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B.C.S.-11

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CONTENTS

COMPUTER BASICS AND PC SOFTWARE

Question Bank – (Previous Year Solved Question Papers)

Question Paper—Exam Held in February-2021 (Solved)	**1-11**
Question Paper—June, 2019 (Solved)	**1-10**
Question Paper—June, 2018 (Solved)	**1-5**
Question Paper—June, 2017 (Solved)	**1-9**
Question Paper—June, 2016 (Solved)	**1-10**
Question Paper—June, 2015 (Solved)	**1-13**

S.No.	***Chapterwise Reference Book***	*Page*

BASICS OF COMPUTER HARDWARE

1.	Computer – their Origin and Applications	**1**
2.	Functioning of A Computer	**19**
3.	Memory System	**28**
4.	Input and Output Devices	**38**
5.	My Personal Computer	**52**

BASICS OF COMPUTER SOFTWARE

6.	Software Evolution	**72**
7.	Operating System	**87**

S.No.	*Chapter*	*Page*
8.	Concept in Programming Language	**94**
9.	Computer Applications	**103**
	INTERNET TECHNOLOGIES	
10.	Networking and Internet	**126**
11.	Web Applications I	**143**
12.	Web Applications II	**156**

■■

Sample Preview of the Solved Sample Question Papers

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QUESTION PAPER

Exam Held in

February – 2021

(Solved)

COMPUTER BASICS AND PC SOFTWARE **B.C.S.-11**

Time: 3 Hours] ***[Maximum Marks : 100***

(Weightage : 75%)

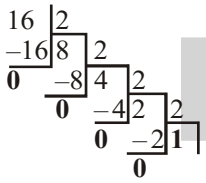
Note: *Question No.* ***1 compulsory****. Attempt* ***any three*** *questions from the rest.*

Q. 1. ***(a)*** **Perform the following:**

(i) **Convert the number $(16.25)_{10}$ to binary.**

Ans. Converting 16.25_{10} in binary system here so:

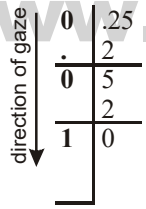
Whole part of a number is obtained by dividing on the basis new



direction of gaze

Happened: $16_{10} = 10000_2$

The fractional part of number is found by multiplying on the basis new:



Happened: $0.25_{10} = 0.01_2$

Add up together whole and fractional part here so:

$10000_2 + 0.01_2 = 10000.01_2$

Result of converting:

$16.25_{10} = 10000.01_2$

(ii) **Convert the number $(1011\ 1010)_2$ to decimal.**

Ans. $(10111010)_2 = (186)_{10}$

Step by Step Solution

Step 1: Write down the binary number:

10111010

Step 2: Multiply each digit of the binary number by the corresponding power of two:

$1x2^7 + 0x2^6 + 1x2^5 + 1x2^4 + 1x2^3 + 0x2^2 + 1x2^1 + 0x2^0$

Step 3: Solve the powers:

$1x128 + 0x64 + 1x32 + 1x16 + 1x8 + 0x4 + 1x2 + 0x1 = 128 + 0 + 32 + 16 + 8 + 0 + 2 + 0$

Step 4: Add up the numbers written above:

$128 + 0 + 32 + 16 + 8 + 0 + 2 + 0 = 186$.

So, 186 is the decimal equivalent of the binary number 10111010.

(iii) **Convert the number $(ABC)_{16}$ to binary.**

Ans. You enter the number: abc_{16} in Hexadecimal number system and want to translate it into Binary.

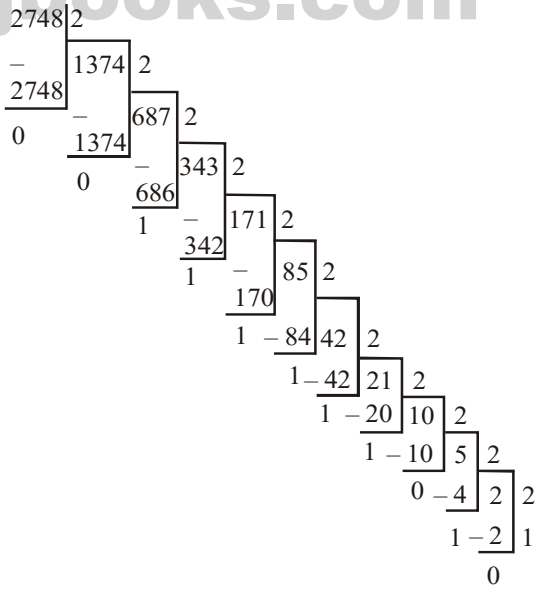
To do this, at first translate it to decimal here so:

