

- Note: 1) All questions are compulsory.
2) All questions carry equal marks.

Q.1	A.	State whether the following statements are True or False :(Attempt any Eight)	(8)
	1.	The speeds of first generation computers were measured in milli-seconds	T
	2.	1024 Megabytes = 1 Terabyte	F
	3.	In the hexadecimal system there are 16 symbols.	T
	4.	Linux is not a programming language	T
	5.	Algorithm is used to state the sequence of steps that will eventually lead to the correct output.	T
	6.	In every C program scanf() function is mandatory.	F
	7.	\n is an escape sequence which moves the cursor to the next line	T
	8.	Nested if() means one if() within another if()	T
	9.	case statement is used in while()	F
	10.	The for(x=0; x<=9; x+=2) will repeat 5 times.	T
Q.1	B.	Select the appropriate option from the following : (Attempt any Seven).	(7)
	1.	_____ memory cards use less power have no moving parts. a) IC b) DVD c) Flash d) Hard Disk	
	2.	In Analog computer the data is processed in a _____ form. a) Continuous b) discrete c) Nano d) Pico	
	3.	Which of these operating systems does not provide a graphical user interface? a) Windows XP b) Linux c) Android d) Microsoft DOS	
	4.	A computer program that translates program instructions from human readable form into machine languages codes is _____ a) Computer Language b) Language translator c) Utility Program d) Spreadsheet	
	5.	A keyword must be written in _____ a) upper case b) lowercase c) toggle case d) mini case	
	6.	There are _____ storage classes in C. a) 4 b) 3 c) 2 d) 6	
	7.	The format characters “%8.2f” will contain _____ decimals. a) 10 b) 8 c) 2 d) 5	
	8.	The diamond symbol in the flowchart represents: a) Start of program logic b) Processing c) Decision d) Display data	
	9.	The logical operator OR is written in C as _____ a) && b) == c) ++ d) 	
	10.	To terminate the loop and take the control out of it we use _____ a) continue b) break c) case d) exit	
Q.2		Answer the following questions :	
	a.	Explain the different generations of computers highlighting the improvements in them.	(8)

Ans.:

First Generation:

The First Generation of digital computers were developed in the early 1940s (1942-1958) and were built using vacuum tube logic circuitry. They used magnetic drums for the main memory. First generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. An example of the first generation computer is the Electronic Computer (ENIAC) which contained nearly 19000 vacuum tubes, weighed nearly 30 tons and occupied an area of 3000 cubic feet. The speeds of First Generation computers were measured in milliseconds (thousands of a second). They had limited internal storage capacity and slow input output speeds. Another example of a first generation computer is the IBM 650.

Second Generation:

The Second Generation of computers was developed in the late 1950's (1959 - 1964) They used transistors in place of vacuum tubes. The transistor was far superior to the vacuum tube; it was smaller in size, less expensive and generated less heat than vacuum tubes. It was a vast improvement over the vacuum tube.

The use of transistors increased the reliability of computers, as their components enhanced the internal storage capacity of the computers. The speed of second generation computers was typically measured in micro seconds. Further, magnetic tape and punched cards could be used for input/output. They used mostly symbolic languages (Auto coder) and some high level languages like Fortran and Cobol. Operating Systems were developed, and they accepted batch processing applications. The IBM 7090 was a second-generation computer.

Third Generation:

The Third Generation of computers was developed in the mid 1960's (1965 - 1971). They used Integrated Circuits in place of transistors. Integrated Circuits were much more compact. One Integrated Circuit could do the job done by hundreds of transistors. This resulted in further reduction in size of the computers, an improvement in their internal storage capacity and input/output speed. The computers generated less heat and were more reliable.

The speed of Third Generation computers were measured in nano seconds. There was also an improvement in the peripherals used as magnetic disks were introduced. The users of the computers in this generation widely used keyboards and monitors to interface with the computers and operating systems were also used. Hence third generation computers could be used for administrative and scientific applications. Multiprogramming and time sharing became a reality. Fortran IV and Cobol 68 were developed and used as high level languages.

