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15CS61

Sixth Semester B.E. Degree Examination, June/July 2019
Cryptography, Network Security and Cyber Law

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Describe the types of Vulnerabilities to domain of security. **(04 Marks)**
b. List the guiding principles of security. **(04 Marks)**
c. Write the extended Euclidean algorithm, with an example. **(08 Marks)**

OR

2 a. Calculate the value of x using Chinese remainder theorem by given below data : $N = 210$, $n_1 = 5$, $n_2 = 6$, $n_3 = 7$, $x_1 = 3$, $x_2 = 5$, $x_3 = 2$. **(05 Marks)**
b. Explain the Vigenere Cipher and the Hill Cipher techniques with illustration. **(06 Marks)**
c. With neat diagram, explain Fiestel structure. **(05 Marks)**

Module-2

3 a. Illustrate the RSA algorithm for encryption and decryption. **(08 Marks)**
b. Briefly explain the practical issues of RSA algorithm. **(04 Marks)**
c. List the properties of the cryptographic hash. **(04 Marks)**

OR

4 a. Discuss the case study : SHA – 1. **(08 Marks)**
b. Explain the Man – In – the Middle attack on Diffie – Hellman key exchange, with neat diagram. **(08 Marks)**

Module-3

5 a. Explain the different Public Key Infrastructure (PKI) architectures. **(08 Marks)**
b. Describe the Mutual authentication using a shared secret. **(08 Marks)**

OR

6 a. Explain the Kerberos message sequence with diagram. **(06 Marks)**
b. Describe the IP Sec protocols Authentication Header and Encapsulating Security Pay load in transport mode. **(05 Marks)**
c. Explain Secure Sockets Layer (SSL) hand shake protocol. **(05 Marks)**

Module-4

7 a. Explain the Authentication and Master Session Key exchange in 802.11i. **(05 Marks)**
b. List and explain the worm characteristics. **(05 Marks)**
c. Explain Firewall functionality and Proxy fire wall. **(06 Marks)**

OR

8 a. Write a note on Intrusion Detection System (IDS). **(05 Marks)**
b. Explain the types of Intrusion Detection System. **(05 Marks)**
c. Briefly explain the Technologies for Web Services. **(06 Marks)**

Module-5

9 a. Explain Digital Signature Certificates. **(10 Marks)**
b. Describe the duties of Subscribers. **(06 Marks)**

OR

10 a. List any eight functions of the Controller. **(08 Marks)**
b. Briefly explain Penalties and Adjudication in IT Act. **(08 Marks)**

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15CS62

Sixth Semester B.E. Degree Examination, June/July 2019
Computer Graphics and Visualization

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Compare random scan display with raster scan display and list the applications of computer graphics. **(04 Marks)**

b. What is openGL? With the help of block diagram explain Library organization of openGL program and give the general structure of openGL program. **(04 Marks)**

c. What is DDA? With the help of a suitable example demonstrate the working principle of Breseham's Line drawing algorithm for different slopes of a line. **(08 Marks)**

OR

2 a. Define the following terms with respect to computer graphics.
i) Bitmap ii) Pixmap iii) aspect ratio iv) Frame buffer **(04 Marks)**

b. List and explain various openGL primitive and its attribute functions. Develop an openGL program to create human face like structure using suitable openGL primitive functions. **(06 Marks)**

c. With the help of a suitable example demonstrate Bresenham's circle drwing algorithm. **(06 Marks)**

Module-2

3 a. Explain scan line polygon fill algorithm. Determine the content of the active edge table to fill the polygon with vertices A(2, 4), B(4, 6) and C(4, 1) for y = 1 to y = 6. **(06 Marks)**

b. Develop composite homogeneous transformation matrix to rotate an object with respect to a Pivot point. For the triangle A(3, 2) B(6,2), C(6, 6) rotate it in anticlockwise direction by 90 degree keeping A(3, 2) fixed, draw the new polygon. **(06 Marks)**

c. With the help of a diagram explain shearing and reflection transformation technique. **(04 Marks)**

OR

4 a. Explain the data structures used by scan line polygon fill algorithm. Determine the content of active edge table to fill the polygon with vertices A(2, 4), B(2, 7), C(4, 9) and D(4, 6). **(06 Marks)**

b. Give the reason to convert transformation matrix to homogeneous co-ordinate representation and show the process of conversion. Shear the polygon A(1, 1), B(3, 1), C(3, 3) D(2, 4), E(1, 3) along x-axis with a shearing factor of 0.2. **(06 Marks)**

c. i) Prove that two successive 2D rotation are additive
ii) Prove that successive scaling are multiplicative. **(04 Marks)**