$abc_{16} = 10.16^2+11.16^1+12.16^0 = 2560+ 176+12 = 2748_{10}$

Happened: 2748_{10}

Converting 2748_{10} in Binary system here so:

Whole part of a number is obtained by dividing on the basis new



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direction of gaze

Happened: $2748_{10} = 101010111100_2$

Result of converting:

$abc_{16} = 101010111100_2$

***(iv)* Convert the number $(110011\ 1001)_2$ to hexadecimal.**

Ans. First, convert 1100111001_2 into decimal, by using above steps:

$= 1100111001_2$

$= 1 \times 2^9 1 \times 2^8 0 \times 2^7 0 \times 2^6 1 \times 2^5 1 \times 2^4 1 \times 2^3 0 \times 2^2 0 \times 2^1 1 \times 2^0$

$= 825_{10}$

Now, we have to convert 825_{10} to hexadecimal

825 / 16 = 51 with remainder 9

51 / 16 = 3 with remainder 3

3 / 16 = 0 with remainder 3

Then just write down the remainders in the reverse order to get the answer, The binary number 1100111001 converted to hexadecimal is therefore equal to : **339.**

***(b)* List the input/output devices for the following situations. Also describe the features of the device:**

***(i)* For taking photographs**

Ans. For Taking Photographs: A digital **camera** may be considered both an **input** and **output** device (I/O device) as it can take pictures (**input**).

***(ii)* Producing output of photograph**

Ans. Producing output of photograph: A digital **camera** may be considered both an **input** and **output** device (I/O device) send them to your computer (**output**).

***(iii)* Input of voice**

Ans. Input Voice: An **input** is any pathway through which an **audio** signal can go IN to the computer. Most obvious is microphone IN or Line IN.

***(iv)* Output of voice**

Ans. Out of Voice: An **output** is any pathway through which an **audio** signal can be sent OUT of a computer. Most obvious is the headphone socket (jack).

***(c)* What is the role of main memory in a Computer? Why is it called RAM? How is RAM different from ROM?**

Ans. Main memory is where programs and data are kept when the processor is actively using them. When programs and data become active, they are copied from secondary memory into main memory where the processor can interact with them. A copy remains in secondary memory.

Main memory is intimately connected to the processor, so moving instructions and data into and out of the processor is very fast.

Main memory is sometimes called **RAM.** RAM stands for **Random Access Memory**. "Random" means that the memory cells can be accessed in any order. However, properly speaking, "RAM" means the type of silicon chip used to implement main memory.

Random Access Memory (RAM) is used to store the programs and data being used by the CPU in real-time. The data on the random access memory can be read, written, and erased any number of times. RAM is a hardware element where the data being currently used is stored. It is a volatile memory.

Types of RAM

1. Static RAM, or (SRAM) which stores a bit of data using the state of a six transistor memory cell.

2. Dynamic RAM, or (DRAM) which stores a bit data using a pair of transistor and capacitor which constitute a DRAM memory cell.

Read Only Memory (ROM) is a type of memory where the data has been prerecorded. Data stored in ROM is retained even after the computer is turned off ie, non-volatile.

Types of ROM

1. Programmable ROM, where the data is written after the memory chip has been created. It is non-volatile.

2. Erasable Programmable ROM, where the data on this non-volatile memory chip can be erased by exposing it to high-intensity UV light.

3. Electrically Erasable Programmable ROM, where the data on this non-volatile memory chip can be electrically erased using field electron emission.

