Total No. of Questions : 5]

SEAT No. : ____

P-6398

[Total No. of Pages : 2

[6155]-61
T.Y. B.Sc. (Computer Science)
CS361 : OPERATING SYSTEMS - II
(2019 Pattern) (Semester-VI)

Time : 2 Hour] ***[Max. Marks : 35***

Instructions to the candidates :

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

Q1) Attempt any Eight of the following. **[8×1=8]**

a) List all dead lock recovery methods.

b) List file system free space management techniques.

c) What is disk scheduling?

d) What is deadlock?

e) Define object-based architecture.

f) List system architectures.

g) List any Four commercial mobile operating systems.

h) What is kernel?

i) What are the features of mobile operating systems?

j) List the types of distributed systems.

Q2) Attempt any Four of the following. (Out of Five) **[4×2=8]**

a) What are the goals of distributed systems.

b) Differentiate scan and c-scan disk scheduling.

c) What is ARM?

d) What is native code?

e) Explain resource - allocation graph with example.

P.T.O.

Q3) Attempt any two of the following. (Out of Three) **[2×4=8]**

a) Consider the following snapshot of system A,B,C,D are the resource types.

	Allocation			
	A	B	C	D
P_0	0	0	1	2
P_1	1	0	0	0
P_2	1	3	5	4
P_3	0	6	3	2
P_4	0	0	1	4

	MAX			
	A	B	C	D
P_0	0	0	1	2
P_1	1	7	5	0
P_2	2	3	5	6
P_3	0	6	5	2
P_4	0	6	5	6

Available			
A	B	C	D
1	5	2	0

Answer the following questions using Banker's Algorithm:

i) What are the contents of need array?

ii) Is the system in safe state? If yes give safe sequence.

iii) If a request from P_1 arrives for (0,4,2,0) can it be granted immediately?

b) Explain the architecture of Android OS.

c) Explain access methods of file system management.

Q4) Attempt any two of the following. (Out of Three) **[2×4=8]**

a) Differentiate Desktop OS and Mobile OS.

b) Explain the necessary conditions of deadlock with suitable example and diagram.

c) Write a short note on directory structure.

Q5) Attempt any ONE of the following. (Out of two) **[1×3=3]**

a) Consider following work queue : 23, 89, 132, 42, 187 & show schedule using following algorithms :

i) SSTF

ii) SCAN

iii) C-LOOK

Also find total head movements in each algorithm.

b) Differentiate between Android OS and iphone OS.

Total No. of Questions : 5]

SEAT No. :

P6399

[Total No. of Pages : 2

[6155]-62
T.Y. B.Sc. (Computer Science)
CS-362 : SOFTWARE TESTING
(Revised 2019) (Semester - VI)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) Attempt the following. **[8×1=8]**

a) Define debugging.

b) Black Box testing is known as glass box testing. Justify T/F.

c) Write advantages of Load Testing.

d) Write difference between Agile and Traditional testing.

e) Write objective of Spike testing.

f) List any 2 objectives of Software Testing.

g) Define Cyclomatic complexity.

h) Define Test plan.

Q2) Attempt any four of the following: **[4×2=8]**

a) Explain Top down integration.

b) Write difference between White and Black box testing.

c) List the features of Agile Testing.

d) Write short note on dimension of quality.

e) Write advantages of regression testing.

Q3) Attempt any two of the following: **[2×4=8]**

a) Explain V-model in detail.

b) Describe basic path testing with example.

c) What is system testing? How it test the system? Also list it's different types.

P.T.O.

Q4) Attempt any two of the following: **[2×4=8]**

a) What is Web application? How it works? Explain diagrammatically.

b) What is unit testing? How it works? Explain with example.

c) What is test case? Explain with example.

Q5) Attempt any one of the following: **[1×3=3]**

a) Write a difference between Alpha and Beta testing.

b) Write short note on Agile testing Quadrants.

Total No. of Questions : 5]

SEAT No. : ____

P-6400

[Total No. of Pages : 2

[6155]-63
T.Y. B.Sc. (Computer Science)
CS-363 : WEB TECHNOLOGIES - II
(2019 Pattern) (CBCS) (Semester-VI)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates :

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

Q1) **Attempt any EIGHT of the following:** **[8 × 1 = 8]**

a) Enlist the characteristics of XML?

b) What do you mean by sticky form?

c) Which information is stored in $_FILES?

d) Justify True or False - XML Parser cannot alter documents or create new documents.

e) What is DOM?

f) Give any two applications of AJAX.

g) What is JQuery?

h) What is CodeIgniter?

i) What is the use of XMLHttpRequest object?

j) What is the use of redirect() function in CodeIgniter?

