



UNIVERSITY OF THE PUNJAB

Roll No.

First Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Introduction to Computing
Course Code: IT-101 /11394

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

PART – I (Objective)

QUESTION # 1

[10 marks]

Select the best option for each of the following MCQs. Overwriting will result ZERO in credit.

1. Examples of volatile storage media include all of the following except _____
 - a) Floppy disks
 - b) Registers
 - c) Main Memory
 - d) Cache Memory
2. _____ followed by _____ is the sequence of keys to cut and paste selected text in Microsoft Office.
 - a) Ctrl+C, Ctrl+V
 - b) Ctrl+X, Ctrl+V
 - c) Ctrl+C, Ctrl+P
 - d) Ctrl+X, Ctrl+P
3. _____ is a device that converts sound waves into audio signals.
 - a) Keyboard
 - b) Keyboard
 - c) Scanner
 - d) Microphone
4. Which of the following is not true about personal computers?
 - a) The PC was introduced by IBM in 1981
 - b) Uses the DOS or windows operating system developed by Microsoft Corporation.
 - c) They are analogue machine.
 - d) They are general purpose computers.
5. _____ is the software that verifies that user is not another computer.
 - a) Password
 - b) Encryption
 - c) Virus
 - d) Captcha
6. In HTML the entire document is enclosed between _____ and _____ tags.
 - a) <table>, </table>
 - b) <head> </head>
 - c) <html>, </html>
 - d) <uol>, </uol>
7. Consider the following HTML and CSS code snippet

```
<head>
  <style type = "text/css">
    <p style = "text-align : center">Introduction to Computing!<p>
  </style>
</head>
```

According to the above code:
 - a) The text "Introduction to computing" will appear bold and underlined.
 - b) The text "Introduction to computing" will appear as hyperlink.
 - c) The text "Introduction to computing" will appear centered.
 - d) Nothing will appear at all.
8. _____ is the study of computer systems that attempt to model and apply the intelligence of human mind:
 - a) Artificial Intelligence
 - b) E-commerce
 - c) Computer Security
 - d) Cyber ethics
9. In DBMS, _____ is a collection of related fields that makeup a single database entry.
 - a) Table
 - b) Record
 - c) Field
 - d) none of these
10. A _____ is an electrical channel along which the bits transfer within the circuitry of computer.
 - a) Chip
 - b) System BUS
 - c) PC Card
 - d) RAM



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Roll No.

PAPER: Introduction to Computing
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TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

PART – II (Short Questions)

QUESTION # 2

[20 marks]

Write short answers to all of the following questions:

1. Explain how a cache memory helps in improving the overall processing speed of computer system.
2. Why ROM is needed in the computer system? What kind of programs/instructions are stored in the ROM?
3. Differentiate between high level and low level languages also give examples of each type.
4. What is a system bus? Name three types of computer buses.
5. What is a computer software? Differentiate between a system software and an application software.
6. What is a computer virus? How it effects a computer system?
7. List the major benefits of e-commerce.
8. What are the various areas where AI (Artificial Intelligence) can be used?
9. Describe the concept of data integrity in DBMS.
10. How simplex and duplex transmission modes work?

PART – III (Subjective)

QUESTION # 3

[10 marks]

- a) Describe how the program instructions are executed by a computer. Briefly explain all the steps involved in instruction life cycle. [5]
- b) Explain the following CPU sharing techniques: [5]
 - i. Multiprocessing
 - ii. Multiprogramming
 - iii. Time-shared multiprogramming

QUESTION # 4

[10 marks]

- a) Explain various kinds of communication media with the significance of each type. [5]
- b) Explain the concept of track, sector and cylinder by using a labeled diagram, while discussing magnetic disk storage. [5]

QUESTION # 5

[10 marks]

Draw a flow chart OR write a program that keeps taking input numbers from user (both even and odd) until user enters a sentinel value -1 and display the sum of all even numbers entered by the user.



UNIVERSITY OF THE PUNJAB

Roll No.

Second Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Programming Fundamentals
Course Code: IT-102, IT-12395

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Question # 01

[1 x 10 = 10]

Write **True** for correct and **False** for incorrect statement against each of the following on the answer sheet

1. int 3a; is not a valid variable name declaration?
2. All keywords in C/C++ are in lower case letters?
3. The size of the data types depend on the system?
4. char has lesser bytes than int and int has lesser bytes than double in any system?
5. Size of the structure depends on its fields, it has a variable size?
6. Does logical operators in C/C++ language are evaluated with short circuit?
7. Assignment operator = is NOT a logical or relational operator?
8. for(;;) represents an infinite loop?
9. Is it possible to declare an array of void data type?
10. func(array); is a correct syntax to send an array as a parameter to function?



UNIVERSITY OF THE PUNJAB

Second Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Programming Fundamentals
Course Code: IT-102, IT-12395

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question # 02

[5 x 4 = 20]

Write a brief description about each of the following

1. Difference between pre and post increment operator with the help of an example.
2. How the || operator works. Explain with the help of an example.
3. What is the significance of static variables in programming?
4. How do you return an integer pointer from a function? Explain with the help of an example.
5. When you pass an array name from a function, what is actually being passed and why?

Question # 03

[3 x 10 = 30]

Answer the following questions

1. Write a program that take three distinct integers from user and display the second smallest of them.
2. Write a program that display all the numbers divisible by three exists in between 1 and 10000 using a while loop.
3. Write a function that accept two parameters, an array of integers and its size, the function should return the average of all the elements exist in that array.

☺☺☺ Best of Luck ☺☺☺



UNIVERSITY OF THE PUNJAB

Roll No.

Second Semester - 2017

Examination: B.S. 4 Years Programme

PAPER: Digital Logic Design
Course Code: IT-104 / IT-12397

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Question#1. Multiple Choice Questions:

(2 x 5 =10 marks)

- Binary equivalent for $(74.47)_8$ is:
a) 111101.100100 b) 111100.111100 c) 111100.100111 d) 111001.101111
- $X'Y + Y'X$ is equivalent to:
a) $X \oplus Y$ b) $X.Y$ c) $X + Y$ d) $X'Y' + XY$
- $X \cdot X'$ is equivalent to:
a) 1 b) 0 c) X d) X'
- Assume SR flip flop is designed and it is reset initially. The state of the flip flop when $S=1$ and $R=0$ will become _____.
a) 1 b) 0 c) Q d) Q'
- To design a 4 x 16 Decoder how many 2 x 4 decoder are needed?
a) 1 b) 2 c) 3 d) 4



UNIVERSITY OF THE PUNJAB

Second Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Digital Logic Design
Course Code: IT-104 / IT-12397

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question # 2. Short Questions:

(20 marks)

- a) Perform M-N using $(r - 1)$'s complement when M=8630 and N= 630 are in decimal number system. (3)
- b) Design 2 x 4 Decoder. (3)
- c) Reduces the given functions using K-Map and write down in SOP form. (3)
 - i. $F(A,B,C,) = CA' + BC' + B'A'+AB$
- d) Draw the truth table of **Full Adder** circuit. (3)
- e) Draw a circuit for given function using NAND gate only. (3)
 - $F(X,Y,Z) = X'Y' + X'Z'$
- f) What is difference between RAM and Register . (2)
- g) Give the excitation table for D Flip-Flop. (3)

Question # 3. Long Questions

(30 marks)

- a) Implement a full-subtractor circuit with two half-subtractor and an OR gate.(10 marks)
- b) Implement $F (A,B,C) = \sum (0, 1, 3, 5, 6)$ using two 2x4 decoders. (10 marks)
- c) (i). Draw full-Adder circuit (5 marks)
 - (ii). Draw 8 x 3 Encoder circuit. (5 marks)



UNIVERSITY OF THE PUNJAB

Roll No.

Third Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Object Oriented Programming
Course Code: IT-201/21400

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

OBJECTIVE

- Question # 01:-** Write the selected option (A or B) on your answer sheet against each of the following [1 x 10 = 10]
1. A technique that programmers use to provide object encapsulation is to usually make objects' data private?
A. True B. False
 2. To create just one memory location for a field no matter how many objects you instantiate, you should declare it static?
A. True B. False
 3. Constructor is called automatically each time an object is created?
A. True B. False
 4. A function that has been declared to be a friend of a class has access to the private data in the class?
A. True B. False
 5. For the object for which it was called, a const member function can modify non-const member data?
A. True B. False
 6. :: (scope resolution) operators can be overloaded?
A. True B. False
 7. Distance operator++(int); is the correct syntax for overloading post increment unary operator as friend function?
A. True B. False
 8. The kind of relationship in which an object contains reference to other object and having independent life cycle is Aggregation?
A. True B. False
 9. A derived class inherits data members and member functions from base class?
A. True B. False
 10. We can output text to an object of class ofstream using the insertion operator << because the ofstream is a stream?
A. True B. False



UNIVERSITY OF THE PUNJAB

Third Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Object Oriented Programming
Course Code: IT-201/21400

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE

Question # 02:-

[4 x 5 = 20]

Give precise and short answers of the following:

1. Arguments passed by value and by reference.
2. Aggregation and Composition.
3. Over-loaded and Over-ridden functions.
4. Virtual and Pure Virtual functions.

Question # 03:-

[30]

Provide the implementation of a class named **Algebra** having **two data** members (a and b) of type integer with **private** access.