4. Mask ROM, in which the data is written during the manufacturing of the memory chip.

***(d)* You have attached a new printer to your computer. Which software will you require so that printer is installed correctly and starts to print. List features of the required computer software.**

Ans. In Windows, search for and open Control Panel. Click Devices and **Printers**, and then click Add a **printer**. On the Choose a device or **printer** to add to this **PC** window, select your **printer**, Go to

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Sample Preview of The Chapter

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COMPUTER BASICS AND PC SOFTWARE

BASICS OF COMPUTER HARDWARE

Computer–their Origin and Applications

1

INTRODUCTION

With the advent of Information and Communication Technology (ICT) use of computer has increased in every phase of our life. **A computer is a programmable machine that receives input, stores and manipulates data, and provides output in a useful format.** Basically computers were meant to 'compute', to perform large calculations in seconds with accuracy. But now the machine is doing wonders. Gone are the days when computers were used only to calculate or compute, now you can hardly find any area untouched by the use of computer. We can see that computers are replacing the manual style of working. Keeping in view the overwhelming use of computer in almost every field such as banking, railways, commerce, book keeping, ticketing, billing, education, etc. It becomes a necessity to get familiar with computer.

This chapter will introduce you to the origin of computer, computer generations, computer system, its components, integrated circuits, operating system, current applications of computer and limitations of computers.

CHAPTER AT A GLANCE

ORIGIN OF COMPUTERS

Initially, computers were invented to compute, and the basic role of computers was to calculate, or to perform lengthy calculations in seconds. In order to count large numbers various systems of numeration were generated, such as:

- Babylonian System of Numeration,
- Greek System of Numeration,
- Roman System of Numeration, and
- Indian System of Numeration (decimal system of numeration 0-9).

But we should be proud to know that our Indian System of Numeration has been accepted universally.

1. Abacus: Since civilizations began, many of the advances made by science and technology have depended upon the ability to process large amounts of data and perform complex mathematical calculations. For thousands of years, mathematicians, scientists and business-men have searched for computing machines that could perform calculations and analyze data quickly and efficiently. One such device was the abacus. The literal meaning of Abacus is the calculating board. The Chinese hold the credit of inventing 'abacus'.

The abacus can be thought of a counting frame, with vertical wires, with seven beads on each wire. A horizontal divider separates the top two beads from the bottom five, sometimes referred to as the heaven and the earth beads. The user manipulates the beads by using the principle of positional weight of beads on a rack.

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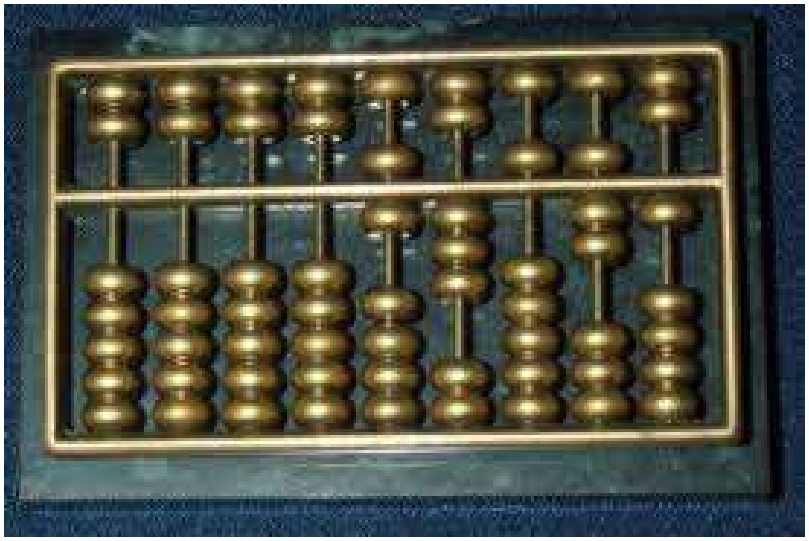
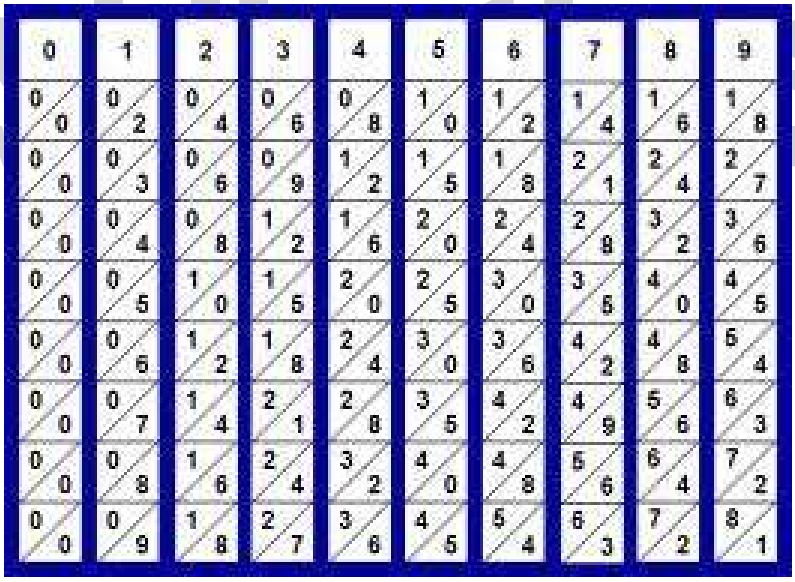


