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PB1891

[6237]-601

T.Y.B.Sc.

COMPUTER SCIENCE

CS-361 : Operating Systems - II

(Revised 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 questions.

[8×1=8]

- a) What is safe sequence?
- b) What is grid computing?
- c) Write file access methods.
- d) Define rotational Latency.
- e) What are the different types of distributed system?
- f) List any four file attributes.
- g) List any two important features of an Android mobile OS.
- h) “Hybrid cloud is a combination of the public cloud and the private cloud”.
Comment (True/False)
- i) State all the necessary conditions for a deadlock to occur.
- j) List any four special constraints of mobile operating system.

Q2) Attempt any four of the following questions.

[4×2=8]

- a) What is C-Scan and C-look? Compare them.
- b) What is mobile operating system? What are it's responsibilities?
- c) Explain deadlock prevention strategies.
- d) Explain different methods for handling free-space list in file system.
- e) Explain cloud computing.

P.T.O.

Q3) Attempt any Two of the following questions.

[2×4=8]

- Compare Desktop OS and Mobile OS.
- What are the operations performed on files?
- Consider given snapshot of system. A system has 5 processes and 3 types of resources A,B,C

Allocation			
	A	B	C
P0	2	3	2
P1	4	0	0
P2	5	0	4
P3	4	3	3
P4	2	2	4

Max		
A	B	C
9	7	5
5	2	2
11	0	4
4	4	4
6	5	5

Available		
A	B	C
3	3	2

Answer the following questions using Banker's Algorithm.

- What are the contents of need matrix?
- Is the system in a safe state? If yes find safe sequence.

Q4) Attempt any two of the following.

[2×4=8]

- Define P₂P architecture of distributed OS.
- Consider the following sets P, R and E

$$P = [P_1, P_2, P_3]$$

$$P = [R_1, R_2, R_3, R_4]$$

$$E = [P_1 \rightarrow R_1, P_2 \rightarrow R_3, R_1 \rightarrow P_2, R_2 \rightarrow P_2, R_2 \rightarrow P_1]$$

Also consider the following number of instances per resource type.

- One instance of resource type R₁ and R₂.
- Two instance of resource type R₂.
- Three instance of resource type R₄.

Construct the resource allocation graph for the above problem. Check whether the system is in deadlock.

- What is directory? What are it's type? Explain two of them.

Q5) Attempt any one of the following.

[1×3=3]

- What is total head movement for FcFs and SSTF scheduling for the disk queue with requests for I/o to blocks on cylinders. 176, 79, 34, 60, 92, 11, 41, 114 in that order. If the disk head is initially at cylinder 50.
- What is client server system. Also state it's advantages.



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T.Y.B.Sc.

COMPUTER SCIENCE

CS - 362 : Software Testing

(Revised 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.*
- 3) Assume suitable data if necessary.*

Q1) Attempt any Eight of the following :

[8×1=8]

- a) “Debugging starts only after successful conduct of testing. State true or false. Justify.
- b) Define regression testing.
- c) Define configuration testing?
- d) Define stress testing.
- e) Define error.
- f) List any 2 objectives of software testing.
- g) What is agile methodology?
- h) Define Test plan.
- i) Define verification.
- j) Define web application.

P.T.O.

Q2) Attempt any four of the following :

[4×2=8]

- a) Describe configuration testing with the help of example.
- b) Write difference between White and Black box testing.
- c) List the features of Agile Testing.
- d) What is integration testing? How it works?
- e) What is Agile Manifesto?

Q3) Attempt any two of the following :

[2×4=8]

- a) Explain V-model in detail.
- b) Write a short note on : Dimensions of quality.
- c) What is internationalization testing? Explain its phases diagrammatically.

Q4) Attempt any two of the following :

[2×4=8]

- a) What is alpha and beta testing? Differentiate between them.
- b) What is unit testing? How it works? Explain with example.
- c) Differentiate between system, performance, load testing.

Q5) Attempt any one of the following :

[1×3=3]

- a) What is Web application? How it works? Explain diagrammatically.
- b) What is test case? How to create it? Explain with example.



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T.Y.B.Sc.

COMPUTER SCIENCE

CS-363: Web Technologies-II

(Revised 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) What information is stored in \$_ENV?
- b) Write any two applications of XML.
- c) List any four parameters of the function setcookie().
- d) How single line and multiline comments are given in JavaScript?
- e) What is XMLHttpRequest object in AJAX?
- f) Write any two features of CodeIgniter.
- g) List any four mouse-related events in JavaScript.
- h) Write the syntax of the setRequestHeader() method.
- i) Is a root element required for an XML file? If so, how many root elements are required?
- j) What is the controller in CodeIgniter?