1. **Data member** of this class should contain **positive data** or **0 (default value)** for a particular object. Write all the **set functions** for each data member to **set** their values. [02 + 02 + 02]
2. Implement **default** (sets all data members to 0), **parameterized** and **copy constructor**. [02 + 02 + 02]
3. Implement **putData** member function to display the data of an object on the console. [02]
4. Overload **arithmetic assignment operator** (**+=**) to add and assign the data of one object to another. [03]
5. Overload **stream extraction operator** for taking the inputs for a particular object's data. [03]
6. Overload **arithmetic minus** (**-**) **operator** to return the result of two objects after subtraction. [03]
7. Overload **unary plus** (**+**) **operator**, returns true if an object contains data greater than zero, false otherwise. [03]
8. Implement **countEqualObjects** member function which accepts an array of **Algebra** objects and return the **total count** of all the objects which is equal to the left hand side object. [05]



UNIVERSITY OF THE PUNJAB

Roll No.

Third Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Computer Organization and Assembly Language
Course Code: IT-203/21402

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

OBJECTIVE

Part - I

Question # 1:

[10]

Answer all parts in this question on answer sheet. Write on the answer sheet the part number and your answer against it. **No need to write the question statement on the answer sheet.**

1. A bus connects the CPU components, which is a collection of parallel wires to transfer data from memory and I/O devices to CPU or vice versa.
A. True B. False
2. It is not necessary that program written for 8086 runs on 80386.
A. True B. False
3. Using MOV instruction only 8-,16- or 32-bit value can be moved into IP.
A. True B. False
4. Computer Organization consists of only CPU and Memory and the interaction between them.
A. True B. False
5. Program Counter register always contain the address of next instruction.
A. True B. False
6. The instruction SHL EBX, 4 will divide EBX by 16.
A. True B. False
7. Interrupt gates are the pointers that point to interrupt handlers in protected mode.
A. True B. False
8. USES operator is used to push data into the stack.
A. True B. False
9. CS register cannot be used as destination operand in MOV instruction.
A. True B. False
10. PUSH instruction cannot be used in 8086 CPU mode.
A. True B. False



UNIVERSITY OF THE PUNJAB

Third Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Computer Organization and Assembly Language
Course Code: IT-203/21402

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE

Part - II

Question # 2:

[20]

- a) Name the four basic parts of an assembly language instruction.
- b) What is the difference between PROC and MACRO?
- c) What are the different memory addressing techniques used in intel architecture?
- d) Describe the function of the following terms:
 - i. DUP operator
 - ii. EQU directive
 - iii. TEXTEQU directive
 - iv. LAHF instruction
 - v. NEG instruction

Part - III

Question # 3:

[10]

Write a procedure that reads a text-paragraph from a file and then prints the number of characters on the screen.

Question # 4:

[10]

Write a program that inputs 10 digits, stores them into an array and finds the minimum digit.
Input Validation: you should input only digits and make sure that no other character can be input.

Question # 5:

[10]

Write a program that should input two single-digit numbers and store them into registers or variables, your program should also input one arithmetic operator (among: +, -, *, /, %); your program should perform the arithmetic operation accordingly and display result.



UNIVERSITY OF THE PUNJAB

Roll No.

Fourth Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Web Engineering
Course Code: IT-205 / IT-22405

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Question # 01:- Write the selected option (A or B) on your answer sheet against each of the following

[1 x 10 = 10]

- | | | |
|--|---------|----------|
| 1. <head> is a HTML tag use to insert a page name? | A. True | B. False |
| 2. <hr> is a HTML tag use to insert a horizontal line in the page? | A. True | B. False |
| 3. <pre> is a HTML tag use to insert a pre-formatted text in the page? | A. True | B. False |
| 4. <ref> tag is use to insert a web reference in HTML page? | A. True | B. False |
| 5. Dynamic website pages can be identified with extension .jsp or .java? | A. True | B. False |
| 6. <sup> tag is used to create a super script in HTML page? | A. True | B. False |
| 7. The JavaScript code is placed inside the <script> tag of HTML page? | A. True | B. False |
| 8. HTTP stands for Hypertext Transfer Protocol? | A. True | B. False |
| 9. Extensible Markup Language pages can be identified with the extension .eml? | A. True | B. False |
| 10. HTML and XML makes up the Java Script? | A. True | B. False |



UNIVERSITY OF THE PUNJAB

Fourth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Web Engineering
Course Code: IT-205 / IT-22405

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question # 02:- Write a brief description about each of the following

[2 x 10 = 20]

1. How can you add a page title in HTML?
2. What do you mean by external CSS?
3. What is the purpose of interactive website?
4. For what purpose Cookies are used?
5. Differentiate between HTML and XML.
6. What purpose does HTTP status codes serve?
7. What happened when you send data from a HTML form with Get method?
8. For what purpose applications variables are used?
9. What is the purpose of XSLT?
10. How do you display a message box in the browser using JavaScript?

Question # 03:- Answer the following questions

[3 x 10 = 30]

1. What do you mean by 3-tier application architecture? How it help us to make web application(s)?
2. What do you mean by JSP? Explain its page life cycle by giving the name and purpose of each function that is called in it.
3. What do you mean by Java Beans? What advantages are provided by this technology in the website development over the existing ones'?

😊😊😊 Best of Luck 😊😊😊



UNIVERSITY OF THE PUNJAB

Roll No.

Fourth Semester - 2017

Examination: B.S. 4 Years Programme

PAPER: Software Engineering
Course Code: IT-206 / IT-22406

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Objective Type Questions (Total Marks 10)

Choose the right option:

1. Linear Sequential Model is suitable when?
 - A. Requirements are clear
 - B. Frequent changes are there
 - C. Time is less
 - D. Resources are short
2. Adaptation of "Software Engineering: As layered technology" is known as:
 - A. Software Process
 - B. Software Process Model
 - C. Software Engineering
 - D. Both 'A' and 'B'
3. There is no difference between a project and an operation.
 - A. True
 - B. False
4. Which one of the following is not a 'P' of Project Management?
 - A. People
 - B. Process
 - C. Power
 - D. Project
5. The duration of an activity for which if it is delayed, there will be no effect on deadline is known as:
 - A. Free time
 - B. Independent time
 - C. Slack or Float time
 - D. All of the above
6. "A customer has to purchase many items from point of sale system". It is shown by:
 - A. Cardinality
 - B. Modality
 - C. Both A and B
 - D. None of the above
7. The main input for architectural design from analysis model is _____.
 - A. State Transition Diagram
 - B. Data Flow Diagram
 - C. Entity Relationship Diagram
 - D. All of the above
8. An external entity can interact with a data store directly.
 - A. True
 - B. False
9. "Program Design Language" is a method to develop _____.
 - A. Data Design
 - B. Architectural Design
 - C. Component Level Design
 - D. All of the above
10. Testing is done by destructive approach and development is done by constructive approach.
 - A. True
 - B. False



UNIVERSITY OF THE PUNJAB

Fourth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Software Engineering
Course Code: IT-206 / IT-22406

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Short Questions (Marks 20)

Each question is of 4 marks

Question # 1:

Differentiate "Software Process" and "Software Engineering"?

Question # 2:

Differentiate 'Manager' and 'Leader'?

Question # 3:

Differentiate 'Entity' and "External Entity" with an example?

Question # 4:

Differentiate 'event' and 'action'?

Question # 5:

Differentiate "Exhaustive Testing" and "Selective Testing"?

Subjective Questions (Marks 30)

Each question is of 10 marks

Question # 1:

What do you understand by "Project Scope"? Explain it by taking relevant example?

Question # 2:

Name and explain elements/constructs/symbols for "Flow Chart"?

Question # 3:

Differentiate "White Box Testing" and "Black Box Testing"? Explain at least one technique for each?

End of Question Paper



UNIVERSITY OF THE PUNJAB

Roll No.

Fourth Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Data Structure and Algorithm
Course Code: IT-207 / IT-22408

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

PART - I (OBJECTIVE)

Question#1. Multiple Choice Questions: (2 x 5 =10 marks)

1. Two main measures for the efficiency of an algorithm are
 - a) Processor and memory
 - b) Complexity and capacity
 - c) Time and space
 - d) Data and space

2. The memory address of the first element of an array is called
 - a) floor address
 - b) foundation address
 - c) first address
 - d) base address

3. A binary tree whose every node has either zero or two children is called
 - a) Complete binary tree
 - b) Binary search tree
 - c) Extended binary tree
 - d) None of above

4. In which notation operator is comes after operand?
 - a) Infix
 - b) Prefix
 - c) Postfix
 - d) None

5. Linear order linked list is provided through _____
 - a) variables
 - b) arrays
 - c) Pointer
 - d) Strings



UNIVERSITY OF THE PUNJAB

Fourth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Data Structure and Algorithm
Course Code: IT-207 / IT-22408

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.



Question # 2. Short Questions:

(4 x 5 =20 marks)

- a) Write down the In fix notation of the following expression:

$$9-3+2*(3^4-3)/4+2*1$$

- b) What is the output of the following code

```
#include <iostream>
using namespace std;
int fun1(int n)
{
    if (n == 1)
        return 0;
    else
        return 1 + fun1(n / 2); // recursive call
}
int main()
{
    cout << "answer is = " << fun1(32) << endl;
    return 0;
}
```

- c) For the following given data below draw the Max-Heap

Data is:

15 3, 6, 18, 5, 9, 11, 20, 17, 7, 2, 3, 14

- d) Write down the code for the Insertion Sort.

void InsertionSort (int A[], int size); // you have to define this function only

Question # 3. Long Questions

(30 marks)

- a) Write down the code of the following function of Link List Class.

