

Total No. of Questions : 7]

SEAT No. :

PE-5603

[Total No. of Pages : 3

[6522]-101

M.Sc. (Computer Application)

CA-CCTP-1: WEB TECHNOLOGY

(2019 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *Q. 1 is compulsory.*
- 2) *Solve any five questions from Q. 2 to Q. 7.*
- 3) *Questions 2 to 7 carry equal marks.*
- 4) *Draw neat labelled diagrams wherever necessary.*

Q1) Attempt any five of the following :

[10]

- a) Explain the difference between static and dynamic websites.
- b) What is Bootstrap? Describe its role in web development?
- c) Write a java script program to concatenate two strings and display the result.
- d) Explain any two methods to traverse an array in PHP.
- e) Find the output (no syntax errors) :

```
<? php
```

```
$ author = "Web technology";
```

```
$ author = str - replace ("e", "a", $ author);
```

```
echo "The updated string is $ author. ";
```

```
?>
```

- f) What is the role of XML schema in web applications?

P.T.O.

Q2) Attempt the following :

- a) i) Describe the use of HTML form controls with examples. [4]
- ii) Explain the concept of event handling in Javascript. [3]
- b) Write a menu - driven program using PHP to perform the following stack operations: [5]
 - i) Push an element onto the stack.
 - ii) Pop an element from the stack.

Q3) Attempt the following :

- a) i) Explain the difference between client -side scripting and server-side scripting with examples. [4]
- ii) Differentiate between ordered and unordered lists in HTML. [3]
- b) Write a PHP script to display an associative array with student names as keys and marks as value. [5]

Q4) Attempt the following :

- a) i) Write a javascript program to check whether a number is even or odd. [4]
- ii) Write a PHP script to display the multiplication table of a given number. [3]
- b) Explain the concept of responsive web design using Bootstrap. [5]

Q5) Attempt the following :

- a) i) Explain the different types of operators in PHP with examples. **[4]**
ii) How is XML different from HTML? Explain with benefits of XML. **[3]**
- b) Discuss the DOM architecture in Javascript and its significance in web development. **[5]**

Q6) Attempt the following :

- a) i) Explain CSS3 animations and transitions with suitable examples. **[4]**
ii) What are anonymous functions in PHP? Provide an example. **[3]**
- b) Write a short note on PHP frameworks and their importance in web development. **[5]**

Q7) Write short notes on any two of the following : **[12]**

- a) WWW and its protocols (HTTP, FTP)
- b) Image mapping in HTML
- c) Different types of arrays in Javascript.



Total No. of Questions : 7]

SEAT No. :

PE5604

[Total No. of Pages : 3

[6522]-102

M.Sc. - I (Computer Application)

CA - CCTP - 2 : ADVANCE DATABASE

(2019 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Q.1 is compulsory.*
- 2) *Solve any five questions from Q.2 to Q7.*
- 3) *Q.2 to Q.7 carry equal marks.*
- 4) *Draw neat labeled diagram where needed.*

Q1) Solve any five of the following :

[10]

- a) What do you mean by Granularity?
- b) Define blind writes.
- c) Define primary key, candidate key.
- d) Write steps in Query processing.
- e) What is Distributed Database?
- f) Define functional dependency. What are trivial functional dependency?

Q2) Attempt the following :

- a) What is cursor? Describe explicit cursor with example. **[7]**
- b) Explain properties of transaction and it's significance. **[5]**

P.T.O.

Q3) Attempt the following :

- a) i) State the problem faced in storing the unstructured data. [4]
- ii) In distributed concurrency control, what are the options for lock manager to lock and unlock data item. [3]
- b) Explain transaction states with diagram. [5]

Q4) Attempt the following :

- a) i) Explain the recoverable schedule. [4]
- ii) Explain mandatory access control mechanism. [3]
- b) Differentiate between 4NF and 5NF. [5]

Q5) Attempt the following :

- a) What are client side and server-side scripting in web? Explain with diagram and benefits and drawback. [7]
- b) Suppose relation schema $R = \{A, B, C, G, H, I\}$ and set of FDS ie.1 [5]
 $F = \{A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H\}$ Find F^+ (i.e. closure of set of functional dependencies)

Q6) Attempt the following :

- a) i) What are views? What are the advantages of creating views. [4]
- ii) Define : [3]
 - 1) Recoverable schedule
 - 2) Cascade less schedule
 - 3) Strict schedule

- b) Consider the transaction. Give two Non-Serial schedules that are serializable. [5]

T_1	T_2
Read (C)	Read (A)
$C = C * 100$	Read (C)
Write (C)	$A = A + C$
Read (B)	Write (A)
Read (Z)	
$B = B + C$	
Write (B)	

Q7) Attempt the following. (Any two) [12]

- Explain challenges in database security.
- Explain lock based protocol with example.
- Write short notes on shadow paging.