Fourth Generation:

The fourth generation computers were introduced in the 1970's and used large scale integrated (LSI) circuits. LSI chips can fit on the tip of one's finger and yet they contain thousands of transistors, diodes and registers. This made it possible for inexpensive micro-computers to be developed. They could be placed on a small table and consequently came within reach of small business establishments.

Microprocessors were developed and used. Thousands of integrated circuits were built onto a single silicon chip. Hence the entire Central Processing Unit (CPU) was used on a single chip. So that less expensive computers with high processing speeds. The speed of Fourth Generation computers was measured in pico seconds. Fortran 77, Cobol 74, Pascal etc. were used as high level languages. In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the Macintosh. Microprocessors.

Fifth Generation:

From the First to the Fourth Generation of computers the emphasis was on improvement of hardware used and hence there was vast improvement in the size and processing speeds of computers.

Fifth Generation computers based on Artificial Intelligence are still under development, however there are several applications using voice input that are already in use today.

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The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-organization. In order to make Artificial Intelligence a reality, parallel processing and superconductors are being used.

Artificial Intelligence includes a) Playing games such as chess, where there has been considerable success, as the super computer called Deep Blue could defeat Gary Kasparov the world chess champion b) Use of Natural spoken Language program computers c) Robotics used for making computers see and react to stimuli, these computers are currently used in assembly plants d) Expert Systems which are developed by experts in their fields which help make decisions in real life situations such as in the medical field and e) Neural networks that stimulate intelligence.

b. What are the binary numbers? What are the rules of binary addition?

Ans. : **BINARY NUMBER:** The binary number system uses only two digits 0 and 1, hence it is called as binary. The computer being an electronic machine has only two states in its circuits, namely ON or OFF. These states are represented in the Binary number system by these two digits 1 and 0 called the binary digits or BITS.

Symbols : 0, 1

Base : 2, as there are only two digits.

Binary Addition Rules :

$$0 + 0 = 0$$

$$1 + 0 = 1$$

$$0 + 1 = 1$$

$$1 + 1 = 0 \text{ with carry of } 1$$

$$1 + 1 + 1 = 1 \text{ with carry of } 1$$

OR

c. Explain in brief about tablet computer and smartphones

Ans:

TABLET :

A Tablet Computer (often just called a tablet) looks more like a handheld slate which consists of a LCD touchscreen which is used for both input and output. The touchscreen is the substitute for a keyboard. It often uses an onscreen virtual keyboard, a passive stylus pen, or a digital pen. A tablet is generally equipped with a Camera, Wi-Fi capabilities and also has a cellular network data connection, such as one to access the Internet. Not only are they smaller and lighter than laptops, they are very convenient to carry around. Applications specifically designed for these touchscreen devices run on these Tablets.

Today these tablets are used by a large number of persons, as they can browse the internet and conveniently view and make/modify presentations on them. Even though there is no physical keyboard, word processing or spreadsheets activity can be carried using the onscreen virtual keyboard

SMARTPHONES:

Smartphones are nothing but top of the line mobile phones that typically run operating systems similar to the tablet computers. They also often share the same applications as tablets. They are very versatile as they combine the features of portable media players, compact digital cameras, pocket video cameras, GPS navigation units, music player etc. hence they can be termed as an all in one device. They use a touchscreen for input, but some include physical keyboards.

There are several different mobile operating systems (OS) used by modern smartphones. They include Google's Android, Apple's iOS, Nokia's Symbian, RIM's BlackBerry OS, Samsung's Bada, Microsoft's Windows Phone, HP's webOS, and embedded Linux distributions such as Maemo and MeeGo. A feature of these operating systems is that they can be installed on many different phone models.

d. Convert the following decimal numbers into binary

i) 56.25 ii) 324.625

Ans:

9) i) Convert decimal number $(56.25)_{10}$ to binary

	Number	Remainder
2	56	
2	28	0
2	14	0
2	7	0
2	3	1
2	1	1
	0	1

	Fraction
	.25
0	.50
↓ 1	.00

Hence $(56.25)_{10} = (111000.01)_2$

ii) Convert decimal number $(324.625)_{10}$ to binary

	Number	Remainder
2	344	
2	162	0
2	81	0
2	40	1
2	20	0
2	10	0
2	5	0
2	2	1
2	1	0
	0	1

	Fraction
	.625
1	.25
0	.50
↓ 1	.00

Hence $(324.625)_{10} = (101000100.101)_2$

1.3 Answer the following questions :

a. What are the types of systems software?