Module-3

5 a. Design a transformation matrix for window to viewport transformation. And explain how reshape function (glutReshapeFunc) works in openGL programming. **(05 Marks)**

b. With the help of a suitable diagram explain basic 3D Geometric transformation techniques and give the transformation matrix. Explain the meaning of affine transformation. **(05 Marks)**

c. With the help of openGL statements and diagram explain illumination and shading models. **(06 Marks)**

OR

6 a. What is Clipping? With the help of a suitable example explain cohen Southerland line clipping algorithm. **(06 Marks)**

b. Design transformation matrix to rotate an 3D object about an axis that is parallel to one of the co-ordinate axes. **(06 Marks)**

c. With the help of a suitable diagram, explain basic illumination, RGB and CMY colour models. **(04 Marks)**

Module-4

7 a. What is 3D viewing? With the help of a block diagram, explain 3D viewing pipline architecture. **(04 Marks)**

b. Design the transformation matrix for orthogonal and perspective projections. **(06 Marks)**

c. Explain Depth buffer method and give the openGL visibility detection functions. **(06 Marks)**

OR

8 a. Explain the steps for transformation from world to viewing coordinate system. **(04 Marks)**

b. Design the transformation matrix for perspective projection and give openGL 3D viewing functions. **(06 Marks)**

c. Give the general classification of visible detection algorithm and explain any one algorithm in detail. **(05 Marks)**

Module-5

9 a. With the help of a suitable programming construct explain event driven input menu picking and Building interactive models. **(08 Marks)**

b. Write a short notes on (any two)

i) Curve and Quadric surfaces

ii) openGL curve and surface functions

iii) Bezier curve and surfaces. **(08 Marks)**

OR

10 a. What are display lists? Explain the steps to develop interactive models and animating interactive programs. **(08 Marks)**

b. Write a short note on (any two)

i) Logic operations (graphics)

ii) Input devices or clients and servers

iii) Bezier spline curve and openGL curve functions. **(08 Marks)**

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15CS63

Sixth Semester B.E. Degree Examination, June/July 2019
System Software and Compiler Design

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain SIC/XE architecture. **(08 Marks)**

b. Generate the complete object program for the following SIC/XE assembly program.

```
WRREC   START   405D
        CLEAR   X
        LDT     LENGTH
WLOOP   TD      OUTPUT
        JEQ     WLOOP
        LDCH    BUFFER, X
        WD      OUTPUT
        TIXR    T
        JLT     WLOOP
        RSUB
OUTPUT  BYTE    X '05'
        END
```

Address of BUFFER 4033
Address of LENGTH 4036

Op Codes :
CLEAR – B4; JEQ – 30; WD – DC; JLT – 38;
LDT – 74; LDCH – 50; TIXR – B8; RSUB – 4C. **(08 Marks)**

OR

2 a. List all assembler independent and dependant feattures and explain program relocation. **(05 Marks)**

b. Explain the data structures used in macro processor with example. **(03 Marks)**

c. Explain the following macroprocessor independent features.
i) Generation of unique lables
ii) Keyword macro parameter. **(08 Marks)**

Module-2

3 a. What is loader? What are the basic functions the loader has to perform? **(04 marks)**

b. Develop an algorithm for bootstrap loader. **(07 marks)**

c. Explain dynamic linking with suitable diagram. **(05 Marks)**

OR

4 a. Differentiate between a linking loader and linkage editor, with the help of suitable diagram. **(08 marks)**

b. Explain different loader option commands with examples. **(04 marks)**

c. Illustrate MS – DOS object module with its record types. **(04 Marks)**

Module-3

5 a. With the help of a diagram, explain the various phases of complier. **(08 Marks)**

b. Explain the concept of input buffering in the lexical analysis. **(04 Marks)**

c. What design objectives, complier optimizations must meet. **(04 Marks)**

OR

6 a. Write a LEX program for the tokens given below : **(08 Marks)**

LEXEMES	TOKEN NAME	ATTRIBUTE VALUE
Any WS	—	—
if	if	—
then	then	—
else	else	—
Any id	id	ptr to table entry
Any number	number	ptr to table entry
<	reloop	LT
<=	reloop	LE
=	reloop	EQ
< >	reloop	NE
>	reloop	GT
>=	reloop	GE

b. Write regular definitions for unsigned numbers and draw the transition diagram for the same. **(08 Marks)**

