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SEAT No. :

P1576

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[5061]-304

S.Y.M.C.A. (Faculty of Engineering)

OBJECT ORIENTED ANALYSIS AND DESIGN

(2013 Course) (Semester - III) (Theory)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) *Neat diagrams must be drawn wherever necessary.*
2) *Figures to the right indicate full marks.*
3) *Assume suitable data, if necessary.*

Q1) a) Explain the Booch Methodology of UML. [4]

b) Explain in brief the phases of Rational Unified Process. [4]

OR

Q2) a) Explain the design view in 4 + 1 view architecture. [5]

b) Differentiate SSAD and OOAD. [3]

Q3) a) Draw use case diagram for Credit card processing system. Make necessary assumptions. [5]

b) Explain the concept of UML meta model. [3]

OR

Q4) a) Draw use case diagram for Online Movie Booking. Make necessary assumptions. [5]

b) What is OCL? Explain with example. [3]

Q5) a) The university has arranged a project competition for which students of MCA, MCS College students can register online in a group. The panels of Judges are invited from colleges of other Universities. The rules of the competition are as follows: [5]

i) One college can send any number of groups.

ii) One group can how minimum 2 and maximum 4 members.

iii) One group cannot develop more than one project.

iv) One student can participate in only one project group.

v) One panel of judges consists of minimum 2 and maximum 5 judges.

P.T.O.

vi) One panel of judges can judge many project.

The University declares result passed on the points given by the panel of Judges.

From the above assumption, Draw class diagram.

b) What is the concept of association? Explain with example. [4]

OR

Q6) a) Draw Class diagram for "Order processing system". Make necessary assumptions. [5]

b) Explain the concepts of Object diagram with example. [4]

Q7) a) Draw sequence diagram for buying a product from vending machine. Make suitable assumption. [5]

b) What is the concept communication diagram? [3]

OR

Q8) a) Draw interaction overview diagram for ATM system. Write suitable assumptions. [5]

b) Define the term Regions and Partitions with suitable example. [3]

Q9) a) Draw activity diagram for "Ticket Vending Machine". Make necessary assumptions. [5]

b) Describe the concept of Timing Diagram. [3]

OR

*Q10)*a) Explain the concept of State machine diagram with example. [5]

b) Define the term Fork and Join with example. [3]

*Q11)*a) Explain the concept of component diagram with suitable example. [5]

b) Describe UML web applications. [4]

OR

*Q12)*a) Draw deployment diagram for web application - online ordering of book. Write your assumptions clearly. [5]

b) What is the use of package diagram? Explain with example. [4]

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[5061]-302
S.Y.M.C.A. (Engg.)
DATABASE MANAGEMENT SYSTEM
(2013 pattern)(Semester - I) (410902)

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) Write a short note on following (Any Two) **[10]**

a) Data Independance and data Models.

b) Database languages.

c) Data Abstraction.

OR

Q2) Explain components of DBMS along with its architecture. **[10]**

Q3) Explain following terms(Any 4): **[8]**

a) Entity

b) Attributes.

c) Keys.

d) Constraints.

e) Relationships.

OR

Q4) Construct an ER diagram for payroll system. **[8]**

P.T.O.

Q5) Explain following: [8]

a) Explain any 4 codd's rules with example.

b) Explain SQL. States its characteristics and advantages.

OR

Q6) State and explain all the DDL statements with syntax and examples. [8]

Q7) Explain Procedure and function in PL/SQL with syntax and Example. Also Explain way of passing parameters: IN,OUT,IN OUT [8]

OR

Q8) Write following programs: [8]

a) A function of Digitsum of a number. Example: 789=7+8+9=24

b) A function of Factorial of a number.

Q9) State and Explain 4NF and BCNF with suitable example. [8]

OR

*Q10)*Explain database design Methodology with example. [8]

*Q11)*Explain HBASE Architecture with neat and label diagram. [8]

OR

*Q12)*What is difference between Relational and Non-Relational database and Explain NoSQL. [8]

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SEAT No. :

[5061]-303

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S.Y.M.C.A.(Under Faculty of Engineering)
OPERATING SYSTEMS
(2013 Course)(Semester-I) (410903)

Time :3Hours] *[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 electronic pocket calculator is allowed.*
4) *Assume suitable data if necessary.*

Q1) a) Define : [4]

i) Assembler

ii) Compiler

iii) Linker

iv) Loader

b) Explain Distributed system [3]

c) Explain historical evolution of Operating system. [2]

OR

Q2) a) Explain Jobs, Programs and Processes. What is the degree of Multiprogramming? [5]

b) Explain an absolute loader with its advantages and disadvantages. [4]

Q3) a) Write a short note on System Calls. [4]

b) Explain Context Switching. [4]

OR

Q4) a) Explain the mechanism to handle the interrupt. [4]

b) What is Scheduling? Explain the Scheduling Criteria. [4]

Q5) a) What is deadlock? Explain conditions for deadlock occurrence [4]

b) Explain classical IPC problems in Operating System. [4]

OR

P.T.O.

