVC module. [4]
b) Explain the tabular difference between Bean factory and application context? [4]

- Q11) a) What is Hibernate? Explain get and load method of Hibernate. [6]
b) Justify your answer that where we may use Hibernate Query Language (HQL) [2]

OR

- Q12) a) Write a short description of following methods of Hibernate: [6]
i) Save
ii) Persist
iii) Save or update
b) List out the annotations used for Hibernate mapping in Hibernate application. [2]

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May - 2017

SEAT No. :

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S.Y. MCA

**Database Management System
(2013 Pattern) (Semester-III)**

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right side indicate full marks.
- 3) Assume Suitable data if necessary

Q1) Explain the structure of DBMS.

[10]

OR

Q2) Explain database language and database abstraction of DBMS.

[10]

Q3) Explain with example how EER diagram convert into tables.

[8]

OR

Q4) Draw ER diagram of Project Management System. Each project's task having time bound and priority, which are distributed within company employees of different departments. Employees having different skillsets. Every year company gone through the appraisal of employees to give promotion. Also as per the requirements new candidates are appointed in various departments.

[8]

Q5) State and explain all the TCL statements with syntax and examples.

[8]

OR

Q6) a) Explain the term integrity Constraints with example.

[5]

b) Discuss on - "Systematic Treatment of NULL values"

[3]

Q7) State and explain all the aggregate functions with syntax and examples.

[8]

OR

Q8) Difference between procedure and function in PL/SQL with syntax and example

[8]

P.T.O.

Q9) State normalization. Explain with example 2NF. [8]

OR

Q10) State and explain normalization with its need. [8]

Q11) a) How you relate Big Data with Non-Relational database? [5]

b) Explain the term NoSQL. [3]

OR

Q12) Discuss. How Big data is helpful in finance? [8]

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SYMCA (Under Faculty of Engg.)
Operating Systems
(2013 Course) (Semester-III)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right side indicate full marks.
- 3) Use of Calculator is allowed.
- 4) Assume suitable data, if necessary.

- Q1)** a) Explain the PASS-I of assembler. [4]
b) Explain an relocating loader with its advantages and disadvantages. [3]
c) Compare application software and system software. [2]

OR

- Q2)** a) Explain [3]
i) Real Time Operating System.
ii) Time Sharing Operating System
b) Define [6]
i) Cross Compiler
ii) Optimizing Compiler
iii) Bootstrap Compiler

- Q3)** a) Consider the following set of processes, with the length of the CPU burst given in milliseconds. [5]

Process	Burst Time	Arrival Time	Priority
P1	8	0	4
P2	6	1	6
P3	7	3	3
P4	9	3	1

Illustrate the execution of these process using non pre-emptive SJF and priority pre-emptive CPU scheduling algorithms. Also calculate average waiting time?

- b) What is process? What is process control block(PCB)? Explain in detail. [3]

OR

P.T.O.

- Q4)** a) Explain preemptive priority process scheduling algorithm with the help of example. [4]
 b) Explain context switching? [2]
 c) Write a note on interrupt mechanism [2]
- Q5)** a) Explain the requirements of Mutual exclusion. [4]
 b) Explain deadlock prevention techniques. [4]
- OR
- Q6)** a) Explain characteristics of Deadlock. [4]
 b) Write a note on race condition. [2]
 c) Write a note on Semaphores. [2]
- Q7)** a) What is swapping? Explain how the space is allocated using swapping? [3]
 b) Write a note with respect to contiguous memory management scheme. [3]
 i) Sharing
 ii) Protection
 iii) Access Time
 c) Explain the concept of fetch and replacement. [3]
- OR
- Q8)** a) Explain the concept of segmentation? What is paged segmentation? [3]
 b) Why demand paging approach is preferred over segmentation? Explain [3]
 c) Write a note on virtual memory management. [3]
- Q9)** a) Explain two level, tree structured and acyclic graph directories. [4]
 b) Write a note on file protection. [4]
- OR
- Q10)** a) What are the different issues related to disk performance? Explain any one disk scheduling algorithm with suitable example. [4]
 b) Explain file system structure [4]
- Q11)** a) Explain the following terms:
 i) Linux Kernel
 ii) Virtual file system in Linux [4]
 b) Explain process management system call. [4]
- OR
- Q12)** a) Draw and explain the basic structure of Linux File System. [4]
 b) Explain any four shell commands with example. [4]

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S.Y.M.C.A. (Under Engineering Faculty) .
Object Oriented Analysis and Design
(2013 Pattern) (Semester-III)

[Max. Marks : 50

Time : 3 Hours]

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right indicate full marks.
- 3) Use of probability table, electronic pocket calculator is allowed.
- 4) Assume Suitable data if necessary.

Q1) a) Explain Rumbaugh's Object Modeling Technique in brief. [4]

b) What are two views of Software Development? State the difference between them [5]

OR

Q2) a) Describe The Booch Methodology that helps to design the system using object paradigm. [5]

b) Explain how Iterative and Incremental architecture approach are modeled in UML? [4]

Q3) a) List the relevant changes in features and enhancements in UML 2.0 [4]

b) Draw a Use Case diagram for Online Transaction Management System (e-shopping). Make necessary assumptions. [4]

OR

Q4) a) What is the difference between <<include>> and <<extend>>. Explain with suitable example. [4]

b) Which are various behavioral diagrams in UML 2.0? Explain role of each of them. [4]

Q5) a) Explain the following adornment on association: Association names, Qualified Association, Association Classes, N-ary Association [4]

b) Give reverse and forward engineering of a Class diagram. [4]