Module-4

7 a. Define left recursion grammer, eliminate left recursion from the following grammer :

$S \rightarrow aB \mid ac \mid sd \mid se$

$B \rightarrow b\,Bc \mid f$

$C \rightarrow g$ **(03 Marks)**

b. Consider the following context free grammer $S \rightarrow SS + \mid SS * \mid a$ and the input string aa + a*

i) Give LMD and RMD

ii) Parse tree

iii) Is the grammer ambiguous? Why

iv) Describe the language generated by the grammer

v) Left factor the grammer. **(05 Marks)**

c. Consider the following grammer with terminals (, [,),]

$S \rightarrow TS \mid [S]\,S \mid)S \mid \in$

$T \rightarrow (x)$

$X \rightarrow TX \mid [X]\,X \mid \in$

i) Construct first and follow sets

ii) Construct its LL(1) parsing table

iii) Is this grammer LL(1)? **(08 marks)**

OR

8 a. The following is ambiguous grammer

$S \rightarrow AS \mid b$

$A \rightarrow SA \mid a$

Construct for this grammer its collection of sets of LR(0) items. IF we try to build an LR – parsing table for the grammer, there are certain conflicting actions what are they? Suppose we tried to use the parsing table by non deterministically choosing a possible action whenever there is a conflict, show all the possible sequences of actions on input abab$. **(10 Marks)**

b. What are the actions of a shift – reduce parser. Design shift – reduce parser for the following grammer on the input 10201 $S \rightarrow 0\ S\ 0 \mid 1\ S\ 1 \mid 2$. **(06 Marks)**

Module-5

9 a. Consider the context free grammer given below :

$S \rightarrow EN$

$E \rightarrow E + T \mid E - T \mid T$

$T \rightarrow T * F \mid T / F \mid F$

$F \rightarrow (E) \mid digit$

$N \rightarrow ;$

i) Obtain the SDD for the above grammer

ii) Construct annotated parse tree for the input string 5 * 6 + 7. **(08 Marks)**

b. Obtain the DAG for the expression, show the steps a + a * (b – c) + (b – c) * d. **(04 Marks)**

c. Translate the assignment

a = b * – c + b * – c into

i) Three address code

ii) Quadruples. **(04 Marks)**

OR

10 a. Explain the issues in the design of a code generator. **(11 marks)**

b. Write the machine instructions for the following three address instructions :

i) b = a[i]

ii) a[j] = c

iii) x = *p

iv) *p = y

v) if x < y goto L. **(05 Marks)**

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15CS64

Sixth Semester B.E. Degree Examination, June/July 2019
Operating Systems

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the role of operating system from different viewpoints. Explain the dual mode of operation of an operating system. **(07 Marks)**

b. Demonstrate the concept of virtual machine with an example. **(05 Marks)**

c. Explain the types of multiprocessing system and the types of clustering. **(04 Marks)**

OR

2 a. Describe the implementation of interprocess communication using shared memory and message passing. **(06 Marks)**

b. Demonstrate the operations of process creation and process termination in UNIX. **(06 Marks)**

c. Explain the different states of a process, with a neat diagram. **(04 Marks)**

Module-2

3 a. Discuss the threading issues that come with multithreaded program. **(08 Marks)**

b. Illustrate how Reader's-Writer's problem can be solved by using semaphores. **(08 Marks)**

OR

4 a. Calculate the average waiting time by drawing Gantt chart using FCFS (First Come First Serve), SRTF (Shortest Remaining Time First), RR (Round Robin) [q = 2 ms] algorithms.

Process	Arrival time	Burst time
P_1	0	9
P_2	1	4
P_3	2	9
P_4	3	5

(08 Marks)

b. Explain the Dining-Philosopher's problem using monitors. **(08 Marks)**

Module-3

5 a. Determine whether the following system is in safe state by using Banker's algorithm.

