[5823]-501

T.Y. B.Sc.

COMPUTER SCIENCE

CS - 351 : Operating Systems - I

(2019 Pattern) (CBCS) (New) (Semester - V) (Paper - I)

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) Define bootstrapping.

b) Explain posix pthread.

c) What is role of dispatcher?

d) List the solutions to critical section problem.

e) What do you mean by page hit?

f) What is kernel?

g) What is ready queue?

h) What do you mean by I/O bound process?

i) What are the two types of semaphores?

j) What is virtual memory?

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

a) What is system call? Explain system call related to device manipulation.

b) Write short note on multilevel queue scheduling.

c) Explain producer, consumer problem.

d) Explain paging in brief.

e) Write difference between preemptive and non preemptive scheduling?.

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

a) What is thread? Explain any 2 multithreading models in brief with diagram.

b) Write short note on logical address and physical address binding with diagram.

c) Consider following set of processes with the length of CPU burst time and arrival time given in milliseconds. Calculate waiting time, turnaround time per each process. Also calculate the average waiting time and average turn around time using preemptive priority scheduling.

Process	Burst time	Arrival time	Priority
P_1	14	4	3
P_2	5	2	1
P_3	6	9	2
P_4	5	5	3
P_5	9	0	4

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

a) Define process. Explain process state diagram in brief.

b) Explain reader-writer problem in brief.

c) Consider a reference string 3,2,1,0,3,2,4,3,2,1,0,4 No. of frames = 3. Find out the number of page faults using i) LRU ii) OPT.

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

a) Explain layered operating system in brief with diagram.

b) Explain first fit, best fit, worst fit, next fit algorithm.

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[5823]-502

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

CS - 352 : COMPUTER NETWORKS - II

(2019 Pattern) (Credit) (Semester - 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 (out of Ten)**   **[8 × 1 = 8]**

a) SMTP is a push protocol. State true or false, Justify.

b) Write two types of connections used by FTP. Also write their port numbers.

c) What is sampling?

d) What is used of "BYE" message in SIP (Session Initiation Protocol)?

e) What is VPN (Virtual Private Network)?

f) What is multicasting?

g) Write advantages of packet filter firewall.

h) Define cryptography.

i) Encrypt the following plain text with given key using substitution cipher. Plain text: India is my county, Key = 4.

j) List methods for verifying the authenticity of the claimant.

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

a) Which are traditional ciphers? Write working of shift cipher.

b) List types of server. Write short note on any one type.

c) Write advantage or POP.

d) What is streaming live audio/video?

e) Write note on IPSec modes.

P.T.O.

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

    a)   Explain PGP certificates.

    b)   Using columnar transposition cipher convert the given plain text to cipher text.

        Plaintext : COMMUNICATIONMUSTBESECURE, Key = FASTER

    c)   What is Electronic Code Book (ECB), write it's advantages and disadvantages.

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

    a)   Write difference between flat name space and hierarchical name space.

    b)   Explain symmetric key cryptography.

    c)   Explain Streaming Stored Audio / Video first approach: using a web server, with advantages and disadvantages.

Q5) **Attempt any One of the following (out of Two)**   [1 × 3 = 3]

    a)   Explain Real-Time Interactive Audio / Video with diagram.

    b)   Explain SSL services in detail.

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P5151

[5823]-503
T.Y. B.Sc.
COMPUTER SCIENCE
CS - 353 : Web Technologies - I
(CBCS) (2019 Pattern) (Semester - V)

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

Instructions to the candidates:

   1)   *All questions are compulsory.*

   2)   *Assume suitable data, if necessary.*

   3)   *Neat diagrams must be drawn wherever necessary.*

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

   a)   What is hyperlink?

   b)   List the advantages of CSS

   c)   Which tag is used to set the text in superscript format?

   d)   State the purpose of pathinfo()

   e)   What is DSN?

   f)   List any two features of HTTP protocol.

   g)   State the use of foreach() function.

   h)   What is web server?

   i)   Give any two functions of random access of file data.

   j)   How to delete file in PHP?