OR

Q6) a) Explain Realization and Dependency relationship with example. [4]

b) Draw an Object diagram for Hotel Management system. [4]

Q7) a) Explain the features Lifeline and Focus of Control with respect to sequence diagram. [4]

b) Explain the concept of Combined Fragments. [4]

OR

Q8) a) Draw sequence diagram for the following scenario: [4]

i) Search the phone number in directory

ii) Dial the number and place the call

b) What are communication diagrams? What are the notations used for communication diagram. [4]

Q9) a) Explain partitions and regions with respect to activity diagram. [4]

b) Draw a timing diagram for ATM system. [4]

OR

Q10) a) What are sub-states? Explain sequential sub-states and concurrent sub-states with suitable diagram. [4]

b) Draw an activity diagram for elevator system. [4]

Q11) a) How deployment diagram will be useful to fully distributed client and server system? [5]

b) Draw package diagram for college admission system [4]

OR

Q12) a) Describe component diagram. Give three types of components. [4]

b) How UML is useful in embedded systems? [5]

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P.T.O.

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SEAT No. :

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S.Y.M.C.A. (Under Engineering Faculty)
Operations Research
(2013 Pattern) (Semester-III)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Use of electronic pocket calculator is allowed
- 4) Assume suitable data, if necessary.
- 5) The graph papers will be provided on demand.

Q1) a) Solve the following LPP using Simplex Method.

[9]

Maximize $Z = 2x_1 + x_2$

Subject to $4x_1 + 3x_2 \leq 12,$

$4x_1 + x_2 \leq 8,$

$4x_1 - x_2 \leq 8,$

where $x_1, x_2 \geq 0$

OR

Q2) a) Solve the following LPP by graphical method.

[6]

Maximize $Z = 6x_1 + 8x_2$

Subject to $5x_1 + 10x_2 \leq 60,$

$4x_1 + 4x_2 \leq 40,$

$10x_1 + 7x_2 \leq 35,$

where $x_1, x_2 \geq 0$

b) Define following

- i) Slack variable
- ii) Feasible solution
- iii) Optimum solution

[3]

P.T.O.

- Q3) a) Solve following transportation problem to minimize the total transportation cost. Give the transportation schedule. Use VAM method to obtain initial basic feasible solution [8]

Source		A	B	C	D	E	Capacity
	P	1	2	6	2	3	800
	Q	3	4	5	8	1	600
	R	3	1	1	2	6	200
	S	4	7	3	5	4	400
	Demand	400	100	700	300	500	

OR

- Q4) a) A company is faced with the problem of assigning 4 machines to 6 different jobs (one machine to one job only). The profits are estimated as below. Solve the Assignment problem to maximize the total profit. [6]

Jobs		Machines			
		A	B	C	D
	1	3	6	2	6
	2	7	1	4	4
	3	3	8	5	8
	4	6	4	3	7
	5	5	2	4	3
	6	3	7	8	4

- b) Write a short note on Degeneracy in the Transportation problem. [2]

- Q5) a) Using the following table [8]

Activity	to	tm	Tp
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- Draw a network diagram
- Find the expected duration and variance for each activity.
- Find critical path
- What is the expected project length?

OR

- Q6)** Find the sequence that minimizes the total elapsed time (in hours) required to complete the following tasks on two machines. Calculate total elapsed time and idle time for both machines. [8]

Task	A	B	C	D	E	F	G	H	I
Machine I	2	5	4	9	6	8	7	5	4
Machine II	6	8	7	4	3	9	3	8	11

- Q7)** a) What is goal programming? Explain any one methods to solve goal programming problem. [4]
 b) Explain Minimum Spanning Tree. [4]

OR

- Q8)** Consider the details of a distance network as shown below [8]

Arc	Distance	Arc	Distance
1-2	6	5-6	13
1-3	7	5-8	9
1-4	10	6-7	5
2-3	8	6-8	4
2-5	4	6-9	8
3-4	6	6-10	3
3-5	11	7-9	10
3-6	3	8-10	10
3-7	5	9-10	9
4-7	7		

- a) construct the distance network
 b) Find the minimum spanning tree using Kruskal's algorithm.

- Q9)** A manufacture of a new detergent powder consisting of three varieties viz super, find and glow has to decide the appropriate variety of detergent to be lanuched on the basis of the following estimated payoffs according to sales-levels. [8]

Detergent Variety	Estimated Levels of sales(units)		
	50000	25000	15000
Super	45	30	20
Fine	60	45	15
Glow	75	50	10

Determine the optimal decision using

- a) Minimax criterion
- b) Regret criterion
- c) Laplace criterion
- d) Hurwicz criterion, for $\alpha = 0.5$

OR

Q10) A newspaper boy has the following probabilities of selling a magazine. [8]

No. of copies sold	probability
10	0.10
11	0.15
12	0.20
13	0.25
14	0.30

Cost of a copy is 30 paise and sale price is 50 paise. He cannot return unsold copies. How many copies should he order? Determine EVPI?

Q11) a) Using multiplicative congruential method generate 7 random numbers with $b = 17$, $c = 111$, $m = 103$ and the seed = 7 [5]

b) What is simulation. Explain merits and demerits of simulation [4]

OR

Q12) a) Given the following information of cancellation of taxis per day at a travel agency. [6]

Number of cancellation	Probability
0	0.35
1	0.22
2	0.18
3	0.10
4	0.15

Simulate Cancellation of taxis for the next 10 days using random numbers.

Random	20	43	58	85	62	75	84	45	55	92
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b) What are random numbers? Why they are called Pseudo-random [3]

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