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Total No. of Questions : 7]

SEAT No. :

PE5605

[Total No. of Pages : 2

[6522]-103

First Year M.Sc. (Computer Application)
CA-CCTP-3 : DESIGN AND ANALYSIS OF ALGORITHM
(2019 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Q. 1 is compulsory.
- 2) Solve any five questions from Q.2 to Q.7.
- 3) Questions 2 to 7 carry equal marks.
- 4) Use of scientific calculator is allowed.

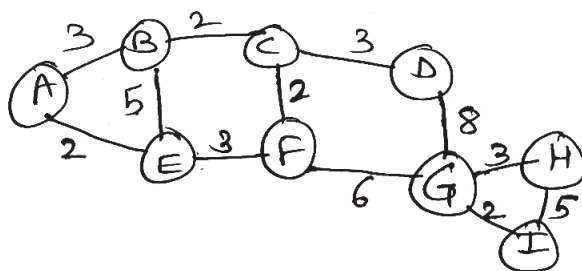
Q1) Solve any five of the following :

[10]

- a) Define Np-hard and Np-complete.
- b) What is 8 queen's problem?
- c) Define vectors and matrices.
- d) What are different classification of edges?
- e) State time and space complexity.
- f) What is Hamiltonian cycle?

Q2) Attempt all of the following :

- a) Apply binary search for following array and search element 15. Also find its time complexity and recurrence relation. 10, 9, 6, 3, 12, 15, 2, 13, 14, 20. [7]
- b) Find single source shortest path using Dijkstra's algorithm for graph given below. [5]



Q3) Attempt all of the following :

- a) Differentiate between DFS and BFS. Find BFS traversal for graph. [7]



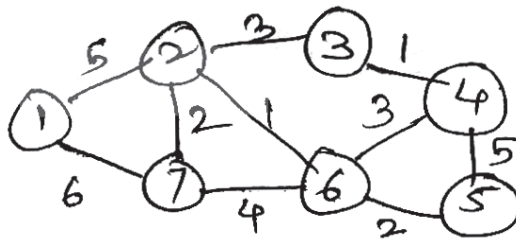
P.T.O.

- b) Find minimum cost of traversal using TSP in BB. [5]

$$\begin{bmatrix} \infty & 21 & 42 & 31 \\ 11 & \infty & 17 & 7 \\ 25 & 5 & \infty & 27 \\ 10 & 9 & 15 & \infty \end{bmatrix}$$

Q4) Attempt all of the following :

- a) Apply Heap sort and merge sort both on following array. [7]
18, 15, 16, 13, 12, 20, 14, 4, 9, 16, 10
- b) What is MST? Find MST for following Graph. [5]



Q5) Attempt all of the following :

- a) Explain term LCS find length of LCS. [7]
<X> = "Sitting", <Y> = "Kitten".
- b) Find maximum profit using job sequencing by arranging profits in non-decreasing order. [5]
 $p = \{3, 5, 22, 18, 1, 6, 30\}$, $d = \{1, 3, 4, 3, 2, 1, 2\}$.

Q6) Attempt all of the following :

- a) Find solution for knapsack using sum of subset with FTS and VTS both. [7]
 $p = \{20, 15, 10, 9, 3\}$, $w = \{4, 6, 4, 2, 6\}$, $m = 10$.
- b) Find solution of knapsack using VTS BB. [5]
 $p = \{10, 15, 6, 8, 4\}$, $w = \{4, 6, 3, 4, 2\}$, $m = 12$

Q7) Attempt any two of the following : [12]

- a) Write note on asymptotic notation.
- b) Perform strasser's matrix multiplication.

$$A = \begin{bmatrix} 32 & 12 \\ 14 & 10 \end{bmatrix} B = \begin{bmatrix} 10 & 9 \\ 3 & 15 \end{bmatrix}$$

- c) Explain significance of cooks theorem.



Total No. of Questions : 5]

SEAT No. :

PE5606

[Total No. of Pages : 3

[6522]-104

First Year M.Sc. (Computer Application)

**CA-CBOTP-1A : OBJECT ORIENTED PROGRAMMING WITH C++
(2019 Pattern) (Semester - I)**

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Questions 1 is compulsory.
- 2) Solve any three questions from Q.2 to Q.5.
- 3) Questions 2 to Q.5 carry equal marks.