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

   a)   Write any 2 features of PHP & HTML.

   b)   Write the output of the following PHP Script

```php
<?php
    $ age = array("Anna"=>"45", "Julie"=>"38", "Benne"=>"53");
    usort($age);
    print_r($age);
?>
```

P.T.O.

c) Write the output of the following script?

```php
<?php
    $a='PHP';
    $b='$a interpolation ';
    echo $b;
?>
```

d) Write the output of the following PHP Script.

```php
$str=' abc,pqr,lmn,xyz';
$p=explode(',',$str,3);
print_r($p);
```

e) What is the output of the following?

```php
<?php
    $p=array(1,2,3,4,5);
    $q=array(1,3,5,7,9);
    $s=array_diff($p,$q);
    print_r($s);
?>
```

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

a) Design HTML form that will accept user input as first name, middle name and last name, address, contact number. Provide buttons to submit the input as well as to refresh form.

b) Explain any two of the following functions with syntax

   i)   array _ intersect ()

   ii)   array _ slice ()

   iii) shuffle ()

c) Explain how to send email with PHP.

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

a) Explain different types of arguments passing to function with example.

b) Write a PHP script to read a file abc.txt where file contains character, B,C,T,G and space. Count occurrences of each character and write it to the abccount.txt file.

c) Explain advantages and disadvantages of IMAP4 protocol.

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

a) Write a PHP script accept and insert records in employee table.

b) What is associative array? Explain with example how is it different from indexed array?

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[5823]-504
T.Y. BSc.
COMPUTER SCIENCE
CS - 354 : Foundations of Data Science
(2019 Pattern) (CBCS) (Semester - V)

Time : 2 Hours]   *[Max. Marks : 35*
Instructions to the candidates:
  1) All questions are compulsory.
  2) Figures to the right indicate full marks.
  3) Neat diagrams must be drawn wherever necessary.

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

  a) Define volume characteristic of data in reference to data science.

  b) Give examples of semistructured data.

  c) Define Data Discretization.

  d) What is a quartile?

  e) List different types of attributes.

  f) Define Data object.

  g) What is Data Transformation?

  h) Write the tools used for geospatial data.

  i) State the methods of feature selection.

  j) List any two libraries used in Python for data analysis.

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

  a) Explain any two ways in which data is stored in files.

  b) Explain role of statistics in data science.

  c) Explain two methods of data cleaning for missing values.

  d) Explain any two tools in data scientist tool box.

  e) Write a short note on wordclouds.

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

a)   Explain data science life cycle with suitable diagram.

b)   Explain concept and use of data visualisation.

c)   Calculate the variance and standard deviation for the following data.

   X :   14   9   13   16   25   7   12

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

a)   Write a short note on hypothesis testing.

b)   Differentiate between structured data and unstructured data.

c)   Explain data visualization libraries in Python.

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

a)   i)   Define data science.   [1]

     ii)   Explain any one technique of data transformation.   [2]

b)   i)   Write any two applications of data science.   [1]

     ii)   Explain any one type of outliers in detail.   [2]

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[5823]-505

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

CS-355 : Object Oriented Programming Using Java - I

(2019 Pattern) (CBCS) (Semester - V) (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 exception

b) Define Interface

c) What is javadoc?

d) What is AWT?

e) What is use of static keyword?

f) What is command line argument?

g) List the types of constructor.

h) What is package?

i) How to open a file in read mode?

j) List any two listener.

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

a) List any two methods of string buffer class.

b) What is use of 'throw' keyword.

c) Differentiate between final and finally keyword.

d) What is method overloading?

e) What is anonymous inner class?

P.T.O.

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

a) Write a Java program using AWT to change background color of table to 'RED' by clicking on button.

b) Write a Java program to copy content from one file into another file, while copying digits are replaced by '*'.

c) Define an interface shape with abstract method area( ). Write a Java program to calculate area of rectangle.

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

a) Write a Java program to accept a number from user. If it is zero then throw user defined exception "Number is zero". Otherwise calculate its factorial.

b) Explain uses of super-keyword with suitable example.

c) Differentiate between AWT and swing.