Q2) Attempt any FOUR of the following.

[4×2=8]

- a) Explain different techniques of maintaining state in PHP.
- b) What is jQuery-Element ID Selector? Explain with an example.
- c) List and explain any four properties of DOM.
- d) Write any two advantages and disadvantages of using AJAX.
- e) Explain any two ways of creating libraries in CodeIgniter.

P.T.O.

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

- a) What is the SimpleXML extension? Explain any three SimpleXML parsing functions.
- b) Explain the JavaScript alert box with a suitable example.
- c) With a suitable diagram, explain the architecture of the CodeIgniter framework.

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

- a) Design the HTML form to accept customer name, age and mobile number. Write a PHP script to store all the details in different session variable after clicking Submit button.
- b) Write a JavaScript program to accept username and password. Validate it with a username that should not be null and should not contain any numbers; the password should be at least eight characters long and should contain at least one alphabet. Give proper alert boxes to show error messages.
- c) Write an Ajax program to suggest names according to the character typed in the input field. Display a list of names using an array.

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

- a) What is a Window object in JavaScript? Explain any two Window object methods.
- b) Write a short note on MVC development pattern used in CodeIgniter.



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T.Y. B.Sc.

COMPUTER SCIENCE

CS-364 : Data Analytics

(Revised CBCS 2019 Pattern) (Semester - VI)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

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

Q1) Attempt any Eight of the following.

[8×1=8]

- a) What is Text analytics?
- b) What is Outlier?
- c) Define Deep Learning.
- d) What is sentiment analysis?
- e) Define community detection.
- f) What is the purpose of FP-growth algorithm?
- g) What is classification?
- h) List any two applications of Data Mining.
- i) Define accuracy.
- j) What is mechanistic analysis?

Q2) Attempt any FOUR of the following.

[4×2=8]

- a) Explain term n-gram with example.
- b) Explain any two Artificial Intelligence (AI) applications.
- c) What is POS tagging? Give example.
- d) What is clustering? State types of clustering.
- e) State the ways to improve efficiency of Apriori algorithm.

P.T.O.

Q3) Attempt any Two of the following.

[2×4=8]

- a) Explain life cycle of Data Analytics.
- b) Write a short note on Trend Analytics.
- c) Consider the following database and find out the frequent Itemsets using Apriori algorithm with minimum-support = 2

T _i D	Items-Purchased
T ₁	M ₁ , M ₂ , M ₅
T ₂	M ₂ , M ₄
T ₃	M ₂ , M ₃
T ₄	M ₁ , M ₂ , M ₄
T ₅	M ₁ , M ₃
T ₆	M ₂ , M ₃
T ₇	M ₁ , M ₃
T ₈	M ₁ , M ₂ , M ₃ , M ₅
T ₉	M ₁ , M ₂ , M ₃

Q4) Attempt any Two of the following:

[2×4=8]

- a) Explain any two types of data analytics.
- b) What is expert findings? How to find an expert?
- c) Describe Association rule metrics.

Q5) Attempt any One of the following.

[1×3=3]

- a) Write a short note on linear regression.
- b) Write a short note on Natural Language Processing (NLP).



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T.Y. B.Sc.

COMPUTER SCIENCE

**CS-365 : Object Oriented Programming Using Java - II
(Revised 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) Define List Interface.
- b) What is JDBC?
- c) How to start a Thread?
- d) List the types of Servlets.
- e) What is JSP?
- f) What is Spring Framework?
- g) Define Hashtable.
- h) What is use of for Name ()
- i) Write the purpose of join ()
- j) How to activate Session in Servlet?

Q2) Attempt any FOUR of the following.

[4×2=8]

- a) Differentiate between Iterator and List Iterator.
- b) What is Resultset Interface? List any two methods.
- c) List the parameters of doPost () in servlet.
- d) List any two implicit objects in JSP.
- e) State any two methods of inter-thread communication.

PTO.

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

- a) Write a Java Program to accept n characters from user, store them into Linkedlist, remove duplicate characters & display in sorted order.
- b) Write a Java Program to accept details of employee (eno, ename, salary), store it into database and display it.
- c) Write a JSP program to accept a number from user and convert it into words (eg 123 – o/p → One Two Three).