Q1) Solve any five of the following: **[5]**

- a) What do you mean by late binding?
- b) What is object? How objects are defined in C++.
- c) State any two rules of using default arguments.
- d) What is use of catch (...) exception handler?
- e) What is an abstract class?
- f) Insertion & extraction operator have to be overloaded as member function state true or false & justify.

Q2) Attempt the following: **[10]**

- a)
 - i) Differentiate between put & write() function. **[2]**
 - ii) Explain function overloading with suitable example. **[4]**
- b) Write a program to declare a class rectangle having data members length & breadth. Accept this data & display area & perimeter of rectangle. **[4]**

P.T.O.

Q3) Attempt the following:

- a) i) Give two methods which are used to define member function. [2]
ii) Explain this pointer with suitable example. [4]
b) Trace the output & justify (Assume these is no error) [4]

i) # include <iostream. h>

Class Base 1

```
{    Public : Base 1()  
        {    cout << "Base 1's constructor called" <<endl;}  
};
```

Class Base 2

```
{    public :  
        Base 2 ( )  
        {    cout <<"Base 2's constructor called" <<endl;}  
};
```

Class Derived : public Base 1 , virtual public Base 2

```
{    public :  
        Derived ( )  
        {    cout <<"Derived's constructor called" <<endl;  
        }  
};
```

main ()

```
{    Derived d;  
}
```

ii) # include <iostream. h>

int x = 50 ;

main ()

```
{    int x = 10;  
        cout << "value of x is" << :: x;  
        cout << "value of x is" << x;  
}
```

Q4) Attempt the following:

[10]

- a) i) List the operator which cannot be overloaded and which operator must be overloaded as member function only (not friend). **[2]**
- ii) Explain various classes available for file stream operations. **[4]**
- b) Write a C++ exception handling program for a positive number input. If no. is negative then exception is thrown. **[4]**

Q5) Attempt any two of the following:

[10]

- a) What is pure virtual function? What are the implications of making a function pure virtual function. **[5]**
- b) Create a C++ class for student object with the following attributes - roll-no, name no. of subjects, marks of subjects. The no. of subject varies for each student. Write a parameterized constructor & create the array for marks dynamically. **[5]**
- c) Explain call by Reference & return by reference with suitable example. **[5]**



Total No. of Questions : 5]

SEAT No. :

PE5607

[Total No. of Pages : 2

[6522]-105

F.Y.M.Sc. (Computer Application)

CA-CBOTP-1B : ASP.NET

(2019 Pattern) (Semester-I)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) *Question No.1 is compulsory.*
- 2) *Solve any three questions from Q.2 to Q.5.*
- 3) *Questions 2 to 5 carry equal marks.*

Q1) Solve any five of the following: **[5]**

- a) What is caching?
- b) Define the types of configuration files.
- c) What is built in object in ASP.NET?
- d) What is CTS?
- e) How CSS is applied to ASP.NET page?
- f) Define data set.

Q2) Attempt the following: **[10]**

- a)
 - i) What is data binding? **[2]**
 - ii) What is event? Explain various important .NET event. **[4]**
- b) Explain the interface with example. **[4]**

Q3) Attempt the following: **[10]**

- a)
 - i) List any two validation control. **[2]**
 - ii) Write C# program to check entered number is armstrong or not. **[4]**
- b) Write difference between session & cookies. **[4]**

P.T.O.

Q4) Attempt the following: [10]

- a) i) How to signout from authentication. [2]
- ii) Explain repeater control using example. [4]
- b) Draw and explain .NET framework architecture. [4]

Q5) Attempt any two of the following: [10]

- a) What is keywords? Explain Keywords-Namespace, Class, Dim, Module. [5]
- b) Explain data adapter or data reader in detail with its syntax and example. [5]
- c) What is ADO. NET? Explain connection object and command object. [5]



Total No. of Questions : 5]

SEAT No. :

PE5608

[Total No. of Pages : 2

[6522]-106

F.Y. M.Sc. (Computer Application)

CA-CBOTP-1C : SOFTWARE TESTING (Manual)

(2019 Pattern) (Semester - I)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) *Question 1 is compulsory.*
- 2) *Solve any three questions from Q.2 to Q.5.*
- 3) *Questions 2 to 5 carry equal marks.*

Q1) Solve any five of the following : **[5]**

- a) What is Software Testing?
- b) Which things are included in defect report?
- c) What do you mean by smoke testing?
- d) Who should prepare test plan in STLC?
- e) Define page object model.
- f) What is effort estimation in test plan?