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

a) Write a Java program to count number of vowels from given string.

b) Explain the features of Java.

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[5823]-506
T.Y. B.Sc.
COMPUTER SCIENCE
CS - 356 : Theoretical Computer Science
(2019 Pattern) (CBCS) (Semester - 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 (Out of TEN) : **[8 × 1 = 8]**

    a)   If $A = \{ \in \}$ Find the value of |A|.

    b)   List all the proper suffixes of the string "0123".

    c)   Define Useless symbol.

    d)   Give formal definition of Turning Machine.

    e)   Define left linear grammar.

    f)   State True or False. DFA do not have multiple final states.

    g)   Name the type of language accepted by Pushdown Automata.

    h)   Write the tuples of LBA.

    i)   State true or false. Pumping lemma is used to show that language is not context tree.

    j)   Write smallest possible string accepted by the following regular expression.

          a(a+b)*ab

Q2) Attempt any FOUR of the following (Out of FIVE) : **[4 × 2 = 8]**
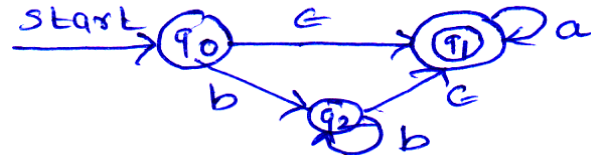
    a)   Explain types of grammar.

    b)   Construct FA for regular expression.

          (1+0)*0

    c)   Differentiate between CNF and GNF (any two points).

P.T.O.

d) Write down the ∈-closure of each state from the following FA.

e) Define types of Turing Machine.

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

a) Construct a DFA for a language

L1∩L2

L1={All strings starting with 'a'}

L2={All strings not having 'ab' as substring}

b) Construct the following CFG intNormal Form (CNF)

S–>aSa | bSb

S–>a |b| aa | bb

c) Design TM for language,

L={WCW^R|W is in (0+1)*}

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

a) Construct a PDA for the language

L={a ^{n}b^{n}c^n |n>=0}.

b) Construct a Moore machine for the language L over Σ = {0,1} which outputs '*' if the string contains '11' in it and outputs '#' otherwise.

c) Compare DFA and NFA.

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

a) Construct a Mealy machine over alphabet {0, 1} which toggles its input.

b) Show that L={0^{n}1^n | n>=1} is not regular.

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[5823]-507

T.Y. B.Sc.

COMPUTER SCIENCE

CS-3510 : Python Programming

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

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

Instructions to the candidates:

   1)   *All questions are compulsory.*

   2)   *Figures to the right indicate full marks.*

   3)   *Total number of questions are five.*

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

   a)   What is dry run in Python?

   b)   Give the purpose of selection statements in Python.

   c)   List the types of type conversion in Python.

   d)   What is the use of pass statement?

   e)   Explain the function enumerate( ).

   f)   Explain the extend method of list.

   g)   What are required arguments in function?

   h)   Explain any 2 functions in time module.

   i)   What are the types of file in Python?

   j)   Write the use of seek & tell function.

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

   a)   How to handle exception in Python?

   b)   Explain any 2 metacharacters used in regular expression.

   c)   Explain any 2 built-in list functions.

   d)   Explain backward indexing in strings.

   e)   Define identifiers.

P.T.O.

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

a) Write a Python program to check if a given number is Armstrong.

b) Write a Python program to display power of 2 using anonymous function.

c) Write a Python program to print even length words in a string.

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

a) Write a Python program to check for Zero Division Error Exception.

b) Write a Python program to find gcd of a number using recursion.

c) Write a Python program to check if a given key already exists in a dictionary.