- i) void removeFromHead() // remove the first node at head
ii) int countDuplicate (int key) // count the node having duplicate values.

- b) Suppose you are given a sorted array A of n distinct numbers that has been rotated k steps, for some unknown integer k between 1 to $n-1$. That is, $A[1..k]$ is sorted in increasing order, and $A[k+1..n]$ is also sorted in increasing order, and $A[n] < A[1]$.

The following array A is an example of $n=16$ elements with $k=10$.

$A=\{9,13,16,18,19,23,28,31,37,42,0,1,2,5,7,8\}$

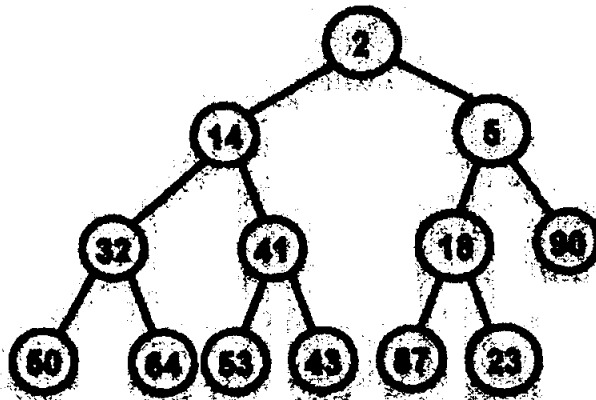
You have to design an $O(\log n)$ code to find the value of k .

int FindK(int A[], int size) //you have to implement this function

P.T.O.

- c) In which order the given tree will Travers when we use the following:
- i. Post order Traversal
 - ii. Write down the code for the Post Order Traversal of any tree.

`void PostOrderTraversal (Node * root);` // it is the prototype of the function which you have to define.





UNIVERSITY OF THE PUNJAB

Roll No.

Fifth Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Theory of Automata (IT)
Course Code: IT-301

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.
OBJECTIVE TYPE

Question # 1

(1* 10 MARKS)

- 1) A language is regular if and only if it is accepted by _____.
a) DFA b) PDA c) LBA d) Turing machine
- 2) Regular expression can be written only for languages of _____.
a) Type 0 b) Type 1 c) Type 2 d) none of these
- 3) Non Determinism is not equal in power with Determinism in case of _____.
a) Turing Machine b) FA c) PDA d) None of These
- 4) Word Automaton is of the _____ word Automaton.
a) Greek b) Latin c) English d) None of these
- 5) Grammars are classified into _____ types according to Chomsky Hierarchy.
a) 0 b) 1 c) 4 d) 5
- 6) $a^n c^n$ where $n = 7$; is the example of a _____ language.
a) Context Free b) Regular c) Unrestricted d) All of these
- 7) POST Machines are same power full as _____.
a) DFA b) NFA c) PDA d) Turing Machines
- 8) Every FA is also a valid _____ by Definition
a) Transition Graph b) Post Machine c) PDA d) Turing Machines
- 9) Head of _____ can move in directions both back and fro (LEFT/ RIGHT).
a) PDA-2 b) Turing Machine c) FA d) PDA
- 10) $AC \rightarrow a$ is a production of _____.
a) Type 0 b) Type 1 c) Type 2 d) Type 3



UNIVERSITY OF THE PUNJAB

Fifth Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Theory of Automata (IT)
Course Code: IT-301

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE TYPE

Question # 2

(4* 5 MARKS)

Answer the following short questions:

- Define Ambiguity. Give an example of Ambiguous grammar and prove it.
- Make clear difference between Determinism and Non-Determinism using suitable examples.
- Make clear the difference between CFG and CNF.
- Explain the different between the Unrestricted and Context Sensitive grammars.
- Give two the smallest possible sets whose Kleene's Closure will be same, finite and prove it.

Question # 3

(5 * 6 MARKS)

- Construct a Turing Machine which will delete letter from third cell of input tape, over $\Sigma = \{a, b, c\}$

OR

Construct Post Machine for the language $c^n b^n a^n ; n > 0$.

- Convert the Following CFG into CNF:

$$S \rightarrow a | Y b Y | a Z Y Z a$$

$$Y \rightarrow Z Z | a Y$$

$$Z \rightarrow b | Y | \Lambda$$

- Give the FA for the language ODD-ODD over $\Sigma = \{m, n\}$
- Give an FA with OUTPUT (MOORE Machine) which can ADD any two inputted binary strings. For example; if 0000 and 1111 are inputted it will output 1111 .
- Give the Context Free grammar for the Language EQUAL over $\Sigma = \{b, a\}$.
- Construct a PDA for the Language PALINDROME over $\{a, b\}$.



UNIVERSITY OF THE PUNJAB

Roll No.

Fifth Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Principles of Management (SS)
Course Code: IT-302

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

OBJECTIVE TYPE

Q1. Choose the correct Answer.

(10×1=10)

- 1) A ----- Structure is well suited to organizations which have a single or dominant core product because each subunit becomes extremely adept at performing its particular portion of the process.
A: Divisional
B: Functional
C: Matrix
D: Both A and B
- 2) Which of the following has not contributed to the boundary less organization?
A: Changes in technology
B: Complex and dynamic environments
C: Static environments
D: Increases in telecommunication
- 3) Managers will often not choose the decision alternative that rational decision making indicates to be best because they have a "vague feeling" that another alternative will be better. Which of the behavioral factors that influence decision-making does this behavior reflect?
A: Bounded rationality
B: Escalation of commitment
C: Intuition
D: Satisficing
- 4) ----- means that the two merging companies became history and a new firm is established
A: Acquisition
B: Merger
C: Joint Venture
D: Both A and B
- 5) ----- means only one company became history which is the acquired company while the acquiring company remains.
A: Joint Venture
B: Merger
C: Acquisition
D: Both A and B
- 6) Maslow's hierarchy of needs proposes that an individual begins by satisfying ----- needs.
A: Self-actualization
B: Esteem
C: Physiological
D: Safety
- 7) Which element of structure refers to the continuous line of authority that extends from the highest organizational levels to the lowest and clarifies who reports to whom?
A: Work specialization
B: Span of control
C: Centralization
D: Unity of command
- 8) For a manager to control or direct the work of an employee, the manager must have _____.
A: Line authority
B: Responsibility
C: Referent power
D: Staff authority
- 9) Organizations that have developed the capacity to continuously adapt and change because their members take an active role in identifying and resolving work-related issues are called _____ organizations.
A: Learning
B: Visionary
C: Community
D: Interdependent
- 10) Sofa Makers recently bought an upholstery firm, Fabulous Fabrics, in an effort to control its inputs by becoming its own supplier. This is an example of -----.
A: Concentration
B: Vertical integration
C: Horizontal integration
D: Diversification



UNIVERSITY OF THE PUNJAB

Fifth Semester 2017

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Principles of Management (SS)
Course Code: IT-302

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE TYPE

Q 2. Give Short Answers.

(10×2=20)

1. Explain Management by Objectives with a focus on IT industry?
2. Explain Advantages, Limitations of democratic type of leadership with examples?
3. Why and how job enrichment helps organizations to maintain competitiveness?
4. What type of technical skills are required for the managers, explain?
5. Outline five needs in Maslow's hierarchy of need theory?
6. Define SWOT Analysis in detail?
7. Differentiate between leading and controlling?
8. How efficiency and effectiveness vary from each other, explain with examples?
9. Differentiate between organizational goal and strategy with examples?
10. Define Motivation with examples?

Q3. Give Answers of the following Questions.

(3×10=30)

1. Differentiate between planning and controlling Process. Mention four advantages and four limitations of planning?
2. Critically discuss on the components of Organizational culture in context of various leadership styles?
3. What is quality in management terms? Compare various theories of quality management?



UNIVERSITY OF THE PUNJAB

Roll No.

Fifth Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Formal Logic
Course Code: IT-303 N

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

OBJECTIVE TYPE

Any over writing and cutting will be considered as mistake

1. Encircle the right one:

1. Which of the following sentence can be a proposition?
a. Shut the door. b. What is your name? c. Water boils at 212 degree Fahrenheit.
2. Truth value is a attribute of:
a. Statement b. Argument c. Sentence
3. Cogency is an attribute of :
a. Deduction b. Syllogism c. Induction
4. Some crows are not non black is a obverse of :
a. Some crows are black. b. Some crows are not black. c. All crows are black.
5. The symbol \vee means:
a. Conjunction b. Disjunction c. Conditional
6. If A is true then I is:
a. True b. False c. Undetermined
7. What is the contraposition of "Some S is not P"?
a. Some non P is not non S. b. All non P is non S. c. No S is non P.
8. Which of the Categorical Proposition is this? Some politicians are doctors
a. A b. E c. I
9. The place of Middle Term in a syllogism is:
a. Major Premise b. Both Premise c. Minor Premise
10. If I is true then E is :
a. True b. False c. Undetermined



UNIVERSITY OF THE PUNJAB

Fifth Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Formal Logic
Course Code: IT-303 N

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE TYPE

Q2: Answer the following:

20 Marks

- What is the difference between statement and sentence?
- Draw traditional square of Opposition.
- Construct a Venn diagram for I Proposition
- Define major and minor term.
- Define Inference.
- Define Quality and Quantity of a categorical Proposition.
- Define Soundness of the argument.
- Enumerate rule of distribution.
- Why question command and suggestion is not proposition.
- Draw Boolean Square of Opposition.