Q2) Attempt the following :

- a)
 - i) Explain different types of testing matrices. **[2]**
 - ii) Give difference between black box testing and white box testing. **[4]**
- b) Draw and explain test case template. **[4]**

Q3) Attempt the following :

- a)
 - i) What are advantages of compatibility testing? Describe it? **[2]**
 - ii) What is integration testing? Explain approaches towards integration testing? **[4]**
- b) What are the stages of defect management cycle? **[4]**

P.T.O.

Q4) Attempt the following :

- a) i) What is installation testing? [2]
- ii) Explain functional testing with its types. [4]
- b) Explain in brief UAT (User Acceptance Testing) plan and its execution. [4]

Q5) Attempt any two of the following : [10]

- a) Explain stages of STLC (Software Testing Life Cycle).
- b) Write note on roles and responsibilities of QA Team.
- c) Write short note on below testing methods.
 - i) Ad-hoc Testing
 - ii) Sanity Testing



Total No. of Questions : 8]

SEAT No. :

PE-5502

[Total No. of Pages : 3

[6522]-201

First Year M.Sc.

Computer Applications-I

CA-CCTP-4 : Data Mining & Data Warehousing

(2019 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Question No.1 is compulsory.
- 2) Solve any five questions from Q.No.2 to Q.No.7
- 3) Q.No.2 to Q.No.7 carry equal marks.

Q1) Solve any five of the following:

[5×2=10]

- a) What do you mean by transactional data?
- b) State the need of data warehousing.
- c) What is the purpose of association rule?
- d) Discuss the terms:
 - i) True positive
 - ii) False positive
- e) Give any two applications of Clustering.
- f) What is leave-one-out in k-fold cross validation?

Q2) Answer the following:

- a) Explain the Support Vector Machine (SVM) approach for classification. **[7]**
- b) Define data mining. Give the data mining primitives. **[5]**

Q3) Answer the following:

- a) Define FP tree. Explain how we can identify frequent itemsets in training data without candidate generation. **[7]**

P.T.O.

- b) Following table contains types from training data set of a car showroom. Attributes “Purchases” is a class label attribute with two distinct values “yes and “no” using Naive Bayesian classification find out what will be the class label value for tuple (Low, Senior, No, Excellent) [5]

TID	Income	Age	Married	Credit-rating	Purchases
1	High	Middle	Yes	Excellent	Yes
2	Medium	Middle	Yes	Fair	Yes
3	Low	Middle	Yes	Excellent	No
4	High	Senior	Yes	Excellent	Yes
5	High	Middle	No	Excellent	No
6	Medium	Young	No	Fair	No
7	Medium	Senior	Yes	Excellent	Yes
8	High	Senior	No	Fair	No
9	Low	Young	Yes	Excellent	Yes
10	High	Young	No	Fair	No

Q4) Answer the following:

- a) What is Weka? Discuss the panels in explorer interface. [7]
b) What do you understand by agglomerative and divisive hierarchical clustering? Explain with example. [5]

Q5) Answer the following:

- a) Consider the following transaction table and generate the candidate itemsets and frequent itemsets, where the minimum support count is 2. Apply apriori algorithm to find candidate itemset and frequent itemset. [7]

TID	List of Items
T100	I ₁ ,I ₂ ,I ₅
T200	I ₂ ,I ₄
T300	I ₂ ,I ₃
T400	I ₁ ,I ₂ ,I ₄
T500	I ₁ ,I ₃
T600	I ₂ ,I ₃
T700	I ₁ ,I ₃
T800	I ₁ ,I ₂ ,I ₃ ,I ₅
T900	I ₁ ,I ₂ ,I ₃

- b) Explain any two accuracy measures. [5]

Q6) Answer the following:

a) What is OLAP (Online Analytical Processing)? Compare OLAP with OLTP. [7]

b) Suppose that the data mining task is to cluster the following eight points (with (x;y) representing location) into three clusters.