Image of Abacus

2. Napier's Bones: Napier's Bone is a device invented in 1617 A. D. by John Napier, a mathematician. He invented the logarithms to reduce any multiplication problem.



0	1	2	3	4	5	6	7	8	9
0 0	0 2	0 4	0 6	0 8	1 0	1 2	1 4	1 6	1 8
0 0	0 3	0 6	0 9	1 2	1 5	1 8	2 1	2 4	2 7
0 0	0 4	0 8	1 2	1 6	2 0	2 4	2 8	3 2	3 6
0 0	0 5	1 0	1 5	2 0	2 5	3 0	3 5	4 0	4 5
0 0	0 6	1 2	1 8	2 4	3 0	3 6	4 2	4 8	5 4
0 0	0 7	1 4	2 1	2 8	3 5	4 2	4 9	5 6	6 3
0 0	0 8	1 6	2 4	3 2	4 0	4 8	5 6	6 4	7 2
0 0	0 9	1 8	2 7	3 6	4 5	5 4	6 3	7 2	8 1

Image of Napier's bones

3. Slide Rule: Slide rule, is a mechanical analog computer. It was developed by English mathematician E. Gunter. The slide rule is used primarily for multiplication and division, and also for functions such as roots, logarithms and trigonometry, but it is not normally used for addition or subtraction.

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Image of Slide Rule

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4. Pascal's Calculator: The credit of building calculator goes to Blaise Pascal, a French mathematician and scientist. The machine was also called Pascaline, it could add and subtract directly and multiply and divide by repetition.

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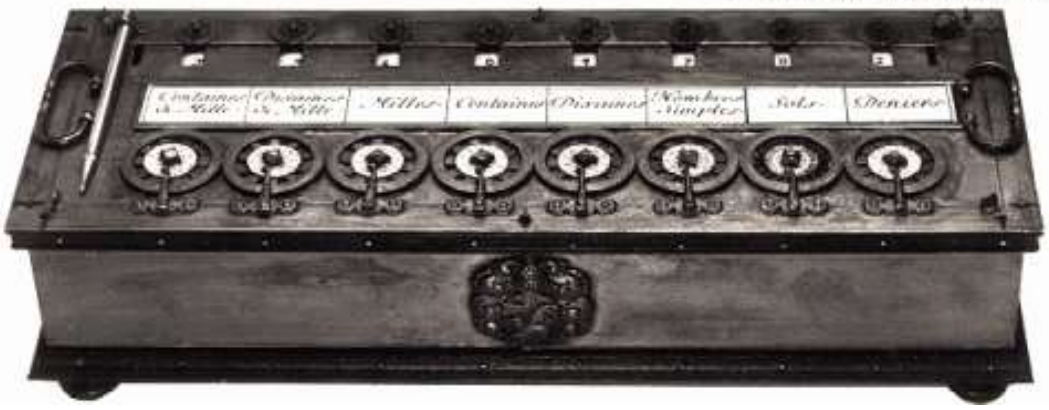

Pascal's Calculator

5. Leibniz's Multiplication and Dividing Machine: German mathematician Gottfried Wilhelm Leibniz invented a digital calculator around 1672 which was called the step reckoner. It was the first calculator that could perform all four arithmetic operations: addition, subtraction, multiplication and division.