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

a) Trace the output of the following :

sum = 0

for i in range (12, 2, –2) :

   sum + = i

print sum

b) Trace the output of the following :

count = 1

def doThis ( ) :

   global count

   for i in (1, 2, 3) :

   count + = 1

doThis( )

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[5823]-508
T.Y. B.Sc.
COMPUTER SCIENCE
CS - 3511 : Blockchain Technology
(2019 Pattern) (CBCS) (Semester - V)

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

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

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

    a) Who published a white paper proposing Ethereum in 2013?

    b) In which type of network each and every node is itself client and server?

    c) Give the command to find the current difficulty level.

    d) What happens if someone loses the private key of his wallet?

    e) What is EVM?

    f) Which institute standardized AES algorithm?

    g) What is Nonce?

    h) What is Non-repudiation?

    i) What is ICO?

    j) Who owns the Blockchain?

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

    a) What is Gas & Gas limit?

    b) What is Public & Private blockchain?

    c) List & Explain value data types in solidity.

    d) What are the benefits of immutable ledger in blockchain?

    e) What is stream cipher and block cipher?

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

    a)   Write a short note on crypto wallet.

    b)   What are the tasks of miners?

    c)   Which are the components of blockchain?

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

    a)   Write a short note on DES.

    b)   What are the advantages of smart contract? Explain any four.

    c)   What are the layers of blockchain?

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

    a)   Define transaction and explain its structure.

    d)   What are the uses of SHA algorithm?

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[5823]-601
T.Y.B.Sc. (C.S.)
CS-361 : OPERATING SYSTEM-II
(2019 Credit Pattern) (Semester - VI)

Time : 2 Hours]   *[Max. Marks : 35*
Instructions to the candidates:
   1)   All question are compulsory.
   2)   Figures to the right indicate full marks.

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

   a)   List any four attributes of files.

   b)   What is starvation?

   c)   List the features of ios. mobile OS?

   d)   What is Access Transparency?

   e)   Define mobile OS?

   f)   Define rational latency?

   g)   Define claim edge?

   h)   Wha is cloud computing?

   i)   Define P2P architecture?

   j)   Define native level programming?

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

   a)   Define cluster computing. State the advantages and disadvantages of cluster operating system.

   b)   Differentiate mobile OS and desktop OS.

   c)   Explain disk formatting in disk management.

   d)   What is distributed operating system? List the purpose of distributed operating system"?

   e)   List down the advantages and disadvantages of windows mobile OS?

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

   a)   List down the architectural styles in distributed operating system & explain any one in detail.

   b)   What is deadlock? Explain different ways of deadlock recovery.

   c)   List down different file allocation methods explain any one in detail.

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

   a)   Differntiate between cluster, grid & cloud computing.

   b)   Consider the following snap shot of a system with 5 processes P_0, P_1,P_2,P_3,P_4 and resources A, B,C.

Process	Allocation			Max		
	A	B	C	A	B	C
P_0	2	3	2	9	7	5
P_1	4	0	0	5	2	2
P_2	5	0	4	11	0	4
P_3	4	3	3	4	4	4
P_4	2	2	4	6	5	5

Available		
A	B	C
3	3	2

   Answer the following using Banker's algorithm

   i)   What are the contents of matrix need?

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

   c)   Write a note on tree structured directories.

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

   a)   Suppose the request sequence is 176, 79, 34, 60, 92, 11, 41, 114, and initial head position is 50. Calculate total head movements using SSTF disk scheduling algorithm.

   b)   Write a short note on kernel architecture of mobile OS.

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[5823]-602

T.Y.B.Sc. (Computer Science)
CS - 362 : SOFTWARE TESTING
(New CBCS 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.*
3) *Assume suitable data if necessary.*

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

a) Define software testing.

b) What is mean by validation?

c) What is stub?

d) Write goal of white box testing.

e) Define regression testing.

f) List any 2 agile principles.

g) List dimensions of quality.

h) Define web application, testing.

i) List levels of testing.

j) What is test plan?

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

a) Write 2 differences between bugs, Faults & Failures.

b) Write short note on black box testing.

c) Explain equivalance partitioning.

d) Explain performance testing.

e) Write features of agile testing.

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

    a) With the help of diagram explain V-model.

    b) What is test case? Explain with example.

    c) Explain Navigation testing in detail.

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

    a) What is performance testing? Write steps in performance testing.

    b) Differentiate between alpha & beta testing.

    c) What is integration testing? Explain top-down integration.