Process	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	1	0	7	5	3	3	3	2
P_1	2	0	0	3	2	2			
P_2	3	0	2	9	0	2			
P_3	2	1	1	2	2	2			
P_4	0	0	0	4	3	3			

If a request for P_4 arrives for (1 0 2), can the request be granted immediately? **(09 Marks)**

b. Discuss the various approaches used for deadlock recovery. **(07 Marks)**

OR

6 a. Illustrate with example, the internal and external fragmentation problem encountered in continuous memory allocation. **(07 Marks)**
b. Explain the structure of page table. **(09 Marks)**

Module-4

7 a. Illustrate how demand paging affects systems performance. **(08 Marks)**
b. Describe the steps in handling a page fault. **(08 Marks)**

OR

8 a. Explain the various types of directory structures. **(08 Marks)**
b. Describe various file allocation methods. **(08 Marks)**

Module-5

9 a. Explain the access matrix model of implementing protection in operating system. **(07 Marks)**
b. Explain the following disk scheduling algorithm in brief with examples:
i) FCFS scheduling
ii) SSTF scheduling
iii) SCAN scheduling
iv) LOOK scheduling **(09 Marks)**

OR

10 a. Explain the components of LINUX system with a neat diagram. **(08 Marks)**
b. Explain the way process is managed in LINUX platform. **(08 Marks)**

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15CS653

Sixth Semester B.E. Degree Examination, June/July 2019
Operation Research

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Define operation research. List and explain the various phases of an operation research study. **(08 Marks)**

b. A firm manufactures three products A, B and C. The profits per unit product are Rs.3, Rs.2 and Rs.4 respectively. The firm has two machines and the required processing time in minutes for each machine on each product is given below :

	Product		
Machine	A	B	C
X	4	3	5
Y	2	2	4

Machines X and Y have 2000 and 1500 machine-minutes respectively. The firm must manufacture 100A's, 200B's and 50C's but not more than 150A's. Set up an LP model to maximize the profit. **(08 Marks)**

OR

2 a. Use the graphical method to solve the following LPP :

Maximize $Z = x + 0.5y$

Subject to constraints $3x + 2y \le 12$

$5x \le 10$

$x + y \le 18$

$-x + y \ge 4$

where $x, y \ge 0$. **(12 Marks)**

b. Define i) Feasible solution ii) unbounded solution iii) Fesible region iv) Optimal solution. **(04 Marks)**

Module-2

3 a. Find all the basic solutions of the following problem :

Maximize $Z = x_1 + 3x_2 + 3x_3$

Subject to constraints $x_1 + 2x_2 + 3x_3 = 4$

$2x_1 + 3x_2 + 5x_3 = 7$

Also find which of the basic solution are :

i) basic feasible ii) non-degenerate basic feasible iii) optimal basic feasible. **(06 Marks)**

b. Solve the following LPP by Big-M method.

Maximize $Z = -2x_1 - x_2$

Subject to constraints $3x_1 + x_2 = 3$

$4x_1 + 3x_2 \ge 6$

$x_1 + 2x_2 \le 4$

where $x_1, x_2 \ge 0$. **(10 Marks)**

OR

4 a. Solve the following LPP by simplex method.
Maximize $= 3x_1 + 2x_2$
Subject to constrains $x_1 + x_2 \leq 4$
$x_1 - x_2 \leq 4$
and $x_1, x_2 \geq 0$. **(08 Marks)**

b. Solve the following LPP by two-phase simplex method.
Maximize $z = 3x_1 - x_2$
Subject to constraints $2x_1 + x_2 \geq 2$
$x_1 + 3x_2 \leq 2$
$x_2 \leq 4$
and $x_1, x_2 \geq 0$ **(08 Marks)**

Module-3

5 a. Write applications of dual simplex method. **(06 Marks)**

b. Solve by dual simplex method the following problem :
Maximize $z = 2x_1 + 2x_2 + 4x_3$
Subject to constraints $2x_1 + 3x_2 + 5x_3 \geq 2$
$3x_1 + x_2 + 7x_3 \leq 3$
$x_1 + 4x_2 + 6x_3 \leq 5$
$x_1, x_2, x_3 \geq 0$. **(10 Marks)**

OR

6 a. Construct the dual of the problem :
i) minimize $z = 3x_1 - 2x_2 + 4x_3$
subject to constraints $3x_1 + 5x_2 + 4x_3 \geq 7$
$6x_1 + x_2 + 3x_3 \geq 4$
$7x_1 - 2x_2 - x_3 \leq 10$
$x_1 + 2x_2 + 5x_3 \geq 3$
$4x_1 + 7x_2 - 2x_3 \geq 2$
and $x_1, x_2, x_3 \geq 0$. **(05 Marks)**

ii) maximize $z = 3x_1 + 5x_2$
subject to constraints $2x_1 + 6x_2 \leq 50$
$3x_1 + 2x_2 \leq 35$
$5x_1 - 3x_2 \leq 10$
$x_2 \leq 20$
where $x_1, x_2 \geq 0$. **(05 Marks)**

b. What are the advantages of duality property? **(06 Marks)**

Module-4

7 a. Find the initial basic feasible solution by using North–West corner rule. **(06 Marks)**