Q3: Use Venn diagram to determine the validity of the following syllogism. And also apply fallacy if commit.

10 marks

- EIO-4
- AAA-2
- OA0-1
- AEE-3
- OOO-4

Q4: Symbolize the following:

10 marks

- If John doesn't pass then he will lose his scholarship and drop out of school.
- If it rains and you don't open your umbrella then you will get wet.
- If your car won't start or you don't wake up on time then you will miss your interview and you will not get the new job.
- If you elect Mary then Mary will make sure that the federal budget will be balanced, partisan wrangling in Washington will cease, and there will be no cuts in social security benefits.
- If the cake gets hot the icing melts and if the icing melts the cake cannot be used at the wedding reception.

Q5: Define logic. Differentiate deductive and inductive argument with at least three examples.

10 marks



Attempt this Paper on this Question Sheet only.

OBJECTIVE TYPE

Note: Over-writing, Cutting, Erasing, Using lead pencil will result in loss of marks.

Q1: Choose the best answer

Marks(10*1=10)

1. Which of the following is not one of the three schemas used in the ANSI/SPARC?

- a. External b. Internal c. Implementation d. Conceptual

2. The older logical database model that organizes data in treelike structure is:

- a. Hierarchical b. Network c. Relational d. Object

3. An entity whose existence depends on another entity type is called _____ entity.

- a. Strong b. Weak c. Dependent d. Variant

4. Relationships among entities of a single class are called:

- a. Has-A relationship b. Is-A relationship c. Recursive Relationship d. None

5. Attributes may share a:

- a. Name b. Domain c. Location d. Table

6. A _____ attribute need not be physically stored within the database.

- a. composite b. Multivalued c. single valued d. derived

7. In _____ normal form any multi-valued attributes have been removed:

- a. First b. Second c. Fourth d. Fifth

8. A relation is analogous to a.

- a. File b. Field c. Record d. Row

9. The greater disadvantage of distributed databases is the _____

- a. Security Risk b. Cost/Complexity
c. Difficulty of control and possible integrity problem d. none

10. Which of the following indicates the maximum number of entities that can be involved in a relationship.

- a. Minimum cardinality b. Maximum cardinality c. E-R diagram d. none



UNIVERSITY OF THE PUNJAB

Fifth Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Database Systems (CMP)
Course Code: IT-304

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.
SUBJECTIVE TYPE

Q2: Give Answers of following Questions? (Marks=10*2=20)

1. Write a query to Get details of those employees whose emp- name are not "John", "Roy", and smith.
2. Write a query to display those employes whose emp-name contains 'o' OR working in same department as SMITH'.
3. Write a query to display emp-id of those employees whose salary is between 20000 and 30000 OR maximum salary greater than 35000.
4. Select department, total salary with respect to a department from employee table where total salary greater than 800000 order by Total_Salary descending
5. Write a query to display department wise minimum salary of employees order by salary descending.
6. What is Referential Integrity?
7. Difference between Data Administrator and Database administrator?
8. Difference Simple Key and Composite Key?
9. Difference between DDL and DML?
10. Define term Generalization and Specialization?

(Subjective)

Q3: Draw E-R diagram for following scenario, and transform into relations (Marks 10+5)

UPS prides itself on having up-to-date information on the processing and current location of each shipped item. To do this, UPS relies on a company-wide information system. Shipped items are the heart of the UPS product tracking information system. Shipped items can be characterized by item number (unique), weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the UPS system at a single retail center. Retail centers are characterized by their type, unique ID, and address. Shipped items make their way to their destination via one or more standard UPS transportation events (i.e., flights, truck deliveries). These transportation events are characterized by a unique schedule Number, a type (e.g, flight, truck), and a delivery Route. Please create an Entity Relationship diagram that captures this information about the UPS system. Be certain to indicate identifiers and cardinality constraints.

Q4: Normalize the following relation and also explain each normal form? (Marks 05)

Aircraft No	Aircraft Name	Pilot No	Pilot Name	Mission	Flying Hours	Hourly Cost
-------------	---------------	----------	------------	---------	--------------	-------------

Q5: What properties table need to have to qualify for a relation? (Marks 10)



Attempt this Paper on this Question Sheet only.

OBJECTIVE TYPE

Question # 1 Multiple Choice Questions:

(10 marks)

1. _____ is not the component of OS.
 - a. Thread management
 - b. Networking
 - c. Protection system
 - d. Command-line interpreter
2. A PCB contains information associated with a specific process that is used by
 - a. OS to control the process.
 - b. CPU to execute a process
 - c. Process to terminate
 - d. None of above
3. ----- controls the degree of multiprogramming.
 - a. Long term scheduler
 - b. Short term scheduler
 - c. Medium term scheduler
 - d. Dispatcher
4. All Threads with in a process share the _____ address space
 - a. Same
 - b. Different
5. When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called
 - a. Dynamic condition
 - b. Race condition
 - c. Essential condition
 - d. Critical condition
6. We can always prevent a deadlock from happening by providing for additional resources of the same kind
 - a. True
 - b. False
7. Which of the following are examples of non-preemptable resources:
 - a. CPU
 - b. Printer
 - c. Memory
 - d. CD writer
 - e. None of the above
8. How many level of paging will be implemented, if the system has 36bit logical address, page size is 4KB and Main memory is 4MB?
 - a. 2 level
 - b. 3 level
 - c. 4 level
 - d. 5 level
9. A solution to the problem of External fragmentation is :
 - a. Swapping
 - b. Compaction
 - c. Larger memory space
 - d. None of these
10. A solution to the problem of External fragmentation is :
 - a. Swapping
 - b. Compaction
 - c. Larger memory space
 - d. None of these



UNIVERSITY OF THE PUNJAB

Fifth Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Operating Systems (CMP)
Course Code: IT-306

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question # 2 Short Questions

SUBJECTIVE TYPE

5 x 4 = 20 marks

1. Differences between scheduler and dispatcher?
2. Mention four reasons for process creation?
3. States the Critical Section Problem. What requirements must a solution to the critical section problem satisfy?
4. What is the difference between Load Time Dynamic Linking VS Run Time Dynamic Linking?

Question # 3 Schedule the following processes using RR. The processes P1, P2 and P3 have arrived at time units 0, 1 and 2 respectively. The number inside the parenthesis indicates the time units for CPU and I/O bursts. Assume a time quantum of 4 time units. **10 marks**

- a. Create Gantt chart
- b. Calculate turnaround time

Process	CPU Burst	I/O Burst	CPU Burst	I/O Burst	CPU Burst
P1	3	6	2	4	5
P2	5	4	3		
P3	6	8	5	7	2

Question # 4

10 marks

- a. Differences between zombie and orphan processes?
- b. Give the output of the given code snippet.

```

int main ( int argc, char * argv [ ] )
{
    int cpid, status;
    cpid = fork();
    printf("start execution");
    if (cpid > 0)
    {
        wait(&status);
        fork();
        printf("Between Creation");
        fork();
        printf("Inside Parent Process\n");
        printf("Bye\n");
    }
    else
    {
        printf("Inside Child Process\n");
        printf("Good Bye\n");
        fork();
        exit(0);
    }
    return 0;
}

```

Question # 5

10 marks

Consider three resource types in a system with following number of instances.

- A (9 instances)
- B (3 instances)
- C (6 instances)

System State is as shown below, find safe sequence (if any) using Bankers & Safety algorithm. In case if there is no safe sequence mention which process (es) are involved in dead lock.

PROCESS	MAX			ALLOCATION		
	A	B	C	A	B	C
P1	3	2	2	1	0	0
P2	6	1	3	6	1	2
P3	3	1	4	2	1	1
P4	4	2	2	0	0	2



Attempt this Paper on this Question Sheet only.
OBJECTIVE TYPE

1. Choose the correct Answer.

(10×1=10)

- 1) Which artifact is NOT an input to Analysis and Design?
A) use-case model
B) glossary
C) supplementary specification
D) vision
- 2) During analysis an architect is concerned about _____.
A) technology
B) deployment
C) implementation
D) behavioral
- 3) What services can be requested from a class, which define the behavior of the class?
A) operations
B) attributes
C) names of classes
D) stereotypes
- 4) What are the components of a structured class?
A) messages, connectors, and roles
B) ports, roles, and threads
C) roles, ports, and connectors
D) attributes, roles, and ports
- 5) Which of the following views are part of the RUP "4+1 views" Model? (Choose three)
A) Logical View
B) Operational View
C) Use-Case View
D) Implementation View
- 6) A use case diagram is used model ----- of the system?
A) Structure
B) Behavior
C) Organization
D) None of them
- 7) A Class diagram shows relationship between/among _____.
A) Classes
B) Interfaces
C) Collaboration
D) All of These
- 8) During Use Case Analysis, which UML diagrams should you use when allocating use-case behavior to classes?
A) sequence and communication diagrams
B) use-case and activity diagrams
C) sequence and activity diagrams
D) class and composite structure diagrams
- 9) The method of design encompassing the process of object oriented decomposition and a notation for depicting both logical and physical and as well as static and dynamic models of the system under design is known as:
A) Object- Oriented Programming
B) Object- Oriented Design
C) Object- Oriented Analysis
D) None of the mentioned
- 10) What is the programming style of the object oriented conceptual model?
A) Invariant relationships
B) Algorithms
C) Classes and objects
D) Goals, often expressed in a predicate calculus.