$A_1(2;10)$; $A_2(2;5)$; $A_3(8;4)$; $B_1(5;8)$; $B_2(7;5)$; $B_3(6;4)$; $C_1(1;2)$; $C_2(4;9)$;

The distance function is Euclidean distance. Suppose initially we assign A_1 , B_1 , and C_1 as the centre of each cluster, respectively. Use the K-mean algorithm to show [5]

i) The three cluster centres after the first round of execution and

ii) The final three clusters

Q7) Write short notes on any two:

[2×6=12]

a) Star schema

b) Expectation Maximization Algorithm

c) Decision tree induction with example



Total No. of Questions : 7]

SEAT No. :

PE-5503

[Total No. of Pages : 2

[6522]-202

First Year M.Sc.

COMPUTER APPLICATION

CA-CCTP-5 : Operating Systems

(2019 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Question No.1 is compulsory.
- 2) Attempt any five question from Q.No.2 to Q.No.7.
- 3) Figures to the right indicate full marks.

Q1) Answer any Five of the following: [10]

- a) Define hard link and soft link.
- b) List the different modes of Vi editor.
- c) What do you mean by background process? Give example.
- d) Which methods are used to change file permissions?
- e) Define shell.
- f) What is Internal and External commands?

Q2) Answer the following:

- a) i) What is file in Unix? What are different types of file? [4]
ii) Explain different wild card characters. [3]
- b) Write a shell script to print all arguments with script name and total number of arguments passed. [5]

Q3) Answer the following:

- a) i) What is system call? Explain its types. [4]
ii) Explain the usage of following commands. [3]
1) at 2) kill
3) nice
- b) Explain the architecture of Unix operating system. [5]

P.T.O.

Q4) Answer the following:

- a) i) Explain man command with its option (any 4 options) [4]
- ii) Write any three features of Unix. [3]
- b) Write a shell script to check whether file is readable, writable or both, executable. [5]

Q5) Answer the following:

- a) i) Explain ls command with its options (atleast 4 options) [4]
- ii) Write a difference between command mode and input mode. [3]
- b) Explain the purpose of following commands. [5]
 - 1) cat 2) od 3) cp
 - 4) wc 5) pwd

Q6) Answer the following:

- a) i) Explain grep and egrep commands with example. [4]
- ii) Explain any three states of process. [3]
- b) Write a shell script to find factorial of given number. [5]

Q7) Attempt any Two of the following:

- a) Briefly describe : [6]
 - i) HOME variable
 - ii) PATH variable
- b) Explain different logical operators supported by shell programming with example. [6]
- c) Explain ex mode commands. [6]



Total No. of Questions : 7]

SEAT No. :

PE-5504

[Total No. of Pages : 2

[6522]-203

First Year M.Sc.

COMPUTER APPLICATION

CA-CCTP-6 : Computer Network

(2019 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Q.No.1 is compulsory.*
- 2) *Solve any Five questions from Q.No.2 to Q.No.7.*
- 3) *Question No.2 to 7 carry equal marks.*

Q1) Attempt any five of the following:

[5×2=10]

- a) Define checksum.
- b) What is Manchester encoding.
- c) List the differences between IPv4 & IPv6 protocols.
- d) Draw NRZ-L encoding for bit pattern 00110110.
- e) List the three types of MAC protocols.
- f) Define Hamming distance.

Q2) Attempt the following:

- a) Define Bridge. List the types of Bridges and explain any one type in detail. **[7]**
- b) Explain OSI references model in detail. **[5]**

Q3) Attempt the following:

- a) What is channelization? List the methods of channelization. Explain any one method. **[7]**
- b) Describe pure and slotted ALOHA in brief. **[5]**

Q4) Attempt the following:

- a)
 - i) Describe the functions performed by Data Link Layer.
 - ii) Write note on IMAP. **[7]**
- b) What is routing? Explain properties of routing algorithms. **[5]**

P.T.O.

Q5) Attempt the following:

- a) Write a short note on Infrared Wireless Transmission. [7]
- b) Calculate maximum bit rate using Shannon's theorem for a channel having bandwidth 31000 Hz and S/N ratio 20dB. [5]

Q6) Attempt the following:

- a) Explain in detail TCP segment format and TCP features. [7]
- b) State the difference between Reservation and Polling. [5]

Q7) Attempt any two : [12]

- a) Explain packet switching and message switching with advantages and disadvantages.
- b) What is FTP? Explain the components of FTP?
- c) Explain architecture of www.



Total No. of Questions : 5]

SEAT No. :

PE-5505

[Total No. of Pages : 2

[6522]-204

First Year M.Sc.