	D_1	D_2	D_3	D_4	Supply
O_1	1	5	3	3	34
O_2	3	3	1	2	15
O_3	0	2	2	3	12
O_4	2	7	2	4	19
Demand	21	25	17	17	80

b. Find the initial basic feasible solution using Vogel's approximation method. **(10 Marks)**

	W_1	W_2	W_3	W_4	Availability
F_1	19	30	50	10	7
F_2	70	30	40	60	9
F_3	40	8	70	20	18
Requirement	5	8	7	14	

OR

8 a. Solve by matrix minima method and obtain an optimal solution for the following problem:

				Available
From	50	30	220	1
	90	45	170	3
	250	200	50	4
Required	4	2	2	

(10 Marks)

b. Solve the following assignment problem :

	J_1	J_2	J_3	J_4
A	2	10	9	7
B	15	4	14	8
C	13	14	16	11
D	3	15	13	8

(06 Marks)

Module-5

9 a. Define : i) pure strategy ii) mixed strategy iii) optimal strategy. (06 Marks)

b. Solve the following game by dominance principle.

		Player B			
		B_1	B_2	B_3	B_4
Player A	A_1	3	2	4	0
	A_2	3	4	2	4
	A_3	4	2	4	0
	A_4	0	4	0	8

(10 Marks)

OR

10 a. Solve the following game by graphical method. (06 Marks)

		Player B				
		I	II	III	IV	V
Player A	I	2	−1	5	−2	6
	II	−2	4	−3	1	0

b. Write short notes on :
i) Genetic algorithm
ii) Tabu search algorithm. (10 Marks)

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15CS661

Sixth Semester B.E. Degree Examination, June/July 2019
Mobile Application Development

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. What is Android? With a neat diagram, explain the major components of Android stack. **(06 Marks)**

b. List and explain the steps to run the Android app on virtual device. **(06 Marks)**

c. Explain XML attributes taking TextView as an example. **(04 Marks)**

OR

2 a. Define Activity. Explain the steps for creating an activity in Android studio. **(06 Marks)**

b. Explain the steps for sending the implicit intents. **(08 Marks)**

c. List out the steps for running the debugger. **(02 Marks)**

Module-2

3 a. What is focus? Explain the algorithm used for focus movement. **(06 Marks)**

b. How do you write espresso tests with Ham Crest matches? **(04 Marks)**

c. Explain how material design color pallete is used. **(06 Marks)**

OR

4 a. Explain the designing of floating action button. **(06 Marks)**

b. How do you code in XML, the Navigation drawers. **(06 Marks)**

c. Explain, how do you make use of UI animator for tests that span multiple apps. **(04 Marks)**

Module-3

5 a. Explain AsyncTask usage with an example. **(06 Marks)**

b. What are Broadcast Intents? Explain system Broadcast intents and custom broadcast intents. **(06 Marks)**

c. What is job scheduler? Explain its components. **(04 Marks)**

OR

6 a. What is a leader? How do you start and restart a loader? **(05 Marks)**

b. Explain with a neat diagram, lifecycle of a started service VS bound service. **(04 Marks)**

c. Explain scheduling of single use alarm. Also explain doze mode and App standby mode. **(07 Marks)**

Module-4

7 a. Explain about external storage and Internal storage. **(06 Marks)**

b. What is SQLite? Explain the steps for implementing SQLite database. **(06 Marks)**

c. How do you implement a CursorLoader? **(04 Marks)**

OR

8 a. Differentiate between shared preferences versus shared instance state. **(05 Marks)**

b. What is content provider? With a neat diagram, explain App Architecture with a content provider. **(06 Marks)**

c. Explain the following database operation: insert( ), delete( ), update( ). **(05 Marks)**