Q6) a) What are three contexts in which concurrency arise? [4]

b) Explain the concepts: [4]

i) Semaphores

ii) Monitors

Q7) a) What is segmentation? Explain the concept of pure segmentation and pure paging in detail. [6]

b) Write a short note on: Virtual memory management [3]

OR

Q8) a) Compare contiguous and non-contiguous memory. [5]

b) Why demand paging approach is preferred over segmentation? Explain. [4]

Q9) a) Explain Disk Structure with suitable diagram. [4]

b) Discuss the factors affecting the efficiency & performance of a disk. [4]

OR

Q10) a) Explain SCAN algorithm with example. [4]

b) Discuss various file protection mechanism in detail. [4]

Q11) a) What is system call? Explain different system calls in LINUX. [4]

b) What is Pipe? Explain inter-process connection with pipes. [4]

OR

Q12) a) What are the kernel's responsibilities to facilitate I/O transfer? [4]

b) Explain different commands of Linux.(Any 4) [4]

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S.Y.M.C.A. (Faculty of Engineering)

ADVANCED JAVA

(2013 Pattern) (Semester - III) (410901)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q. 3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Use of Calculator is allowed.***
5) ***Assume Suitable data if necessary.***

Q1) Define JDBC. Describe architecture of JDBC with proper syntax and semantics. **[8]**

OR

Q2) List the steps that connect database with java application and explain components of JDBC. **[8]**

Q3) Explain Role of Deployed Descriptor (.XML) file and container in details. **[8]**

OR

Q4) Explain lifecycle of Servlet in details. **[8]**

Q5) 'JSP is similar to servlet', Elaborate with proper explanation. **[8]**

OR

Q6) Write a short note on: **[8]**

a) Expression

b) Declaration

c) Scriplet

d) Include

P.T.O.

Q7) Explain Entity Bean with its lifecycle. [8]

OR

Q8) List and describe difference between Statefull and stateless session beans. [8]

Q9) Write & explain spring MVC form handling example. [9]

OR

Q10) State and explain Spring bean life cycle? [9]

Q11) What is HQL? Explain any four HQL queries with example. [9]

OR

Q12) Explain Hibernet Architecture in details. [9]

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S.Y.M.C.A. (Engineering Faculty)

OPERATIONS RESEARCH

(2013 Pattern) (410905) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) *Figures to the right indicate full marks.*
2) *All questions are compulsory.*

Q1) a) Solve the following LP using simplex method. [6]

Minimize $z = 2x + 3y$

Subject to $x + y >= 5$

$x + 2y > 6$

$x_1, x_2 >= 0$

b) What is feasible solution & optimal solution. [3]

OR

Q2) a) Solve the following LPP by big M Method [6]

Minimize $z = 2x + 3y$

Subject to $x + y >= 5$

$x + 2y >= 6$

$x_1, x_2 >= 0$

b) Form the dual of the following primal problem. [3]

Min $z = 2x + 6y$

Subject to $9x + 3y >= 20$

$2x + 7y = 40$

$x, y >= 0$

P.T.O.

Q3) a) Obtain an optimal solution to the transportation problem by MODI Method. [6]

	D1	D2	D3	Supply
S1	0	2	1	6
S2	2	1	5	7
S3	2	4	3	7
Demand	5	5	10	

b) Write short note on the distribution Method. (MODI) [3]

OR

Q4) a) The head of the department has five Jobs A, B,C, D, E & five subordinates V, W, X, Y, Z. The number of hours each man would take to perform each job is as follows: [6]

	V	W	X	Y	Z
A	3	5	10	15	8
B	4	7	15	18	8
C	8	12	20	20	12
D	5	5	8	10	6
E	10	10	15	25	10

b) Write short note on Trans-shipment method. [3]

Q5) a) From the information given below, draw network diagram & critical path. Find the probability that the project will be completed within 55 days.[5]