COMPUTER APPLICATION

CA-CBOP-2 (A) : Java Programming

(2019 Pattern) (Semester - II)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Q.1 is compulsory.
- 2) Attempt any 3 questions out of Q.2, Q.3, Q.4, Q.5.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

Q1) Attempt any five of the following. [5×1=5]

- a) Is JDK required on each machine to run a Java program? Justify.
- b) How are 'this' and 'super' is used with constructors?
- c) What is the purpose of finally clause of try-catch-finally statement?
- d) What is the use of prepared statement in JDBC?
- e) Name two subclasses of the Test component class.
- f) Differentiate between Generic servlet and Http servlet.

Q2) Attempt the following. [10]

- a) What is abstract class? Can abstract class be final? [2]
- b) Explain different methods of session management. [4]
- c) What are the different types of JDBC statements? Write a java program to create connection to data base and display the table student containing (studroll, name, phone) from the database. [4]

Q3) Attempt the following. [10]

- a) How can we restrict inheritance for a class so that no class can be inherited from it? Give example. [2]
- b) Can a class be a superclass and a subclass at the same time? Explain with an example. [4]
- c) Write a java program to print the area of a rectangle by creating a class named 'Area' taking the values of its length and breadth as parameters of its constructor and having a method 'return Area' which return area of the rectangle. Length and breadth to be entered by user. [4]

P.T.O.

Q4) Attempt the following [10]

- a) Explain any two advantages of servlet. Name the interface that is used by the sever to pass configuration information to the servlet. [2]
- b) Write a java program to copy contents of one file into another file. [4]
- c) Write a java program to create an applet having buttons to add and subtract two numbers. Display the result. [4]

Q5) Attempt any two of the following. [2×5=10]

- a) Explain the array declaration, creation in java with proper syntax and examples.
- b) Create a JSP page which accepts user names in a text box and greets the user according to the time on server side. (e.g. username: ABC, Good morning ABC)
- c) Write a java program to display the servlet information and server information.



Total No. of Questions : 5]

SEAT No. :

PE-5506

[Total No. of Pages : 2

[6522]-205

First Year M.Sc.

**COMPUTER APPLICATION
CA-CBOTP-2B : Web Services
(2019 Pattern) (Semester - II)**

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Q.1 is compulsory.
- 2) Solve any three questions form Q 2 to Q 5.
- 3) Question 2 to 5 carry equal marks.

Q1) Solve any five of the following: **[5]**

- a) Write one property of web service architecture.
- b) State any one example of UDDI.
- c) Give the meaning of UDDI.
- d) Give one example where SOAP used.
- e) List the contents of SOAP body.
- f) State the softwares supporting web services.

Q2) Attempt any two of the following: **[10]**

- a) State the major components of web services.
- b) Give the challenges of using web services.
- c) Explain in brief : WSDL.

Q3) Attempt any two of the following: **[10]**

- a) Explain in brief UDDI.
- b) What is the purpose of header block of SOAP message?
- c) Explain the core architectural elements of a RESTful system.

Q4) Attempt any two of the following: **[10]**

- a) State any two kind of operations supported for publishing API and UDDI.
- b) What are the best practices to be adhered while designing RESTful web service?
- c) How errors are handled in SOAP?

P.T.O.

Q5) Attempt any two of the following:

[10]

- a) State the various data structures used in UDDI.
- b) What are various types of web services?
- c) Give the major advantages of RESTful services.



Total No. of Questions : 5]

SEAT No. :

PE-5507

[Total No. of Pages : 2

[6522]-206

First Year M.Sc.

COMPUTER APPLICATION

CA-CBOTP-2C: Software Testing (Automated)

(2019 Pattern) (Semester - II)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Question 1 is compulsory.
- 2) Solve any three questions from Q.2 to Q.5
- 3) Questions 2 to 5 carry equal marks.

Q1) Solve any five of the following: [5]

- a) What are various selenium suite components?
- b) Why HTML is considered as web element?
- c) State any one difference between selenium and QTP tools.
- d) State the meaning of Hub in selenium grid.
- e) When to use page object model?
- f) What is HTTP?

Q2) Attempt any two of the following: [10]

- a) What are different types of Testing?
- b) Write advantages of TestNG.
- c) Explain different types of selenium commands.

Q3) Attempt any two of the following: [10]

- a) How to set Test case priority in TestNG with selenium?
- b) How to handle Auto suggestion in selenium Web Driver?
- c) What is use of X-path?

Q4) Attempt any two of the following: [10]

- a) Give advantages of using selenium as an automation tool.
- b) List the different features provided by TestNG.
- c) Differentiate between max Session and max Instance in selenium grid.