UNIVERSITY OF THE PUNJAB

Fifth Semester 2017

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Object Oriented Analysis and Design
Course Code: IT-307

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE TYPE

Q 2. Give Short Answers.

(10×2=20)

1. What is an object? Give an example. Give the characteristics of object oriented system?
2. What is inheritance? Discuss types of inheritance with example?
3. Differentiate between Multilevel and Multiple Inheritance?
4. When we use publicly derived inheritance and privately derived inheritance? Explain with examples?
5. Differentiate between linear and iterative process modeling approaches with examples?
6. Define aggregation and composition with examples?
7. What is the use of system sequence diagram and list the relationships used in class diagram?
8. Explain the relationships that are possible among the classes in the UML representation with your example?
9. Give the use cases that can be used to generate the test cases for the Bank ATM application?
10. Whether unified method and unified modeling language are same or different?

Q3. Give Answers of the following Questions.

(3×10=30)

1. Make the use case, class and object diagrams of a Hospital Management System which should handle the in-patient, out-patient information through receptionist. Doctors are allowed to view the patient history and give their prescription. There should be an information system to provide the required information?
2. Compare object oriented development approach and components based development approach?
3. What are design patterns? Why we use them. Explain any three design patterns with relevant examples?



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Internet Programming (IT)
Course Code: IT-308

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question # 2.

[2 x 10 = 20 Marks]

Precisely write down the answers of the following questions.

1. What do you mean by "Java is platform independent"?
2. How objects will be destroyed in java?
3. What is meant by multiple inheritance and multi-level inheritance?
4. Describe the two attributes i.e. action and method of form tag in html?
5. How does java perform event handling?
6. Write down a life cycle of JSP page.
7. What is difference between package and public access modifiers?
8. What do you know about Server-side scripting languages?
9. What is meant by a scripting language?
10. Describe ResultSet object used in JDBC?

Question # 3.

[3 x 10 = 30 Marks]

Briefly write down the answers of the following questions.

1. What is meant by interface and abstract classes? Explain with an example program.
2. A client wants to send a request to server for checking that a string is palindrome or not. So, you have to make a server-client application, in which client sends a string to the server and server resends the response in which it tells that the given string is palindrome or not. (Do your task with serialization method in which either you can use built-in class String or make your own string class).
3. Write a JSP page, which will dynamically create a drop down list with all countries along with their regions saved in data base.

DB Name: Database

Table name: Countries(countryName(varChar(50)), regionName(varChar(50)))



UNIVERSITY OF THE PUNJAB

Roll No.

Sixth Semester - 2017

Examination: B.S. 4 Years Programme

PAPER: Internet Programming (IT)

TIME ALLOWED: 30 mins.

Course Code: IT-308

MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Question # 1.

[Marks: 1 x 10 = 10]

Evaluate the statement and write down the correct option number.

1. JQuery is a library of JavaScript.
 - a. Yes
 - b. No

2. Scanner class is in _____ package.
 - a. java.lang
 - b. java.util
 - c. javax.swing
 - d. none of these

3. In CSS, class selector uses _____ symbol.
 - a. (.) dot
 - b. (#) dot
 - c. no id selector is available in CSS
 - d. None of these

4. Which of the following is a valid declaration of an object of class Shape?
 - a. new Shape obj;
 - b. obj = new Shape();
 - c. Shape obj = new Shape();
 - d. Shape obj = new Shape;

5. JDK stands for _____.
 - a. Java Deployment Kit
 - b. Java Development Kit
 - c. Java Debugging Kit
 - d. None of these

6. On pressing CANCEL button, prompt box returns _____ value.
 - a. message written in text box
 - b. null
 - c. prompt box is not a type of Pop up box
 - d. none of above

(P.T.O.)

7. Non-static data members/member functions cannot be accessed in static member functions.
- Yes
 - No
8. All functions in java are _____.
- Virtual
 - Inline
 - Both a and b
 - Either a or b
9. If we uses get method technique, then the data will be sent through _____.
- body of request
 - url
 - both a & b
 - none of these

10. What will be the output of the program?

```
public class Foo{
    public static void main(String [] args){
        try{
            return;        }
        finally{
            System.out.println("Finally");
        }
    }
}
```

- Finally
- Compilation fails
- The code runs with no output
- An exception is thrown at runtime



UNIVERSITY OF THE PUNJAB

Roll No.

Sixth Semester - 2017

Examination: B.S. 4 Years Programme

PAPER: Computer Networks (CMP)

Course Code: IT-309

TIME ALLOWED: 30 mins.

MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Question No 1: Multiple Choice Questions

[1x10=10]

1. In the _____ protocol we avoid unnecessary transmission by sending only frames that are corrupted.
a) Stop and Wait
b) Go-Back-N
c) Selective Repeat
d) none
2. Which of the following is not a digital-to-analog conversion?
a) ASK
b) PSK
c) FSK
d) AM
3. _____ encoding has a transition at the middle of each bit.
a) RZ
b) Manchester
c) Differential Manchester
d) All
4. In the OSI model, what is the main function of the transport layer?
a) node-to-node delivery
b) process-to-process message delivery
c) synchronization
d) updating and maintenance of routing tables
5. To solve the looping problem, bridges on LAN use the _____ algorithm, to create a loop less topology.
a) Dijkstra's
b) Distance Vector
c) Spanning tree
d) none
6. In _____ switching, there is no resource allocation for a packet.
a) datagram
b) virtual circuit
c) message
d) circuit
7. A generator that contains a factor of _____ can detect all odd-numbered errors.
a) x
b) $x + 1$
c) 1
d) none
8. A Go-back-N ARQ uses a window of size 15, how many bits are needed to define the sequence number
a) 16
b) 5
c) 4
d) none
9. A stream of packets from a source to a destination is called data _____.
a) congestion
b) flow
c) process
d) 8
10. If Ethernet destination address is 07:01:02:03:04:05, then this is a _____ address.
a) unicast
b) multicast
c) broadcast
d) anycast



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Computer Networks (CMP)
Course Code: IT-309

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question No 2: Give the short answers of the following short Questions? [2x10=20]

1. What are the three types of routing decision taken by a bridge for an incoming frame?
2. Write the names of any four Discuss different types of delays in packet switched networks?
3. Differentiate between inter domain and intra domain routing protocol?
4. Encode the following bit stream, 11001001 with the NRZ-L and Manchester encoding schemes.
5. Using a 5 bit sequence number, what is the maximum size of the send and receive windows for each of the following protocol:
 - a. Go-Back-N ARQ
 - b. Selective Repeat ARQ
6. For n devices in a network, what is the number of cable links required for a mesh topology?
7. Determine the level of sensitivity ('High' or 'Low') of each application in the following table for given parameters.

Application	Reliability	Delay	Jitter	Bandwidth
Text Chat				
Online Gaming				

8. What is a socket address?
9. What is a default mask?
10. How Http is similar to FTP?

Question No 3: Give the answers of the following Questions? [6x5=30]

- (1) Discuss the propagation modes in Fiber Optics?
- (2) Given a remainder of 111, a data unit of 10110011, and a divisor of 1001, is there any Error in data unit?
- (3) Discuss CSMA/CD protocol?
- (4) Which of the following are easy/difficult to handle in Virtual-Circuit and Datagram subnets, and why? (Answer just in one line for each case)
 - i. Router memory space
 - ii. Address parsing time
 - iii. Quality-of-service
 - iv. Congestion control
- (5) Consider the class 'B' address: 170.110.88.0. We need 56 subnets in such a way that each subnet may host up to 32 hosts.
 - a) How many bits will be required for subnet ID?
 - b) How many usable subnets will be there?
 - c) What will be the subnet mask?
 - d) What will be the address of 3rd host of 2nd subnet?
- (6) How does standard TCP react in case of Congestion?



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2017

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Information Systems (IT)
Course Code: IT-311

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE PORTION

Q. No. 2 Attempt the following Short Questions. (5*4=20)

1. What is Information and what are its characteristics?
2. What is Knowledge Management System (KMS).
3. Distinguish between internet and Intranet?
4. What is meant by e-commerce with example?
5. What is an organization and its different features?

Q. No. 3 Attempt the following long Questions. (10*3=30)

Q i. What is Information system and Explain TPS and ESS with an example?

Q ii. Explain Revenue Model of E-commerce? How a business can make money what are the strategies for that?

Q iii. While using IT in Business which kind of Security and Ethical challenges exists in society?



UNIVERSITY OF THE PUNJAB

Roll No.