Ans. : Types of Systems Software :

a) Operating Systems, b) Utility Programs,

c) Library Programs, d) Language Translators

(8)

b. Write an algorithm to find the largest of three numbers.

Ans.:

Step 1 : Read the numbers A, B and C.

Step 2 : Max = A

Step 3 : if $B > \text{Max}$, then Max = B

Step 4 : if $C > \text{Max}$, Max = C

Step 5 : Display Max

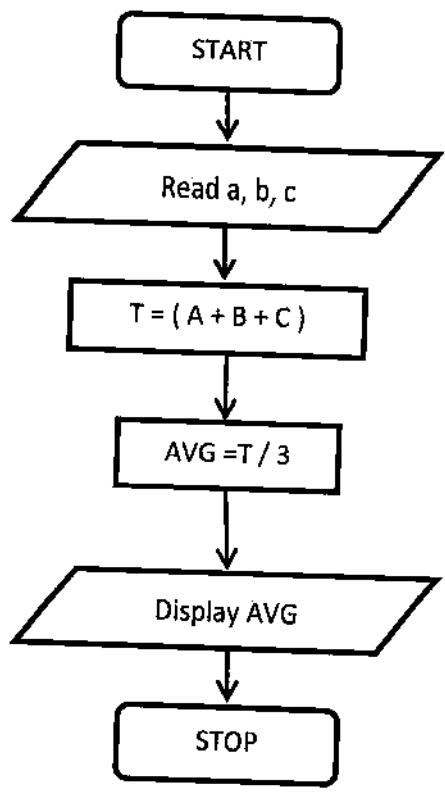
(7)

OR

c. Draw the flowchart to get three data values a, b and c from the user and display the average of these three values. (8)

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Ans. :



d. Discuss the applications of computer in relation with Risk Analysis, Management Information System, E-Commerce. (7)

Ans. :

RISK ANALYSIS(Two marks)

Risk analysis is defined as a procedure to identify threats & vulnerabilities, analyze them to ascertain the exposures, and highlight how the impact can be eliminated or reduced. Risk analysis is used for capital budgeting, insurance, investment sector, and project management.

MANAGEMENT INFORMATION SYSTEM (Two marks)

Management Information System (MIS) provides information to manage organizations efficiently. MIS is mainly used to provide information to the middle and top level management in an organization. This information is not concerned with the day-to-day activities but rather gives an overall picture of the working of a department, a product, etc.

E-COMMERCE(Three marks)

Electronic commerce is also called e-commerce. It is the buying and selling of products or services over the Internet. Electronic commerce uses technologies such as electronic funds transfer (EFT), supply chain management, Internet marketing, online transaction processing (OLTP), electronic data interchange (EDI), inventory management systems, and automated data collection systems. It may also use other technologies such as e-mail, mobile devices and telephones.

Examples of e-commerce are : Amazon, Google Play, Flipkart, Myntra, etc.

Q.4

Answer the following questions :

a. What is an escape sequence? What is its purpose

Ans.: An escape sequence begins with a backslash (\) and is followed by some special character. Escape sequence causes escape from the normal way characters are interpreted. The purpose for this is that the back slash character is a special character in the C system and does not actually count as a character.

Some escape sequences are given below :

Escape sequence	Character
\t	Horizontal tab
\v	Vertical tab
\n	New line
\f	Form feed to advance the printer to a new page
\r	Carriage return
\"	Quotation marks
\\	Backslash
\?	Question mark

(8)

b. Write a program to input the basic pay and calculate and display basic pay, da, hra, total pay and tax where da as 60% of basic pay, hra as 25% of basic pay, total as basic pay+da+hra and tax as 20% of the total pay.