Q2) **Attempt any FOUR of the following :** **[4 × 2 = 8]**

a) What is session? How to start the new session?

b) Explain the structure of well-formed XML document.

c) Explain pop-up boxes in JavaScript.

d) Discuss similarities and differences between GET and POST method.

e) Explain asynchronous mode in Ajax.

P.T.O.

Q3) **Attempt any TWO of the following :** **[2 × 4 = 8]**

a) What is XML parser? Explain it with its types

b) Explain the workflow of MVC Architecture.

c) Write a note on Ajax Web Application model.

Q4) **Attempt any TWO of the following :** **[2 × 4 = 8]**

a) Write a JavaScript code to accept employee's name and age, validate it with name and age should not be null and age should be greater than 18 years.

b) Create Doctor table as follows Doctor (dno, dname, experience).Write Ajax program to print the doctor's details of selected doctor.

c) Write a PHP Script to keep track of number of times the web page has been accessed. (Use Session Tracking)

Q5) **Attempt any ONE of the following :** **[1 × 3 = 3]**

a) Write XMLsyntax rules.

b) What are JQuery selectors ? Explain in brief.

Total No. of Questions : 5]

SEAT No. :

P6401

[Total No. of Pages : 2

[6155]-64
T.Y. B.Sc.
COMPUTER SCIENCE
CS-364 : Data Analytics
(CBCS Rev 2019 Pattern) (Semester - VI)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt any Eight of the following. **[8×1=8]**

a) State occam's razor principle.

b) Define Data Analytics

c) What is supervise learning?

d) What is TF-IDF?

e) What is frequent itemset?

f) Define stemming.

g) What is Link prediction?

h) State Applications of AI.

i) State types of logistic regression.

j) Define precision

Q2) Attempt any four of the following: **[4×2=8]**

a) State types of Machine learning. Explain any one in detail.

b) How Receiver operating characteristic (ROC) curve is created?

c) What is association rule? Give one example.

d) What is Influence Maximization?

e) Explain Knowledge discovery in database (KDD) process.

P.T.O.

Q3) Attempt any two of the following: **[2×4=8]**

a) Write a short note on community detection.

b) Explain Apriori algorithm.

c) Short note on challenges in social Media Analytics (SMA)

Q4) Attempt any two of the following: **[2×4=8]**

a) Explain phases in Natural language processing (NLP).

b) Explain exploratory data analytics.

c) Explain life cycle of social media Analytics.

Q5) Attempt any one of the following: **[1×3=3]**

a) Consider the following transactional database and find out Frequent Itemsets using Apriori algorithem with minimum - support = 50%

TID	Items - Purchased
T_1	$I_1, I_2, I_3,$
T_2	I_2, I_3, I_4
T_3	I_4, I_5
T_4	I_1, I_2, I_4
T_5	I_1, I_2, I_3, I_5
T_6	I_1, I_2, I_3, I_4

b) Write a short note on Text analytics.

Total No. of Questions : 5]

SEAT No. : ____

P-6402

[Total No. of Pages : 2

[6155]-65

T.Y. B.Sc. (Computer Science)

CS-365 : OBJECT ORIENTED PROGRAMMING USING JAVA - II

(2019 Pattern) (CBCS) (Semester-VI) (Paper-V)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates :

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

Q1) **Attempt any EIGHT of the following:** **[8 × 1 = 8]**

a) What is use of callable Statement?

b) What is thread?

c) How servlet is differ from CGI?

d) Define set.

e) List any two parameter using scriplet.

f) Define spring.

g) Which interface is implemented by Treeset class.

h) List any two method of statement interface.

i) Write the purpose of yield ().

j) What is cookie?

Q2) **Attempt any FOUR of the following :** **[4 × 2 = 8]**

a) What is Map interface and how to implement it?

b) What is Data Base Meta Data?

c) Give the name of directives in JSP.

d) State the type of servlet.

e) What are the thread priorities?

P.T.O.

Q3) **Attempt any TWO of the following :** **[2 × 4 = 8]**

a) Write a java program to accept 'N' student name from user, store them in Linked list collection and display in reverse order.

b) Write a java program to accept details of student (rollno, name, percentage). Store it into database & display it.

c) Write a JSP program to accept username & password, if username & password is same then display "Login sucessful" message on the browser other - wise display "Login failed" message.

Q4) **Attempt any TWO of the following :** **[2 × 4 = 8]**

a) Explain Life cycle of thread.

b) What is session tracking? How to implement it.

c) Write a java program to delete the details of given teacher & display remaining records from Teacher Table. Assume teacher table (tid, tname, subject) already created.

Q5) **Attempt any ONE of the following :** **[1 × 3 = 3]**

a) Explain the architecture of spring.

b) Explain the components of JSP.