Sixth Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Information Systems (IT)
Course Code: IT-311

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

OBJECTIVE PORTION

Q. No.1. Select the most suitable choice.

1.	Which system are typically major sources of data of other systems? (a) Transaction Processing system (b) Management Information system (c) Executive Support system (d) Decision Support system
2.	A supply chain management (SCM) system it manages firm's relationships with _____. (a) Suppliers (b) Consumers (c) Low Level Management (d) High Level Management
3.	Types of E-commerce (a) 3 (b) 2 (c) 4 (d) 5
4.	Support processes for acquiring, creating, storing, distributing, applying, integrating knowledge: (a) Transaction Processing system (b) Management Information system (c) Executive Support system (d) Decision Support system
5.	Menu cost is said to be the: (a) Merchant cost of changing price (b) Cost of selling products (c) Cost of resources (d) Cost of selling e-bay products
6.	_____ is not moral dimension of information age? (a) Information rights and obligation (b) accountability and control (c) Quality of life (d) Cast system
7.	Transaction Processing system are most commonly used by the senior management level of an organization. (a) True (b) False (c) Statement is not clear
8.	In transaction fee revenue model revenue is generated through _____. (a) Commission (b) Resources (c) Marketing (d) None of these
9.	Long-term strategic decisions, financial performance is defined by (a) Suppliers (b) Consumers (c) Low Level Management (d) High Level Management
10.	_____ include Make decisions, formulate action plans, solve organizational problems: (a) Information Technology (b) Management (c) Information System (d) None



Attempt this Paper on this Question Sheet only.

SECTION-I

Q. 1 MCQs (1x10 = 10 Marks)

- (i) The set $S = \left\{ \begin{bmatrix} 1 \\ 2 \end{bmatrix}, \begin{bmatrix} 2 \\ 3 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \end{bmatrix} \right\}$ of vectors in R^2 is -----
a) Linearly Independent b) Linearly dependent c) Basis of R^2 d) None of these
- (ii) A system $Ax = b$ of m linear equations in n unknowns in n variables has a solution if and only if-----
(a) rank of $A = \text{rank of } A_b$ (b) rank of $A \neq \text{rank of } A_b$
(c) rank of $A = m$ (d) None of these
- (iii) If A is a matrix of order 3×3 and $\det(A) = 3$, then the value of $\det(2A)$ is -----
(a) 24 (b) 27 (c) 54 (d) None of these
- (iv) A unit vector orthogonal to both $(1, 1, 2)$ and $(0, 1, 3)$ in R^3 is -----
(a) $\left(\frac{1}{\sqrt{11}}, \frac{-3}{\sqrt{11}}, \frac{1}{\sqrt{11}} \right)$ (b) $\left(\frac{-1}{\sqrt{11}}, \frac{3}{\sqrt{11}}, \frac{1}{\sqrt{11}} \right)$ (c) $\left(\frac{2}{\sqrt{11}}, \frac{-3}{\sqrt{11}}, \frac{-1}{\sqrt{11}} \right)$ (d) $\left(\frac{-1}{\sqrt{11}}, \frac{-3}{\sqrt{11}}, \frac{1}{\sqrt{11}} \right)$
- (v) The set $W = \{(x, y, z) \in R^3 : x + y + z = c\}$ is a subspace of R^3 if -----
(a) $c > 0$ (b) $c < 0$ (c) $c = 0$ (d) None of these
- (vi) The property $\forall a, b \in R$ then $a + b = b + a$ is called -----
(a) Associative property (b) Transitive property
(c) Closure property (d) None of these
- (vii) A linear transformation $T : U \rightarrow V$ is one-to-one if and only if -----
(a) $N(T) = \{0\}$ (b) $N(T) \neq \{0\}$ (c) $N(T) = \{1\}$ (d) $N(T) = \{-1\}$
- (viii) The transformation $T : R^3 \rightarrow R^2$ be defined by $T(x_1, x_2, x_3) = (x_1 + 1, x_2 + x_3)$ is
(a) Linear (b) Not Linear (c) Rational (d) None of these
- (ix) The dimension of $\text{Ker}T$ is called -----
(a) Rank (b) Nullity (c) basis (d) none of these
- (x) The characteristic polynomial of the matrix $\begin{pmatrix} 3 & 0 \\ 0 & 4 \end{pmatrix}$ is-----
(a) $p(\lambda) = (3 - \lambda)^2$ (b) $p(\lambda) = (3 - \lambda)(4 - \lambda)$
(c) $p(\lambda) = \lambda^2$ (d) None of these



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2017

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Linear Algebra (MA)
Course Code: IT-312

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SECTION-II

Q. 2

SHORT QUESTIONS

(4x5 = 20 Marks)

(i) Solve the system of linear equations

$$6x - 6y + 6z = 6$$

$$2x - 4y - 6z = 12$$

$$10x - 5y + 5z = 30$$

(ii)

Prove that
$$\begin{vmatrix} \frac{a^2+b^2}{c} & c & c \\ a & \frac{b^2+c^2}{c} & a \\ b & b & \frac{c^2+a^2}{c} \end{vmatrix} = 4abc$$

(iii) Show that the vectors (1,2), and (3,5) span the vector space \mathbb{R}^2

(iv) Define $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$ by $T(x_1, x_2, x_3) = (x_1 - x_2, x_1 + x_3, x_2 + x_3)$. Find the basis and dimension of $N(T)$.

(v)

Find inverse of the matrix
$$\begin{bmatrix} 1 & 0 & 3 \\ 2 & 4 & 1 \\ 1 & 3 & 0 \end{bmatrix}$$

SECTION-III

LONG QUESTIONS

(6x5 = 30 Marks)

Q.3 Solve the system of linear equations by Gaussian elimination method

$$x + y + 2z = 9, \quad 2x + 4y - 3z = 1, \quad 3x + 6y - 5z = 0$$

Q.4

Find the characteristic polynomial, eigen Values and eigen vectors of the matrix
$$\begin{bmatrix} 2 & 2 \\ 3 & 1 \end{bmatrix}$$

Q.5

Show that the matrix
$$\begin{bmatrix} 1 & -3 & -4 \\ -1 & 3 & 4 \\ 1 & -3 & -4 \end{bmatrix}$$
 is nilpotent.

Q.6

Determine whether or not the given set of vectors is a basis of \mathbb{R}^3
 $v_1 = (1, 2, -1), v_2 = (0, 3, 1), v_3 = (1, -5, 3)$.

Q.7

Write $v = (1, -2, 5)$ as a linear combination of the vectors
 $v_1 = (1, 1, 1), v_2 = (1, 2, 3), v_3 = (2, -1, 1)$



Attempt this Paper on this Question Sheet only.

(Objective Part) 10 Marks

Choose the appropriate options.

- (i) When brain fail to send a breadth signal. then we are facing:
 - a) Narcolepsy
 - b) Insomnia
 - c) Sleep Apnea
 - d) None of them
- (ii) Echoic memory is based on:
 - a) Images
 - b) Sounds
 - c) Pain
 - d) Pressure
- (iii) When new information gets mix with old one and dominate then this process is called:
 - a) Proactive
 - b) Attention
 - c) Retroactive
 - d) Nene of them
- (iv) Who introduced the idea of Dualism?
 - a) Aristotle
 - b) Plato
 - c) Rene Descartes
 - d) Wilhelm Wundt
- (v) Who is known as the father of Modern Psychology?
 - a) Plato
 - b) Wilhelm Wundt
 - c) E.B.Titchener
 - d) Sigmund Freud
- (vi) Psychoanalysis is a method of searching a person's
 - a) Conscious Memories
 - b) Unconscious Memories
 - c) Latent Memories
 - d) None of them
- (vii) Whole is greater than the sum of parts is the key point of
 - a) Cognitive School of thought
 - b) Functionalism
 - c) Behaviorism
 - d) Gestalt School of thought
- (viii) E.B Titchener used the method of:
 - a) Functionalism
 - b) Introspection
 - c) Observation
 - d) Clinical Method
- (ix) Sleep walking murder cases occurred to date:
 - a) 65
 - b) 69
 - c) 68
 - d) 67
- (x) Who opened the first psychology lab at the university of Leipzig?
 - a) Wilhelm Wundt
 - b) IVan Pavlov
 - c) B.F. Skinner
 - d) E.B Titchener



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Introduction to Psychology (HM)
Course Code: IT-313

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

(Subjective Part) 30 Marks

- 1) Define the term “Psychology”. Write a detailed note on the following branches of Psychology: (10)
 - a) Forensic Psychology
 - b) Clinical Psychology
 - c) Cognitive Psychology
 - d) Neuro Psychology
- 2) Explain the detail of “Personality Theory of Sigmund Freud”. (10)
- 3) Define the term “Hypnotism”. Discuss the Application of “Hypnotism” in detail. (10)

Short Questions 20 Marks

- 4) Write a detailed note on “Psychoanalysis” School of Thought.(5)
- 5) Discuss in detail the “Disorders regarding Personality”.(5)
- 6) Define Narcolepsy and Sleep Apnea as Sleep Disorders.(5)
- 7) Define the term **Artificial Intelligence** and differentiate between Human Mind and Computer Memory.(5)



UNIVERSITY OF THE PUNJAB

Sixth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Introduction to Sociology (SS)
Course Code: IT-314

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

(Subjective Part) 30 Marks

- 1) Define the term "Sociology". Explain briefly social sanction: (10)
- 2) What is social interaction? Write a detail note on the various types of social interaction.
(10)
- 3) Write a detail note on the following perspectives of sociology: (10)
 - **Functionalist.**
 - **Conflict**
 - **Interactionist.**

Short Questions 20 Marks

- 4) Differentiate between society and community.(5)
- 5) What is conflict? (5)
- 6) What are some types of authority? Explain precisely. (5)
- 7) Define Ibn-e-khuldun laws of sociology.(5)



UNIVERSITY OF THE PUNJAB

Roll No.