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

    a) Write a short note on Automated tests.

    b) What is internationalization testing? Explain with types.

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[5823]-603
T.Y.B.Sc.
COMPUTER SCIENCE
CS-363 : Web Technologies-II
(2019 CBCS 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.   **[8×1=8]**

  a)   Which function is used to remove all global session variables?

  b)   Which information is stored in $_FILES?

  c)   What are the characteristics of XML?

  d)   XML tags are case sensitive. Justify true of false.

  e)   Write the primitive datatypes in JavaScript.

  f)   Define DOM.

  g)   What is the use of XML Http Request object?

  h)   What is Ajax?

  i)   What is codeIgniter?

  j)   Which function is used for page redirection in codeIgniter?

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

  a)   What is the significance of POST method?

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

  c)   Give relationship between XML and PHP.

  d)   Explain Synchronous request to the server in Ajax.

  e)   What is page redirecting? Write down syntax of the function used for page redirection.

                                                                        P.T.O.

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

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

   b)   What is the scope of variable in JavaScript?

   c)   What are the advantages and disadvantages of AJAX?

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

   a)   Write a JavaScript code to accept username and password validate it with username should not be null and password should be at least 6 digit long.

   b)   Write a php program to strore current date-time in COOKIE and display last visited on". date-time on the webpage upon reopening of the same page.

   c)   Create student table as follows student (sno. sname, per). Write Ajax program to select the student name and print the selected student's details.

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

   a)   Explain use of setcookie () function with its arguments.

   b)   Explain MVC framework.

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[5823] - 604
T.Y.B.Sc.
COMPUTER SCIENCE
CS-364 : Data Analytics
(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 necessary.*
  3) *Neat diagrams must be drawn wherever necessary.*

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

  a)   Define Data Analytics.

  b)   Define Tokenization.

  c)   Define Machine Learning.

  d)   What is clustering?

  e)   What is Frequent Itemset?

  f)   What is data characterization?

  g)   What is outlier?

  h)   What is Bag of words?

  i)   What is Text Analytics?

  j)   Define Trend Analytics?

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

  a)   What is confusion matrix?

  b)   Define support and confidence in association rule mining.

  c)   Explain any two Machine Learning (ML) Applications.

  d)   Write a short note on stop words.

  e)   Define supervise Learning and unsupervise Learning.

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

    a)   What is prediction? Explain any one regression model in detail.

    b)   Differentiate between Stemming and Lemmatization.

    c)   Describe types of Data Analytics.

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

    a)   Consider the following transactional database and find out Frequent Itemsets using Apriori algorithm with minimum support count=2

TID	List _ of _ Item_IDs
T_1	I_1, I_2, I_5
T_2	I_2, I_4
T_3	I_2, I_3
T_4	I_1, I_2, I_4
T_5	I_1, I_3
T_6	I_2, I_3
T_7	I_1, I_3
T_8	I_1, I_2, I_3, I_5
T_9	I_1, I_2, I_3

    b)   Which are the challenges in social media analytics?

    c)   Explain Reinforcement learning.

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

    a)   Write a short note on support vector machine.

    b)   Explain life cycle of Data Analytics.

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[5823] - 605

T.Y. B.Sc.

COMPUTER SCIENCE

CS - 365 : Object Oriented Programming Using Java - II

(2019 Pattern) (Semester - VI) (CBCS) (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 map interface.

   b)   What is use of wait ( )?

   c)   What is use of get connection ( )?

   d)   What is scriplet?

   e)   What is purpose of JSP directives?

   f)   Define spring framework.

   g)   Give the name of JDBC API.

   h)   Define Iterator Interface.

   i)   What is ArrayList?

   j)   Define cookie.

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

   a)   How to create thread?

   b)   List JDBC driver.

   c)   Differentiate between set & list interface.

   d)   Write any two methods of HTTP_session.

   e)   What are the applications of spring?

P.T.O.