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

- a) Explain the Life Cycle of Servlet.
- b) Write a program using Multi Threading to blink a text on frame.
- c) Explain JDBC process with an example.

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

- a) Explain any three applications of spring.
- b) Differentiate between JSP & Servlet.



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T.Y.B.Sc.

COMPUTER SCIENCE

CS - 366 : Compiler Construction

(Revised 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 eight of the following (out of Ten).

[8×1=8]

- a) List code optimization technique.
- b) What is sentinel?
- c) Define the term Handle.
- d) Define Bootstrapping.
- e) LEX is a scanner provided by Linux operating system. State True or False. Justify.
- f) LALR is the best bottom - up parsing method. Justify.
- g) Define Basic block.
- h) Differentiate between synthesis & inherited attributes.
- i) What is a parser?
- j) List all phases of the compiler.

Q2) Attempt any four of the following (out of Five).

[4×2=8]

- a) Write a short note on s-attributed grammar.
- b) Find FIRST & FOLLOW of the following grammar.
 $S \rightarrow Ad|B$
 $A \rightarrow aAB|b$
 $B \rightarrow bBa|E$
- c) Write LEX definition for identifier.
- d) Construct the DAG for the following expression.
 $x + x * (y - z) + (y - z) * a$
- e) Differentiate between SLR and Canonical LR parser.

P.T.O.

Q3) Attempt any two of the following.

[2×4=8]

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

$S \rightarrow aA|SbB$

$A \rightarrow aA|bB$

$B \rightarrow b$

- b) Check whether the following grammar is SLR or not.

$S \rightarrow bAB|aA$

$A \rightarrow Ab|b$

$B \rightarrow aB|a$

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

Q4) Attempt any two of the following.

[2×4=8]

- a) Check whether the following grammar is LL(1) or not?

$A \rightarrow aAa|Ab|AA|b$

- b) Check whether the following grammar is LALR(1) or not.

$S \rightarrow S+T|T$

$T \rightarrow T * F | F$

$F \rightarrow id$

- c) Consider the following grammar.

$S \rightarrow S+S|S-S|S*S|S/S|id$

Construct the operator precedence relation table. Also find Leading & Trailing for the grammar.

Q5) Attempt any one of the following.

[1×3=3]

- a) Define SDD and SDT. State the task performed by SDT.

- b) Construct DAG for the block

$a = b + c$

$b = a - d$

$c = b + c$

$d = a - d$



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T.Y. B.Sc.

COMPUTER SCIENCE

CS-3610 : Software Testing and Tools

(2019 Credit Pattern) (Revised) (Semester - VI) (Paper - VII)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

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

Q1) Attempt any EIGHT of the following. (out of Ten)

[8×1=8]

- a) Define Test Automation.
- b) What is Test scenario?
- c) What is grey-box testing?
- d) What is test incident report?
- e) What is structural testing?
- f) Define Acceptance testing.
- g) Win Runner is an automated End-to-End testing tool.
State TRUE of FALSE.
- h) What is extra coding?
- i) What is a syntax defect?
- j) Enlist any two characteristics of Selenium tools.

Q2) Attempt any FOUR of the following. (out of Five)

[4×2=8]

- a) What is Code Coverage? Explain.
- b) Define test criteria and explain its types.
- c) List any two parameters based on that testing tools classify.
- d) Write any two types of errors.
- e) Define priority defect and its different levels.

P.T.O.

Q3) Attempt any TWO of the following. (out of Three)

[2×4=8]

- a) How to make use of automation tools?
- b) What are different types of loop testing? Explain in details.
- c) Explain reasons because of bug can be arise.

Q4) Attempt any TWO of the following (Out of Three)

[2×4=8]

- a) Create case study for verify the functionality of Myntra login page.
- b) Consider following code and apply decision coverage testing create use cases

Input (int x, int y)

```
{  
    Int z = ((x+y/200)*100;  
    If(z > 80)  
        Print("O+")  
    else if (60 < z < 80)  
        Print(A"+")  
    else  
        Print ("B")  
}
```

Test case 1 : x = 78 y = 87

Test case 2 : x = 80 y = 90

- c) Explain Nested loop and unstructured loop testing.

Q5) Attempt any ONE of the following. (out of Two)

[1×3=3]

- a) Write short note on Classification of Defects.
- b) Write about Sikuli and Apache JMeter testing tools.