P.T.O.

Q5) Attempt any two of the following:

[10]

- a) How to create a surefire report in maven?
- b) What are limitations of selenium IDE?
- c) State the different testing types supported by selenium.



Total No. of Questions : 7]

SEAT No. :

PE-5609

[Total No. of Pages : 2

[6522]-301

M.Sc.

COMPUTER APPLICATION

CA-CCTP-7 : Mobile Application Development using
Android

(2019 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Question No. 1 is compulsory.*
- 2) *Solve any five questions from Q.2 to Q.7.*
- 3) *Question 2 to 7 carry equal marks.*
- 4) *Draw diagram wherever necessary.*

Q1) Solve any five of the following :

[10]

- a) What is Manifest file?
- b) Give an Example of Button Component.
- c) Why use PhoneGap?
- d) What is IOS?
- e) Write disadvantages of Swift.
- f) What is SQLite?

Q2) Attempt the following :

- a) Explain different type of view Groups with example.

[7]

- b) Write short note on Widgets.

[5]

Q3) Attempt the following :

- a) Explain Architecture of Android with the help of diagram.

[7]

- b) Write an android program which send one number to another activity display factorial of number.

[5]

P.T.O.

Q4) Attempt the following :

- a) Write phone gap application for creating searching and removing contacts. [7]
- b) Explain life cycle of Android Activity. [5]

Q5) Attempt the following :

- a) Explain with help of diagram Application of Life cycle of IOS. [7]
- b) What is Broadcast Receivers? Explain it with example. [5]

Q4) Attempt the following :

- a) Write an application for following : [7]

EmpID :

Emp Name :

Designation :

After Clicking ok store data in SQLite

- b) What is Notification? How to display Hello world? [5]

Q7) Write a short note on any two : [12]

- a) Base Adapter
- b) Asynk task
- c) Xcode



Total No. of Questions : 7]

SEAT No. :

PE5610

[Total No. of Pages : 2

[6522]-302

**M.Sc. - II (Computer Application)
CA-CCTP-8 : INTERNET OF THINGS
(2019 Pattern) (Semester - III)**

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Q.1 is compulsory.*
- 2) *Solve any five questions from Q.2 to Q.7.*
- 3) *Questions 2 to 7 carry equal marks.*
- 4) *Draw neat labeled diagram wherever necessary.*

Q1) Solve any five of the following:

[10]

- a) What is Zigbee?
- b) Enlist cloud services. Explain any one in short.
- c) State different sensors used in IoT.
- d) Write simple Ethernet server example.
- e) What is LUX?
- f) Write Steps to setup IDE Arduino software.

Q2) Answer the following:

- a) Give two examples each of analog sensors and digital sensors. Explain working principles of any one of them. **[7]**
- b) Explain simple Ethernet client example using Arduino. **[5]**

Q3) Attempt the following:

- a) Explain cloud based architecture with the help of diagram. **[7]**
- b) Explain with example any two IoT protocols. **[5]**

P.T.O.

Q4) Attempt the following:

- a) Explain the following cloud platforms. [7]
 - i) SaaS
 - ii) PaaS

State the advantages and disadvantages of cloud computing platforms.

- b) What is SOC? Explain with example. [5]

Q5) Attempt the following:

- a) Explain working principles of sensors with help of diagram. [7]
- b) Differentiate between Analog and Digital sensors. [5]

Q6) Attempt the following:

- a) Explain MQTT protocol in detail. [7]
- b) What are the security issues at different layers? Explain in brief. [5]

Q7) Attempt the following: (Any 2) [12]

- a) Bluetooth protocol in wireless communication.
- b) Application of IoT.
- c) Ethernet TCP/IP.



Total No. of Questions : 7]

SEAT No. :

PE5611

[Total No. of Pages : 2

[6522]-303

S.Y. M.Sc. (Computer Application)
CA-CCTP-9 : ARTIFICIAL INTELLIGENCE
(2019 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Q. 1 is compulsory.*
- 2) *Solve any five questions from Q.2 to Q.7.*
- 3) *Questions 2 to 7 carry equal marks.*

Q1) Attempt any five of the following.

[10]

- a) How is machine learning related to AI?
- b) Define Heuristic search.
- c) What are the two advantages of depth first search?
- d) Explain propositional logic with example.
- e) Define knowledge.
- f) What is resolution? Explain with example.