Ans.:

```
#include<stdio.h>
void main()
{
float basic,da,hra,tpay,tax;
printf("Enter basic pay");
scanf("%f",& basic);
da=basic*.60;
hra=basic*.25;
tpay=basic+da+hra;
tax=tpay*.20;
printf("Basic pay =%.2f\n",basic);
printf("D.A.=%.2f\n",da);
printf("H.R.A=%.2f\n",hra);
printf("Total pay=%.2f\n",tpay);
printf("Tax=%.2f\n",tax);
}
```

(7)

OR

c. What is the output of the following 'C' program?

```
#include<stdio.h>
void main( )
{int a=1235, b=-1888;
float x=2233.44, y=4455.866;
printf("%6d %6d \n", a, b);
printf("%+8.2f %+10.1f \n", x, y); }
```

Output:

bb1235b-1888

+2233.44bbb+4455.9 (where b denotes a blank space)

(8)

d. What is the output of the following 'C' program?

```
#include<stdio.h>
void main()
{ int a=5, b=10, c, d;
a+=b++;
c=a*2+b;
d=++a-4;
printf("%d %d %d %d\n",a, b,c, d);}
```

(7)

Output:

16 11 41 12

Q.5 Answer the following questions :

a. Write a program in C to Display the Multiplication table of Seven. (8)

7 X 1 = 7
7 X 2 = 14
•
•
•
7 X 10 = 70

Ans.:

```
#include<stdio.h>
void main()
{int i;
for(i=1; i<=10; i++)
printf("7 x %d = %d \n", i, 7*i );}
```

b. Write a program in C to accepts sales from key board then calculate and print sales tax as follows: (7)

sales	sales tax
up to Rs 5000	5% of sales
between Rs 5000 & Rs 9000	10% of sales
over Rs 9000	12.5% of sales

Solution :

```
#include<stdio.h>
#include<conio.h>
void main()
{ float s,st;
clrscr( );
printf("Enter The sales\n");
scanf("%f",&s);
if(s<=5000)
st=s*.05;
else
if(s>5000 && s<=9000)
st=s*.10;
else
st=s*.12;
printf("Sales Tax = %.2f\n",st);
getch( );}
```

OR

c. Write short notes on **Any Three** of the following giving suitable examples: (15)

- 1) break statement
- 2) for () loop
- 3) do...while () loop
- 4) if ()
- 5) switch ()

Ans.:

- 1) The break statement

Execution of the break statement causes the program to immediately exit from the loop it is executing, whether it's for (), while () or do loop. If a break is executed from within a set of nested loops, only the innermost loop in which the

keyword break followed by a semicolon i.e. **break**;

Eg.: continue;

2) for () loop

Ans.: There are three statements inside the for loop separated by semicolons. The first statement give initial value, second statement is condition and third statement increases/decreases the value

Eg.: for(initial value; condition; Increment/decrement)

```
{  
Statements;  
}
```

3) do...while () loop

Ans.: In this loop the statements within the loop are executed first and then the condition is checked, as the condition is written at the end of the loop. If the condition is satisfied the loop is repeated, if the condition is not satisfied the loop terminates. The do loop is simply a transposition of the while loop.

Eg.:do

```
program statement  
while(expression) ;
```

4) The if() statement

It is used to check a condition and execute a set of statements when the condition is satisfied. The simplest form of the if statement is as follows :

```
if(condition / expression)  
statement- 1;
```

else

```
statement- 2;
```

statement-1 (before else) is executed only if the condition/ expression is true, and statement-2(after else) is executed when it is false.

5) switch()

Ans. It is used when there are multiple alternatives to be checked as in nested if(). Each alternative is represented using a case statement

Eg.: switch(expression)

```
{  
case value 1:  
program statements;  
break;  
case value 2:  
program statements;  
break;  
“  
“  
“  
default;  
program statements;  
break;  
}
```

(as per general form check the example)