Sixth Semester - 2017

Examination: B.S. 4 Years Programme

PAPER: Introduction to Sociology (SS)
Course Code: IT-314

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

(Objective Part) 10 Marks

Choose the appropriate options.

- (i) The most important agent of socialization is:
 - a) Family.
 - b) School
 - c) Peer.
 - d) None of them
- (ii) The practical form of status is:
 - a) Heredity.
 - b) Role
 - c) Strata
 - d) None of them.
- (iii) The founder of modern sociology is:
 - a) Ibn-e-khuldun.
 - b) Imam Ghazali.
 - c) Shah wali ulluah.
 - d) Auguste comte.
- (iv) The term AL-ASBIYA refers to:
 - a) Voluntary cooperation.
 - b) Social evolution.
 - c) Social solidarity.
 - d) None of these.
- (v) System of reward and punishment is called:
 - a) Social sanctions.
 - b) Social norms.
 - c) Law.
 - d) All of them.
- (vi) Social interaction is the name of:
 - a) Social relation.
 - b) Social gathering.
 - c) Social processes.
 - d) Game.
- (vii) Who used the analogy of living organism for society:
 - a) Max weber.
 - b) Herbert spencer.
 - c) C.W.Mills.
 - d) Auguste Comte.
- (viii) Muqaddamah was written by:
 - a) Auguste Comte.
 - b) Ibn-e-khuldun
 - c) Aristotle.
 - d) None of these.
- (ix) Sociology originated as a separate discipline in:
 - a) 1836
 - b) 1837
 - c) 1838
 - d) None of them.
- (x) Max weber focused on the idea of:
 - a) Communism.
 - b) Symbolic interactionism.
 - c) Functionalism.
 - d) None of them.



UNIVERSITY OF THE PUNJAB

Roll No.

Seventh Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Network Management and Administration
Course Code: IT-401

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Q 1: Each question has four possible answers. Choose the correct answer and encircle it. Over-writing, Cutting, Erasing, Using of lead pencil will result in loss of marks. (10)

- (i) To solve the looping problem, bridges on LAN use the _____ algorithm, to create a loopless topology.
(a) Dijkstra's (b) Distance Vector (c) Spanning tree (d) none
- (ii) How many kinds of information RMON can collect:
(a) 11 (b) 9 (c) 7 (d) 5
- (iii) Which type of Agents are optimized for specific hardware platform and Operating system:
(a) Extendible (b) Proxy (c) Monolithic (d) None
- (iv) SNMP uses _____ as the transport mechanism for SNMP messages:
(a) TCP/IP (b) UDP (c) FTP (d) SMTP
- (v) You have a network ID of 206.17.250.0 and need to divide it into nine subnets. You need to provide for the largest possible number of hosts per subnet. Which of the following subnet masks should you use?
(a) 255.255.255.240 (b) 255.255.255.248 (c) 255.255.255.224 (d) 255.255.255.192
- (vi) What will allow a host on VLAN 40 on switchX to communicate with a host in VLAN 40 on switch Y?
(a) QoS (b) Routing (c) Trunking (d) VPN
- (vii) Communication between the Probes and Central Server is:
(a) XML (b) HTML (c) ASP (d) JavaScript
- (viii) Which one is not a ATM Service:
(a) ABR (b) SBR (c) VBR (d) None
- (ix) In which STP state does a port record MAC addresses but not forward user data?
(a) blocking (b) learning (c) disabling (d) forwarding
- (x) Which of the following is not a valid VTP mode?
(a) Server (b) Client (c) Transparent (d) Hybrid



UNIVERSITY OF THE PUNJAB

Seventh Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Network Management and Administration
Course Code: IT-401

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Q 2: Answers the following short questions:

(10 x 02 = 20)

- 1) What is the difference between share and security permissions?
- 2) What is the difference between Ad-hoc and Infrastructure mode Wireless network?
- 3) Differentiate between manager and agent in network management?
- 4) Differentiate between MIB and SMI?
- 5) What are the Four Differences between Workgroup and Domain in windows networking?
- 6) What are the four functional areas of Network management?
- 7) Write any two versions windows server 2003?
- 8) Write any two versions of SNMP protocol?
- 9) What is the functionality of probe in RMON?
- 10) What are the three roles for a Windows Server 2003 system in a network?

Q 3: Long Question:

(10 x 03 = 30)

- 1) a) What is the process of detecting problems in fault management?
b) Do you need an NMS? why?
- 2) a) What is the role of DNS server in networks and what's types of DNS-explain?
b) What is Transport mapping? Explain?
1. 3) Write short notes on:
 - a) Access List
 - b) SNMP V3.



UNIVERSITY OF THE PUNJAB

Roll No.

Seventh Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Enterprise Application Development
Course Code: IT-402

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Question # 01:- Write the selected option (A or B) on your answer sheet against each of the following

[1 x 10 = 10]

- | | | |
|--|---------|----------|
| 1. Client and Server are only components of EJB architecture? | A. True | B. False |
| 2. There are 4 editions of J2EE available in the web market? | A. True | B. False |
| 3. Applications written using EJB are static? | A. True | B. False |
| 4. Session, Entity and Message Driven are all types of java beans? | A. True | B. False |
| 5. CMP stands for Classical Management Protocol? | A. True | B. False |
| 6. CMP and BMP are subtypes of session bean? | A. True | B. False |
| 7. Life cycle of state-full application bean includes Ready, Activate and Passivate? | A. True | B. False |
| 8. Enterprise bean manages the consistence logic in CMP entity bean? | A. True | B. False |
| 9. LDAP stands for Light Directory Access Process? | A. True | B. False |
| 10. EAD stands for Enterprise Application Development? | A. True | B. False |



UNIVERSITY OF THE PUNJAB

Seventh Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Enterprise Application Development
Course Code: IT-402

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Question # 02:- Write a brief description about each of the following

[5 x 4 = 20]

1. What do you mean by distributed system?
2. What is the purpose of CSS?
3. Why there is need to use HTML in enterprise application?
4. What do you mean by local interface?
5. Define CMP Bean?

Question # 03:- Answer the following questions

[3 x 10 = 30]

1. What is RMI? Explain the purpose of its each component with the help of examples.
2. What do you mean by JQuery? Explain the purpose of its each component with the help of examples.
3. What do you mean by Java Mail API? What advantages are provided by this component in the website development over the existing ones?



UNIVERSITY OF THE PUNJAB

Roll No.

Seventh Semester 2017

Examination: B.S. 4 Years Programme

PAPER: Database Administration
Course Code: IT-403

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Objective

(Marks 10*)

1. LGWR process writes information into

- a. Database file b. Control File c. Redolog File d. All of above

2. Database overall structure is maintained in a file called

- a. Redologfile b. Datafile c. Control files d. All of above

3. It is difficult to grant and manage common privileges needed by different groups of database users using the roles

- a. True b. False

4. Which of the following is not an reason for the fact that most of processing is done at the server ?

- a. To reduce network traffic b. For application sharing
c. To implement business rules centrally c. None

5. All datafiles related to tablespace are removed when the tablespace is dropped

- a. True b. False

6. What is DATABLOCK

- a. Set of Extents b. Set of Segments c. Smallest Database storage unit d. None

7. A Transaction ends

- a. Only when it is Committed b. Only When it is Rolledback
c. When it is Committed or Rolledback d. None

8. Which is not part of the Data Definition Language ?

- a. Create b. Alter c. Alter session d. None

9. Size of tablespace can be increase by

- a. Increase the size of one of the Datafiles b. Adding one or more Datafiles
c. Cannot be increased d. None

10. A set of Dictionary tables recreated

- a. Once for entire database b. Every time user is created
c. Every time a tablespace is created d. None



UNIVERSITY OF THE PUNJAB

Seventh Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Database Administration
Course Code: IT-403

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Q2: Give answer of shot question

(Marks 4 *5=20)

1. Write steps and commands to take open database backup of database running in Archive log mode.
2. Write a recovery steps with command. When database running in Archive log mode and database initially closed.
3. Add redo log member(log01.rdo,log02.rdo) to each group(Group1,Group2) in your database located on "mydb".
4. Create Table space with the name "user01" locally managed with uniform size extends.

Subjective

(Marks 6*5=30)

1. Differentiate between PFILE and SPFILE?
2. Describe Different Stages of starting up instances.
3. Create a Locally managed tablespace.
4. Explain the recovery procedure w.r.t Redolog files and Undo Segments .
5. Draw a diagram of explaining relation between database physical structure and logical structure.
6. What is a Role? Explain different characteristics of role.?



UNIVERSITY OF THE PUNJAB

Roll No.

Seventh Semester 2017
Examination: B.S. 4 Years Programme

PAPER: Project Management
Course Code: IT-404

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Objective Type Questions (Total Marks 10)

Q1: Choose the Correct Answer:

- 1.1) Which of the following is not an attribute of a project?
 - a. Project is unique
 - b. Project is developed by using progressive elaboration
 - c. Project has primary customer or sponsor
 - d. Project involve little uncertainty

- 1.2) What term describes an organization's acquisition of goods and services from an outside source in another country?
 - a. Globalization
 - b. Offshoring
 - c. Exporting
 - d. Global Sourcing

- 1.3) _____ involves measuring progress toward project objectives and taking corrective measures?
 - a. Initiating
 - b. Planning
 - c. Executing
 - d. Monitoring and Controlling

- 1.4) What tools and techniques are used for all processes of project integration management?
 - a. Project management software
 - b. Templates
 - c. Expert Judgement
 - d. All of the above

- 1.5) What approach is used to develop a WBS for writing down and drawing ideas in a nonlinear format?
 - a. Top-down
 - b. Bottom-up
 - c. Analogy
 - d. Mind mapping

- 1.6) _____ is a network diagramming technique used to predict project duration?
 - a. PERT
 - b. GANTT chart
 - c. Critical Path Method Analysis
 - d. Crashing

P.T.O.