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

    a)   Write a JDBC program to accept details of Book (B_id, B_name, B_cost) from user & display it.

    b)   Write a java program in multithreading to display all the alphabets between 'A' to 'Z'. Each alphabet should display after two seconds.

    c)   Write a JSP script to check whether given number is perfect or not & display the result in yellow colour.

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

    a)   Write a servlet program to count the number of times a servlet has been invoked [use cookies].

    b)   Explain life cycle of thread.

    c)   Differentiate between statement & prepared statement interface.

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

    a)   Explain JDBC architecture.

    b)   Write a java program to accept 'n' numbers from user, store them into LinkedList collection. Display only odd numbers.

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[5823]-606

T.Y.B.Sc. (Computer Science)
CS-366: COMPILER CONSTRUCTION
(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.

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

  a)   What is the use of lookahead pointer.

  b)   State true or false, "Target code is generated in the analysis phase of the compiler".

  c)   What is the output of LEX program?

  d)   Terminals can have synthesized attributes, but not inherited attributes. State true or false.

  e)   Define operand descriptors.

  f)   State True or False. The yywrap() lex library function by default always return 1.

  g)   List the two aspects of compilation.

  h)   List the different types of conflicts that occur in LR parser.

  i)   What is handle pruning?

  j)   List the techniques used in code optimization.

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

   a) Define Annotated Parse tree. Give an example.

   b) List and explain in short any two LEX library function.

   c) Calculate FIRST and follow for the following.

   S→ a |^| (R)

   T→ S, T|S

   R→ T

   d) Give 2 differences between synthesized and inherited attributes.

   e) Compute LEADING and TRAILING symbols of the following grammar.

   E → E+T | T

   T→ T∗F | F

   F→ (E) | id

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

   a) Write a RDP parser for the following grammar.

   S → aA | SbB

   A → aA | bB

   B → b

   b) Give difference between single pass compiler & multipass compiler.

   c) Check whether the given grammar is LL(1) or not.

   S → A

   A → aA | Ad

   B → bBc | f

   C → g

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

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

      $N \rightarrow V = E \mid E$

      $E \rightarrow V$

      $V \rightarrow a \mid* E$

   b)   Consider the expression $a = b*(-c) + b*(-c)$. Give Triple representation and quadruple representation.

   c)   Check whether given grammar is operator precedence or not.

      $S \rightarrow < L > \mid a$

      $L \rightarrow L,S \mid S$

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

   a)   Write a LEX program to find sum of first n numbers.

   b)   Construct DAG for the following expressions

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

      - $i = i + 5$

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[5823] - 607

T.Y.B.Sc. (Computer Science)
CS-3610 : SOFTWARE TESTING AND TOOLS
(2019 Credit Pattern) (Semester -VI) (Paper-VII)

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

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

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

    a)   Define test case.

    b)   Define static testing.

    c)   What is test incident report?

    d)   What is test plan?

    e)   What is design defect?

    f)   McCabe's Cyclomatic complexity defines an lower bound for the number of linearly path through a program. State true of false.

    g)   Enlist the two open source automation testing tools.

    h)   What is defect?

    i)   What is entry criteria?

    j)   Write two limitation of manual testing.

Q2) Attempt any FOUR of the following. (out of five)   **[4×2=8]**

    a)   Define errors with its different types.

    b)   Enlist the different types of loop testing.

    c)   Write objective of writing test cases.

    d)   What is testing defect? List its different types.

    e)   Write the name of test automation frameworks.

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

    a)   Define bug and explain bug tracking tools.

    b)   Explain branch coverage testing with its advantages and disadvantages.

    c)   Explain IEEE Std. test summary report with its various parameters.

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

    a)   Write a test case for facebook login functionality of the web page application.

    b)   Consider following code.

        Input (int x, int y)

```
{
    int z = ((x+y)/200) * 100;
    If (z>50)
    Printf("PASS");
    Else
    Printf("FAIL");
}
```

        Test case 1 : x=20, y = 30, Test case 2: x=100, y=75

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

    c)   Write benefits of automated testing.

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

    a)   Explain defect life cycle.

    b)   Write selenium installation steps.

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