Total No. of Questions : 5]

SEAT No. :

P6403

[Total No. of Pages : 3

[6155]-66
T.Y. B.Sc. (Computer Science)
CS - 366 : COMPILER CONSTRUCTION
(2019 Pattern) (Semester - VI)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

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

Q1) Attempt any Eight of the following (out of 10). **[8×1=8]**

a) Define cross compiler.

b) List the two classes of SDD.

c) Define the term dead code.

d) List the differnt types of conflicts that occur in LR parser.

e) State one difference between annotated Parse tree and dependency graph.

f) List the techniques used in code optimization.

g) What is the purpose of augmenting the grammar?

h) Define term Attribute Grammar.

i) What is output of Lexical Analysis?

j) State True or False : Shift - Shift conflict does not occur in LR Parser.

Q2) Attempt any four of the following (out of 5): **[4×2=8]**

a) Compute First and Follow for the following

$S \rightarrow i\ CtSS' | a$

$S' \rightarrow e\ S | \in$

$C \rightarrow b$

P.T.O.

b) Write difference between LL parser and LR Parser.

c) Compute Leading and Trailing symbols of the following Grammar:

$S \rightarrow (T) \mid a \mid \wedge$

$T \rightarrow T, S \mid \$$

d) Write execution steps of VACC program.

e) Give two difference between synthesized and inherited attributes.

Q3) Attempt any Two of the following (out of 3) **[2×4=8]**

a) Write a Recursive Descent Parser (RDP) for the following grammar.

$E \rightarrow E+T \mid T$

$T \rightarrow T * F \mid F$

$F \rightarrow (E) \mid id$

b) Construct DAG for following expression.

i) $b*(a+c)+(a+c)*d$

ii) $y+(y+x)/(x-z)*(x-z)$

c) Check whether the following Grammar is LL(1) or not?

$S \rightarrow a \mid \wedge \mid (R)$

$T \rightarrow S, T \mid S$

$R \rightarrow T$

Q4) Attempt any two of the following (out of 3) **[2×4=8]**

a) Check whether the given grammar is SLR (1) or not.

$S \rightarrow A \mid B$

$A \rightarrow aA \mid b$

$B \rightarrow dB / b$

b) Construct triples and Quadruples for the following expression :

(a+b)*(m–n) ↑ (m+n)

c) Consider the following SDD and construct Annotated Parse tree for input string $3*5*2$

Production	Semantic Rules
$E \rightarrow TE'$	$E'.inh = T.val$ $E.val = E'.syn$
$E' \rightarrow +TE'$	$E'_1.inh = E'.inh+T.val$ $E'_1.syn = E'_1.syn$
$E' \rightarrow \in$	$E'.syn = E'.inh$
$T \rightarrow FT'$	$T'.inh = F.val$ $T.val = T'.syn$
$T' \rightarrow *FT'$	$T'_1.inh = T'.inh * F.val$ $T_1'.syn = T'_1.syn$
$T^1 \rightarrow \in$	$T'.syn = T'.inh$
$F \rightarrow digit$	$F.val = digit.lexval$

Q5) Attempt any one of the following (out of 2). **[1×3=3]**

a) Write a LEX program to find factorial of a given number.

b) Eliminate left-Recursion from following grammar:

$S \rightarrow Aa \mid b$

$A \rightarrow Ac \mid sd \mid \in$

Total No. of Questions : 5]

SEAT No. :

P-6404

[Total No. of Pages : 2

[6155]-67
T.Y. B.Sc. (Computer Science)
CS-3610 : Software Testing and Tools (Paper - VII)
(Revised 2019) (CBCS) (Semester - VI)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

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

Q1) **Attempt any Eight of the following (Out of Ten) :** **[8 × 1 = 8]**

a) What is software testing?

b) Enlist any two features of Bugzilla tool?

c) State any two advantages of statement coverage.

d) Define test Plan.

e) Define entry criteria and exit criteria in a test case.

f) Define error.

g) Enlist the types of defects.

h) Define Manual Testing.

i) What is test suite?

j) What is a test report?

Q2) **Attempt any Four of the following (Out of Five) :** **[4 × 2 = 8]**

a) Explain any two test case design techniques.

b) Enlist four objective of writing test cases.

c) What are the critical defects?

d) What is difference between manual testing and automation testing?

e) State features of JIRA tool.

P.T.O.

Q3) **Attempt any TWO of the following (Out of Three) :** **[2 × 4 = 8]**

a) How to design test cases in MS Excel? Describe with example.

b) Write a note on path coverage testing.

c) Explain steps for writing test cases.