Q2) Attempt the following :

- a) Write down the algorithm of generate and test. **[7]**
- b) How does predicate logic help with knowledge representation? **[5]**

Q3) Attempt the following :

- a) What is backward chaining. Discuss its properties with example. **[7]**
- b) Write advantages and disadvantages of frame representation. **[5]**

Q4) Attempt the following :

- a) Write the script for restaurant. **[7]**
- b) Explain alpha-beta pruning with example. **[5]**

P.T.O.

Q5) Attempt the following :

- a) What is learning? Explain learning from example in detail. [7]
- b) Translate the following statements FOPL : [5]
 - i) Some girls play chess
 - ii) Not all students like both computer and Marathi.
 - iii) All Parrots fly.
 - iv) Every student respects his teacher.
 - v) There is a bunny who is cute.

Q6) Attempt the following :

- a) Explain AO* algorithm with example. [7]
- b) Discuss Bayes theorem in detail. [5]

Q7) Attempt the following : [12]

- a) Give state space representation for “Missionary Cannibal Problem”. [4]
- b) Write Hill Climbing Algorithm. [4]
- c) Discuss Dempster - Shafer theory. [4]



Total No. of Questions : 5]

SEAT No. :

PE5612

[Total No. of Pages : 2

[6522]-304

S.Y.M.Sc. (Computer Applications)

CA-CBOTP-3A : PYTHON PROGRAMMING

(2019 Pattern) (Semester - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Question No. 1 is compulsory.
- 2) Solve any three questions from Q.2 to Q.5.
- 3) Questions No. 2 to 5 carry equal marks.

Q1) Solve any five of the following. [5]

- a) List any two built in datatypes in python.
- b) Give the difference between == and = operator in python.
- c) Write the use of range() function in python.
- d) Define Recursion.
- e) Differentiate between sets and lists in python.
- f) State True/False

“Python strings are immutable”.

Q2) Attempt the following. [10]

- a) i) How can you import a module in python. Give an example. [2]
- ii) Define Dictionary in python? Write syntax to access its values. [4]
- b) Write a python program to print table of a given number. [4]

P.T.O.

Q3) Attempt the following. [10]

- a) i) Differentiate between positional and keyword arguments in python. [2]
- ii) Describe following methods of list with example. [4]
 - 1) append ()
 - 2) remove ()
 - 3) sort ()
 - 4) insert ()
- b) Write any four features of python in brief. [4]

Q4) Attempt the following. [10]

- a) i) Differentiate between generator and Iterators in Python. [2]
- ii) Explain inheritance in python with suitable example. [4]
- b) Write a program that accepts a sentence and calculate the number of uppercase and lowercase letters in the sentence. [4]

Q5) Attempt any two of the following. [10]

- a) Explain finally block in exception handling of python. [5]
- b) Explain what a set is and how it differs from a list. [5]
- c) How to define a function in python? Give an example. [5]



Total No. of Questions : 5]

SEAT No. :

PE5613

[Total No. of Pages : 2

[6522]-305

M.Sc. - II (Computer Application)

CA-CBOTP-3B : BIG DATA

(2019 Pattern) (Semester - III)

Time : 2 Hours]

[Max. Marks : 35

Instructions to the candidates:

- 1) Question No. 1 is compulsory.
- 2) Solve any three questions from Q.2 to Q.5.
- 3) Questions No. 2 to 5 carry equal marks.

Q1) Solve any five of the following.

[5]

- a) Define HBase.
- b) State the Big Data.
- c) What is Database.
- d) What is Hadoop?
- e) List out Big Data technology.
- f) Define Non - Relational Data base.

Q2) Attempt the following.

[10]

- a)
 - i) What are the challenges in Big Data? **[2]**
 - ii) Explain Hadoop Yarn in detail. **[4]**
- b) Write a case study on Big Data Analytics. **[4]**

Q3) Attempt the following.

[10]

- a)
 - i) Explain any two characteristics of Big Data. **[2]**
 - ii) Explain Map reduce in detail. **[4]**
- b) Explain three V's of Big data in detail. **[4]**

P.T.O.

Q4) Attempt the following. **[10]**

- a) i) Explain any two applications of Big data. **[2]**
- ii) Explain Hadoop Ecosystems in detail. **[4]**
- b) Explain Big data workload design approaches. **[4]**

Q5) Attempt any two of the following. **[10]**

- a) Difference between SQL and NOSQL. **[5]**
- b) Explain Data Integration pattern in detail. **[5]**
- c) Explain machine learning with MLlib. **[5]**