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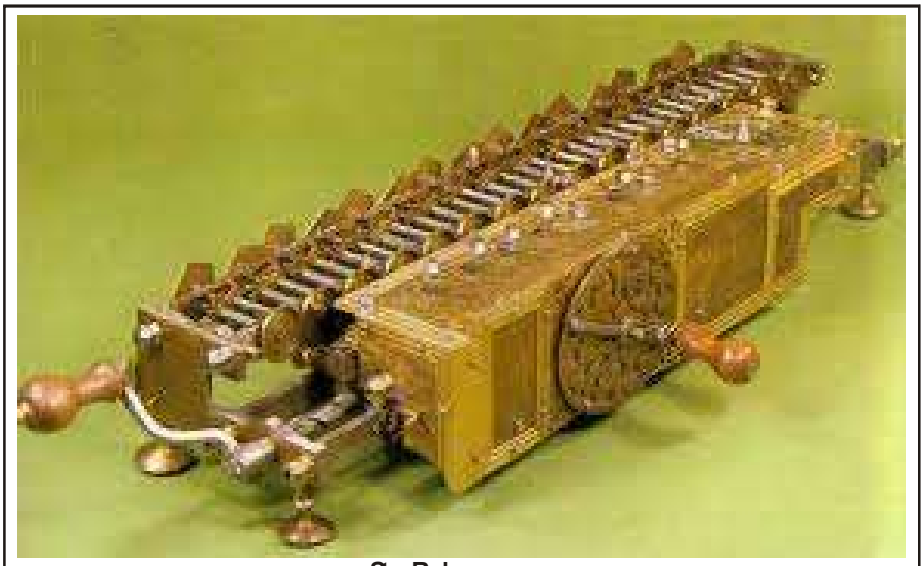
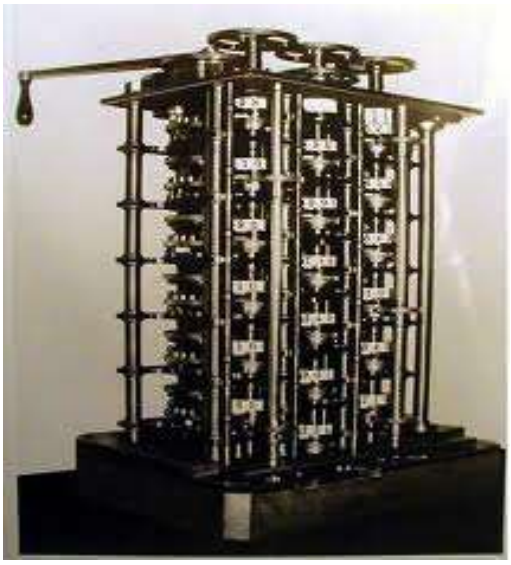


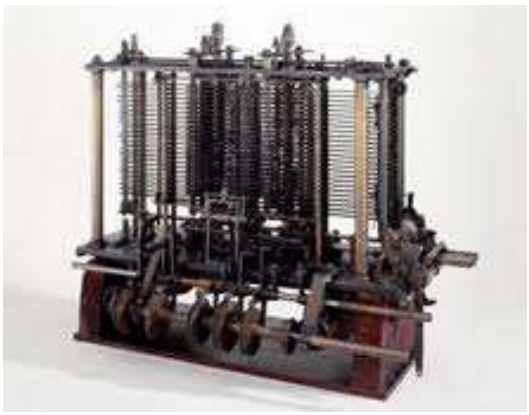
Step Reckoner

6. Difference Engine: Charles Babbage, an English mathematics professor told that all the mathematical operations, even the most complexed ones, can be broken down into simple operations. This concept could be used to make it able to be carried out by a machine in loop. This machine used the decimal number system and was powered by cranking a handle. It could be called the first step towards the creation of computers. That is why he is called as the Father of the Computers.



Difference Engine

7. The Analytical Engine: Due to some reasons Babbage left working on Difference Engine and he started working on Analytical Engine which was even closer to the concept of today's computers. Because it was a proposed mechanical general-purpose computer. It had an arithmetical unit, control flow in the form of conditional branching and loops, and an integrated memory.



Analytical Engine

8. Mechanical and Electrical Calculator: Calculators are very popular device for arithmetic calculation. Calculators were developed in the 19th

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