Q4) **Attempt any Two of the following (Out of Three) :** **[2 × 4 = 8]**

a) Explain defect life cycle with the help of detailed diagram.

b) Consider following code -

i) input(intx, inty) {

ii) sum = x+y;

iii) if (sum >0)

iv) Printf (This is positive
results);

v) else

vi) Printf(This is negative
result);

vii) }

Test case 1: x = 6, y = 2

Test case 2: x = –4, y = –3

Consider above test cases scenarios and find the percentage of statement coverage.

c) Explain different types of Automation testing tools? Explain two of them in short.

Q5) **Attempt any ONE of the following (Out of Two) :** **[1 × 3 = 3]**

a) How to prepare test plan?

b) Explain unstructured loop testing.

Total No. of Questions : 4]

SEAT No. : ____

P8766

[Total No. of Pages : 2

[6155]-101

S.Y. B.Sc.

COMPUTER SCIENCE

CS - 212 : Relational Database Management System

(2013 Revised Pattern) (Semester - I) (21122) (Paper - II)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:

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

Q1) Attempt all of the following: **[10×1=10]**

a) Define Trigger.

b) What do you mean by time stamp?

c) Define System Log.

d) Name any two Armstrong axioms.

e) List various states of a transaction

f) Define cursor.

g) What is downgrading?

h) Define checkpoints.

i) State how to detect deadlock.

j) List the disadvantages of concurrent schedules.

P.T.O.

Q2) Attempt any 2 of the following: **[2×5=10]**

a) Explain client-server architecture benefits.

b) What is transaction? Explain ACID property of transaction.

c) Explain desirable properties of decomposition

Q3) Attempt any 2 of the following: **[2×5=10]**

a) Explain referential integrity.

b) Explain role of DBA with respect to security.

c) Explain DAC (Discretionary Access Control).

Q4) Attempt either (A) or (B): **[1×10=10]**

A) a) Consider the following relation schema: **[5]**

student (sno, sname) teacher (tno, tname, qualification)

Student and teacher are related with many-many relationship.

Write a cursor to list details of students who have taken RDBMS as a subject

b) Discuss how the recovery from catastrophic failure is handled. **[3]**

c) Explain concatenation of strings in PQ/SQL. **[2]**

OR

B) a) Consider the following relational database: **[5]**

Doctor (dno, dname, dcity) Hospital (hno, hname, hcity)

Doc-hosp (dno, hno)

Write a function to return count of number of hospitals located in 'Pune 'City.

b) Explain timestamp based protocol. **[3]**

c) What is stored procedure? Give syntax to create stored procedure. **[2]**

Total No. of Questions : 4]

SEAT No. : ____

P8767

[Total No. of Pages : 2

[6155]-102

S.Y. B.Sc.

COMPUTER SCIENCE

CS - 221 : Object Oriented Concepts Using C++

(Revised 2013 Pattern) (Semester - II) (Paper - I) (22121)

Time : 2 Hours] ***[Max. Marks : 40***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Assume suitable data, if necessary.***

Q1) Attempt all of the following: **[10×1=10]**

a) What do you mean by encapsulation?

b) What is destructor?

c) Give any two benefits of OOP.

d) What is inline function?

e) What is function template?

f) What is the purpose of delete operator?

g) Give the syntax and example of precision() function.

h) What is the purpose of private access specifier?

i) State the purpose of “this” pointer.

j) Which flags should be used to open a binary file for writing only if the file does not exist?

P.T.O.

Q2) Attempt any two of the following: **[2×5=10]**

a) What are different types of inheritance? Explain multilevel inheritance with example.

b) Create a class Fraction containing data members as Numerator and Denominator. Write a C++ program to overload operators to add and multiply two Fraction.

c) Create a C++ class Sumdata to perform following functions:

int sum(int, int) - returns the addition of two integer arguments.

float sum(flaot, float, float) - returns the addition of three float arguments.

int sum(int [ ] ,int) - returns the sum of all elements in an array of size 'n'. Write a C++ program to illustrate the use of above class.

Q3) Attempt any two of the following: **[2×5=10]**

a) Explain runtime polymorphism by a suitable example.

b) What is friend function? What are the features of friend function?

c) Write a C++ program to find maximum of two integer numbers and two float numbers by using function template.

Q4) Attempt any one of the following (A or B): **[1×10=10]**

A) a) What is constructor? List types of constructor. Explain overloading of constructor with suitable example. **[5]**

b) Write a C++ program to merge two text files into one file. **[5]**

OR

B) a) Write and explain block structure of C++ program. **[4]**

b) Explain the Advantages of Exception Handling. **[3]**

c) Write a C++ program to find area and volume of cylinder using Inline function. **[3]**