Module-5

9 a. What is permission? Explain its importance. **(05 Marks)**

b. Explain how data is stored in firebase real-time database. **(05 Marks)**

c. Explain how do you monitor the performance of running app. **(06 Marks)**

OR

10 a. What is firebase? How do you get started with fire base? **(06 Marks)**

b. What is an APK? How do you prepare your app for release? **(06 Marks)**

c. Write a note on Firebase Analytics. **(04 Marks)**

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15CS664

Sixth Semester B.E. Degree Examination, June/July 2019
Python Application Programming

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. List the features of Python Programming Language (at least FIVE). **(05 Marks)**

b. What is the role of a programmer? List two skills required to be a programmer. **(05 Marks)**

c. Explain the chained and nested conditional execution statements along with syntax and flow chart. **(06 Marks)**

OR

2 a. What are Python words and sentences? Explain with an example for each. **(04 Marks)**

b. Differentiate compiler and interpreter. **(04 Marks)**

c. Write python programs to i) Find largest of three numbers
ii) Check whether the given year is leap year or not with functions. **(08 Marks)**

Module-2

3 a. With syntax, explain the finite and infinite looping constructs in python. What is the need for break and continue statements. **(08 Marks)**

b. Write a Python program to generate and print prime numbers between 2 to 50. **(04 Marks)**

c. What are String slices? Explain the slicing operator in Python with examples. **(04 Marks)**

OR

4 a. Write a Python program to count the number of occurrences of a given word in a file. **(06 Marks)**

b. Write a Python function that takes decimal number as input and convert that to binary equivalent and return the same. **(04 Marks)**

c. List any six methods associated with strings and explain each of them with an example. **(06 Marks)**

Module-3

5 a. What are the ways of traversing a list? Explain with an example for each. **(04 Marks)**

b. Differentiate Pop and Remove methods on lists. How to delete more than one element from a list. **(06 Marks)**

c. Write a Python program that accepts a sentences and build dictionary with LETTERS, DIGITS , UPPER CASE , LOWER CASE as key values and their count in the sentences as values. Ex: Sentence = "VTU@123.e-Learning"
d = {"LETTERS" : 12, "DIGITS" : 3, "UPPER CASE" : 4 , "LOWER CASE" : 8}. **(06 Marks)**

OR

6 a. Compare and contrast lists and tuples. **(04 Marks)**

b. Write a program to check the validity of a password read by users. The following criteria should be used to check the validity. Password should have atleast
i) One lower case letter ii) One digit iii) One upper case letter
iv) One special character from [$ # @ !] v) Six character.
Your program should accept a Password and check the validity using above criteria and print "valid" or "invalid" as the case may be. **(08 Marks)**

c. Demonstrate i) how a dictionary items can be represented as a list of tuples.
ii) How tuples can be used as keys in dictionaries? **(04 Marks)**

Module-4

7 a. What is a Class? How to define a class in Python? How to instantiate a class and how the class members are accessed? **(04 Marks)**

b. Differentiate class variables and instance variables. **(02 Marks)**

c. Write a Python program that uses datetime module within a class, takes a birthday as input and prints the age and the number of days , hours, minutes and seconds until the next birthday. **(10 Marks)**

OR

8 a. Write a program that has a class Point with attributes as X and Y co-ordinates. Create two objects of this class and find the midpoint of both the points. Add a method reflex_x to class point, which returns a new point. Which is the reflection of the point about the x – axis.

Ex : point (5, 10) ⇒ reflex_x returns point (5, -10). **(06 Marks)**

b. Differentiate between simple, multiple and multi – level inheritance. **(06 Marks)**

c. Write a program that has a class Person . Inherit a class Student from Person which also has a class MarksAttendance. Assume the attributes for Person class as : USN, Name, dob, gender. Attributes for Student class as : Class , branch , year , MA.
Attributes for MarksAttendance: Marks, Attandance.
Create a student S = Student ("1AB16CS005" , "XYZ", "18-1-90" , "M", 85 , 98) and display the details of the student. **(04 Marks)**

Module-5

9 a. Demonstrate with the help of Python construct i) how to retrieve an image over HTTP.
ii) how to retrieve web pages with urllib. **(08 Marks)**

b. Compare and contrast the JavaScript object Notation (JSON) and XML. **(04 Marks)**

c. What is Service – Oriented Architecture? List the advantages of the same. **(04 Marks)**

OR

10 a. Write a Python program that retrieve an user's Twitter friends , Parse the returned JSON and extract some of the information about the friends. **(08 Marks)**

b. Create a simple spidering program that will go through Twitter accounts and build a database of them. **(08 Marks)**

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