UNIVERSITY OF THE PUNJAB

Seventh Semester 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Project Management
Course Code: IT-404

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Short Questions (Marks 20)

Each question is of 2 marks

1. What is a project?
2. Define Quality with respect to triple constraints?
3. Differentiate software development life cycle and project life cycle?
4. Explain projectized organization?
5. Name techniques of budget estimation?
6. List reasons why Organizations use 'benchmarking'?
7. List the tools and techniques for performing risk quantitative analysis?
8. Enlist the processes involved in Project communication Management?
9. Explain RACI charts?
10. Define "Project baseline"?

Subjective Questions (Marks 30)

Question 1: (15 Marks)

Explain project time management processes in details?

Question 2: (15 Marks)

Define Software Configuration Management? Explain its processes in details by taking relevant examples?

End of Question Paper



UNIVERSITY OF THE PUNJAB

Roll No.

Eighth Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Network Security
Course Code: IT-406

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

OBJECTIVE TYPE

Question #1

(1*10=10)

Choose and encircle appropriate option from following, overwriting and cutting is not allowed.

- 1) We use Cryptography term to transforming messages to make them secure and immune to
a) Change b) Idle c) Attacks d) Defend
- 2) Cryptanalysis is used
a) to find some insecurity in a cryptographic scheme b) to increase the speed
c) to encrypt the data d) none of the mentioned
- 3) SHA-1 has a message digest of
a) 160 bits b) 512 bits c) 628 bits d) 820 bits
- 4) The digest created by a hash function is normally called a
a) modification detection code (MDC) b) message authentication connection
c) message authentication control d) message authentication cipher
- 5) The man-in-the-middle attack can endanger the security of the Diffie-Hellman method if two parties are not
a) Authenticated b) Joined c) Submit d) Separate
- 6) In Cryptography, when text is treated at the bit level, each character is replaced by
a) 4 Bits b) 6 Bits c) 8 Bits d) 10 Bits
- 7) What is a Hash Function?
a) It creates a small flexible block of data b) It creates a small, fixed block of data
c) It creates a encrypted block of data d) none of the mentioned
- 8) Which one of the following algorithm is not used in asymmetric-key cryptography?
a) RSA algorithm b) diffie-hellman algorithm
c) electronic code book algorithm d) none of the mentioned
- 9) Pretty good privacy (PGP) is used in
a) browser security b) email security c) FTP security d) none of the mentioned
- 10) In tunnel mode IPsec protects the
a) IP header b) entire IP packet c) IP payload d) none of the mentioned



UNIVERSITY OF THE PUNJAB

Eighth Semester - 2017

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Network Security
Course Code: IT-406

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

SUBJECTIVE TYPE

Short Questions

Question #2.

(4*5=20)

Write the short answers of the following question.

- 1.1) What are the **Security Threats** data may face by some intruder during data communication over a network? Describe briefly.
- 1.2) Eve has intercepted the cipher text “UVACLYFZLJBYL”. Show how she can use a **brute-force attack** to break the cipher got as a result of **Additive cipher**?
- 1.3) Discuss the role of Ticket Granting server (**TGS**) in inter realm operations of **Kerberos**?
- 1.4) How does **IPSec** offer the authentication and confidentiality service?
- 1.5) Permute the following Hexadecimal word of plain text **A2B** using the following 12x16 Permutation table?

01	09	10	11	12	01	02	03	03	04	05	06	07	08	09	12
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Question #3

(10)

- a) Explain with the help of flow chart and figures working of **Advance Encryption standard(AES)** by providing General Structure, Structure of Rounds and Key Generation Mechanism?

Question #4

(2*5=10)

- a) Why is SHA more secure than MD5?
- b) How does IPSec offer the authentication and confidentiality service?

Question #5

(10)

What is Principle of Public **Key Encryption** Technique? Explain **RSA** algorithm with example.



UNIVERSITY OF THE PUNJAB

Roll No.

Eighth Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Software Quality Assurance
Course Code: IT-407

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Objective Type Questions (Total Marks 10)

Choose the best option:

1. Which testing is concerned with behavior of whole product as per specified requirements.
A. Acceptance Testing
B. Component Testing
C. System Testing
D. Integration Testing
2. Software tester should be involved very early during development phase of a project.
A. True
B. False
3. System Testing is a _____.
A. Black Box Testing
B. White Box Testing
C. Gray Box Testing
D. None of the above
4. Beta testing is useful way of compatibility testing.
A. True
B. False
5. Who is responsible for component testing?
A. Software Tester
B. Designer
C. User
D. Developer
6. User Acceptance Testing is _____.
A. White Box Testing
B. Black Box Testing
C. Gray Box Testing
D. None of the above
7. Which of the following is not the part of test plan?
A. Scope
B. Mission
C. Objective
D. Risk Right
8. "The degree of a function to give right result" is known as _____.
A. Reliability
B. Correctness
C. Scalability
D. Maintainability
9. Black Box Testing is only functional testing.
A. True
B. False
10. Software Quality Control consists of the auditing and reporting functions of management.
A. True
B. False



UNIVERSITY OF THE PUNJAB

Eighth Semester - 2017

Examination: B.S. 4 Years Programme

Roll No.

PAPER: Software Quality Assurance
Course Code: IT-407

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Short Questions (Marks 20)

Each question is of 5 marks

1. Differentiate "Measure" and "Metric" with example?
2. Name the main heads of a "test plan"?
3. Differentiate 'defect' and 'failure' with example?
4. Shortly explain the "Alpha Testing" and "Beta Testing"?

Subjective Questions (Marks 30)

Question 1: (10 Marks)

Briefly explain Dromey's Quality Model?

Question 2: (10 Marks)

Explain "testing principles" in short?

Question 3: (10 Marks)

Write a short note on:

- A. Review Techniques
- B. ISO 9126 Model



UNIVERSITY OF THE PUNJAB

Roll No.

Eighth Semester - 2017
Examination: B.S. 4 Years Programme

PAPER: Introduction to Economics
Course Code: IT-408

TIME ALLOWED: 30 mins.
MAX. MARKS: 10

Attempt this Paper on this Question Sheet only.

Objective

Q1. Encircle the correct option. Overwriting and cutting is not allowed. (1×10=10)

- i. When marginal utility is negative, then total utility
 - a. Decreases
 - b. Increases
 - c. Becomes negative
 - d. Does not change
- ii. In economics, symbol for utility is
 - a.M
 - b.X
 - c.U
 - d.Y
- iii. If demand is not influenced by the change in price, elasticity of demand will be:
 - a. Equal to one
 - b. More than one
 - c. Less than unity
 - d. Zero
- iv. The cost which increase and decrease with the level of output are
 - a. Total cost
 - b. Fixed cost
 - c. Variable cost
 - d. Marginal cost
- v. Additional amount of money which a firm gets by selling an additional output is called:
 - a. Average revenue
 - b. Marginal revenue
 - c. Total revenue
 - d. None
- vi. Monopoly is opposite to:
 - a. Perfect competition
 - b. Imperfect competition
 - c. Oligopoly
 - d. Perfect and imperfect competition both
- vii. One of the following is invisible item of balance of payment
 - a. Import of motor cars
 - b. Export of cotton
 - c. Private investment in foreign country
 - d. Expenditures of passengers travelling by air
- viii. Which one of following is indirect tax?
 - a. Income tax
 - b. Property tax
 - c. Export duty
 - d. Sales tax
- ix. The income which a person can use according to his will is called
 - a. Personal income
 - b. Disposable personal income
 - c. Net income
 - d. Per capita income
- x. The systematic record of visible and invisible exports and imports of a country in one year is called
 - a. Balance of trade
 - b. Balance of payments
 - c. External balance
 - d. Internal balance.



UNIVERSITY OF THE PUNJAB

Eighth Semester - 2017
Examination: B.S. 4 Years Programme

Roll No.

PAPER: Introduction to Economics
Course Code: IT-408

TIME ALLOWED: 2 hrs. & 30 mins.
MAX. MARKS: 50

Attempt this Paper on Separate Answer Sheet provided.

Subjective

- Q2. Write short answers to the following questions: (2×10=20)**
- i. Write five causes of changes in supply.
 - ii. Define oligopoly.
 - iii. Define marginal product.
 - iv. State meanings of total cost.
 - v. Draw average and marginal revenue curves under monopoly.
 - vi. When is Balance of Payments surplus?
 - vii. Write five causes of inflation.
 - viii. What is meant by indirect tax?
 - ix. Define gross national product.
 - x. Enlist various types of unemployment.
- Q3. What is meant by Central Bank. Describe functions of a Central Bank. (10)**
- Q4. Define national income and explain circular flow of national income. (10)**
- Q5. What is monopolistic competition? Explain and illustrate how price and output are determined under monopolistic competition. (10)**