Activity	t_o	t_m	T_p
1-2	4	6	8
2-3	5	7	15
2-4	4	8	12
3-6	15	20	25
3-5	10	18	26
4-6	8	9	16
5-7	4	8	12
6-7	1	2	3
7-8	6	7	8

b) Write a short note on Forward pass / Press calculation. [2]

OR

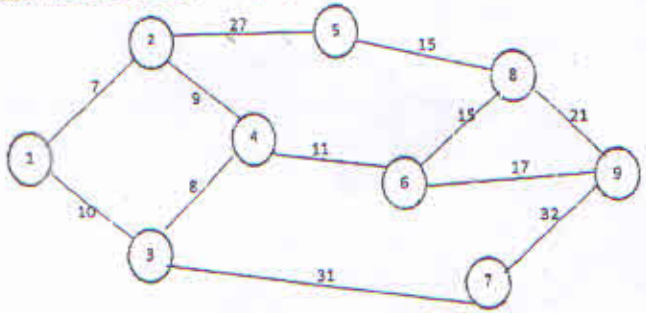
Q6) a) Listed in the table are the activities & sequencing necessary for a maintenance job on the heat exchange in a refinery. [5]

Activity	Description	Predecessor Activity
A	Dismantle Pipe Connection	-
B	Dismantle heater, closure & Floating Front	A
C	Remove tube bundle	B
D	Clean bolts	B
E	Clean heater & floating head front	B
F	Clean tube bundle	C
G	Clean shell	C
H	Replace tube bundle	F,G
I	Prepare shell pressure test	D, E, H
J	Prepare tube pressure test & reassemble	I

Draw a network diagram for the project.

b) Write a short note on backward pass / press calculations. [2]

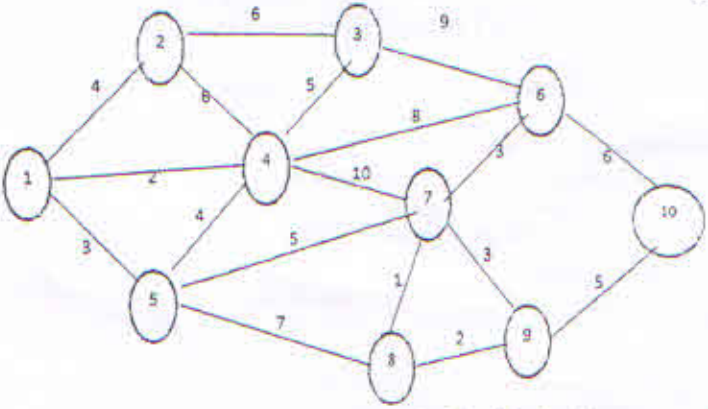
Q7) a) Find the shortest path from node 1 to node 9 of the distance network shown in above fig. using dijkstra's algorithm [6]



b) Write a note on minimum spanning tree by kruskal's algorithm. [3]

OR

Q8) a) Consider the distance network diagram shown in below figure. Find the minimum spanning tree of this network using the PRIM algorithm. [6]



b) Write algorithm of shortest path model by floyd's algorithm. [3]

Q9) a) Estimated levels of scales (units) [6]

Strategies	N1	N2	N3
S1	7,00,000	3,00,000	1,50,000
S2	5,00,000	4,50,000	0
S3	3,00,000	3,00,000	3,00,000

Which strategy should be concern executive choose the basis of

i) Maximin

ii) Minimax

iii) Maximax

iv) Laplace

b) Give the significance of decision analysis what are the steps of decision making process. [3]

OR

*Q10)*a) The research department of ABB has recommended the marketing department. An launch the shampoo of three different types. The marketing mango has to decide one of the types of shampoo to be launched under the following estimated pay offs for various levels of scales. **[6]**

Types of Shampoo	Estimated Rs. 15000	Levels of Rs.10,000	Scales (Unit) Rs.5000
Egg Shampoo	30	10	10
Clinic Shampoo	40	15	5
Deluxe Shampoo	55	20	3

What will be the marketing manager's decision

i) Maximin

ii) Minimax

iii) Maximax

iv) Laplace

b) What is decision making under risk? Explain excepted value criterion. **[3]**

*Q11)*a) What is simulation modeling? Explain Monte Carlo Simulation. **[5]**

b) Explain in brief generation of random number. **[2]**

OR

*Q12)*a) Generate three random numbers based on multiplicative congruential method using b = 17, c = 111, m = 103, seed = 7. **[5]**

b) Define Simulation with their merits & demerits in brief. **[2]**

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