Course Code	:	BCS-011
Course Title	:	Computer Basics and PC Software
Assignment Number	:	BCA (1)/011/Assignment/2019-20
Maximum Marks	:	100
Last Date of Submission	:	15th October, 2019 (For July, 2019 Session)
		15th April, 2020 (For January, 2020 Session)

This assignment has three questions of 80 marks. Answer all the questions. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation. Please give precise answers. The word limit for each part is 200 words.

Q1. (Covers Block 1) (7×4=28)

a) Explain the von Neumann Architecture with the help of a diagram. Is this architecture used in the current personal computers? Justify your answer. Explain the role of integrated circuits in design of computers. Also, explain the classification of computer on the basis of technology.

b) Explain the term binary digit. How binary number system is different from decimal number system? How do you represent a computer instruction in binary? Explain with the help of an example. List and explain the role of various components of a computer instruction. What is the role of bus and registers in instruction execution?

c) Convert the following numbers as directed
   (i) Decimal 257.125 into binary and hexadecimal
   (ii) Decimal 999876789 into binary and hexadecimal
   (iii) String "Test for number 45, @check" to ASCII and Unicode strings
   (iv) Hexadecimal 4F9A8C7D to decimal and binary

d) What is the role of memory in a computer system? Why are primary and secondary memory needed in a computer system? What is RAM? How is it different to ROM? Which of the two, RAM or ROM is volatile?

e) Define the term access time for a hard disk. Explain with the help of an example, how access time and storage capacity for magnetic disks are calculated. How is the storage capacity for a magnetic tape calculated? What are the differences in access mechanism for magnetic tapes and magnetic disks?

f) Compare and contrast the following technologies
   (i) Light Pen and Touch screen
   (ii) Scanner and Optical Mark Reader
   (iii) LCD monitor and LED display
   (iv) Printers and Plotters

g) Explain the characteristics/functions of the following in the context of a computer system:

    (i) Disk Defragmenter

    (ii) Motherboard of a computer

    (iii) Disk Checkers

    (iv) Uses of "My Computer" and "My Documents" on a Windows Desktop

Q2. (Covers Block 2)   (7×4=28)

a) Explain the Client/Server architecture with the help of a diagram. Explain how this architecture is similar to/ different from cloud computing.

b) Explain the differences between structured programming and non-structured programming with the help of example code. List and define the three important concepts of Object oriented programming.

c) Define the basic functions of the following software:

    (i) Compiler

    (ii) Device Driver

    (iii) Diagnostic Program

    (iv) Anti-virus software

d) List the functions of the following in the context of Operating System

    (i) Graphical User interface and its advantages

    (ii) File management

    (iii) Process

    (iv) Batch Processing

    (v) Time sharing

    (vi) Input/ Output Services

e) Draw a flow chart and write an algorithm for a program that adds all two digit numbers divisible by 3. (Hint: These numbers are 12, 15 till 99. You must use looping).

f) Explain the meaning of each of the following lines in the context of programming:

    (i) int i;

        int remain, evenodd=31;

    (ii) remain = evenodd % 2;

    (iii) if (remain == 0)

    (iv) printf("The Number is an EVEN number");

    (v) else printf("The Number is an ODD number");

g) List which software or type of software will be required for the following situations. Give reasons in support of your answer.

(i) You have joined a new company which maintains your daily activity logs and time devoted by you on different projects which company is doing. The company maintains these records for all the employees & projects.

(ii) You need to send your resume along with an application to 20 different companies; you have name and address of HRD manager of all these companies stored in file.

(iii) You need to record the transactions of a multinational company; the transaction may include purchases, sales and financial transactions.

(iv) You have a very low budget for buying application software, though you have manpower with good computer skills what kind of software will you use for the company and why?

Q3. (Covers Block 3)   **(6×4=24)**

(a) What are the advantages of using Computer Networks? Explain the following terms in the context of computer networks:

(i) Circuit switching

(ii) Half Duplex transmission

(iii)Guided Channels

(iv)Infrared transmission.

(b) Explain the differences between the following, giving one application of each:

(i) Ring Topology, Bus topology and star topology

(ii) LAN, MAN and WAN

(c) Explain the characteristics of the following networking devices:

(i) Routers

(ii) Modem

(iii)Gateways

(iv)Switches

(d) Explain the layers of TCP/IP Model. What is an IP address? Explain the role of subnet mask with the help of an example. How does DNS translate a web address? Explain with the help of an example.

(e) Explain the functions of browser and search engine in the context of Internet. You want to find commercial banks which offer **house loans** and **debit cards** but do not provide **online services**; make efficient query or queries that will show the desired result as above.

(f) Explain the following in the context of Internet and its applications:

(i) E-learning and Moodle

(ii) Electronic Educational Resources

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