

## II. State True or False:

1. TRUE
2. FALSE
3. TRUE
4. FALSE
5. TRUE

## III. Answer the following:

1. Circuitry is a system of electric circuits through which signals can travel from one component to another.
2. A microcontroller is a board that consists of many components that are connected to each other.
3. micro:bit is a pocket-sized computer that introduces you to how software and hardware work together.
4. Buttons, LED display & light sensor, Pins – GPIO, Pin-3 volt power, Pin-Ground, Touch logo, Microphone LED – new, Programming the micro:bit

## IV. Answer in detail:

1. Refer Book Pg.No 72, 73
2. 

```
from microbit import *  
# Define smiley face pattern  
smiley_face = Image("00000:"  
                    "09090:"  
                    "00000:"  
                    "90009:"  
                    "09990")
```

```
# Display smiley face  
display.show(smiley_face)  
sleep(2000) # Wait for 2 seconds
```

```
# Display message "Coding is fun!"  
display.scroll("Coding is fun!")
```

### Smiley Fun with Coding

Write down the code to display the message "Coding is fun!" using a micro:bit, following a smiley face.

```
from microbit import *  
# Define smiley face pattern  
smiley_face = Image("00000:"  
                    "09090:"  
                    "00000:"  
                    "90009:"  
                    "09990")
```

```
# Display smiley face  
display.show(smiley_face)  
sleep(2000) # Wait for 2 seconds  
# Display message "Coding is fun!"  
display.scroll("Coding is fun!")
```

This code first defines a smiley face pattern using a 5x5 grid of pixels.

The Image() function is used to create a custom image using 0s and 9s. Each 0 represents an off pixel, and each 9 represents an on pixel.

The smiley face pattern is then displayed on the LED screen using the display.show() function.

After displaying the smiley face for 2 seconds (sleep(2000)), the code uses the display.scroll() function to scroll the message "Coding is fun!" across the LED screen.

## Class : 7 KEY ANSWERS

### Chapter 1. WORKING PRINCIPLES OF A COMPUTER

#### Page No. 8-9

#### I. Choose the correct answer:

1. A) System Unit
2. C) Both a and b

3. C) Main Memory
4. B) 3
5. B) Trouble Shooting

#### II. Fill in the blanks:

1. PS/2
2. Mother Board

3. Expansion Card
4. Serial, Parallel
5. ROM

### III. Expand the following:

1. BIOS – Basic Input Output System
2. USB – Universal Serial Bus
3. UPS – Uninterruptible Power Supply
4. VGA – Video Graphic Adaptor
5. PS/2 – Personal System / 2

### IV. Answer the following:

1. The mother board is the main board that all the other internal components connect to.
2. System unit, also known as the base unit, is the main body of a desktop computer.
3. The Basic Input Output System tests all the critical components to ensure that they function properly.
4. The storing of frequently used data in an extremely fast RAM, that connects directly to the CPU, is called Caching.
5. A port is a connector where you plug in an external device such as a key board, monitor, printer, mouse and micro phone.
6. Uninterruptible power supply is a device that supplies power to connected equipment from a separate source in the absence of utility power.
7. Virtual memory is the space on a hard disk used to temporarily store data and can be swapped, in and out of the RAM as needed.
8. An expansion card is a circuit board that lets you add new features to a computer.

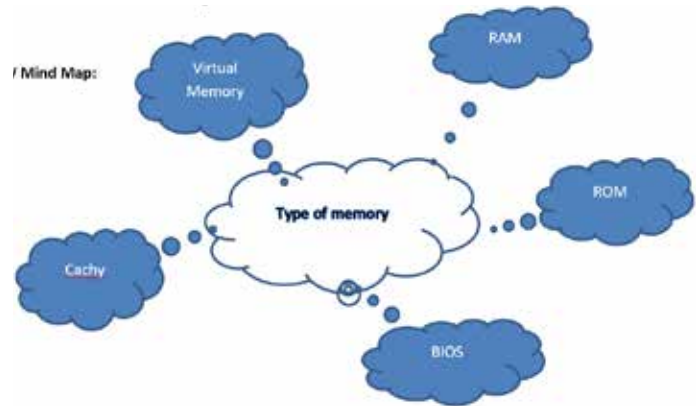
### V. Answer in Detail:

1. The CPU is the brain of the computer. It controls the overall activities of a computer.
  - The CPU consists of the control unit, ALU (Arithmetic and Logic Unit), a memory unit and various temporary buffers.
  - The ALU is the part of the CPU where are computation takes place.

- The control unit controls all the hardware operations.
- The MU stores the program and data that are currently being used.

2. Refer the book: Page No.7

### VI. Mind Map:



## Chapter 2. Logical Functions in MS-Excel

### Page No. 20-21

#### I. Answer the questions:

- A. = AND(A2>A3, A2<A4) – False  
 B. = OR(A2>A3, A2<A4) – False  
 C. = AND(A2<A4, A2+A3=24) – False

- II. A. =IF(A2<100, "Within budget", "Over budget")  
 B. =IF(A2=100, SUM(B5:B15), " ")

#### III. Olive oil can be purchased according to this price schedule:

|   | A                                       | B      |
|---|-----------------------------------------|--------|
| 1 | Cost / gallon for the first 500 gallons | \$23   |
| 2 | Cost / gallon for gallons above 500     | \$20   |
| 3 | Number of gallons                       |        |
| 4 | 10                                      | 230    |
| 5 | 483                                     | 11109  |
| 6 | 500                                     | 11500  |
| 7 | 1,600                                   | 33,500 |

**IV. Write IF statements to calculate the cost of the quantities of olive oil listed in cells A5, A6 and A7 above:**

A. =IF(A5<=500, B1\*A5, 500\*B1+(A5-500)\*B2)

B. =IF(A6<=500, B1\*A6, 500\*B1+(A6-500)\*B2)

C. =IF(A7>500, B1\*A7, 500\*B1+(A7-500)\*B2)

## Chapter 3. Forms In MS-Access

### Page No. 31

#### I. Fill in the blanks:

1. Auto order
2. Arrange tab
3. Themes group design
4. Property sheet
5. Unbound

#### II. Answer the following:

1. User Friendly Interface, Customizable Templates, Powerful Query Designer Integrated Reporting Tools, Customizable Forms, Macros for Automation.
2. A form is a database object that we can use to enter, edit or display data from a table or a query.
3. To create a form with a single mouse click with the Form Wizard or in Design View.

#### III. Answer in detail:

1. Creating a form in MS-Access.
  1. Select your database table by clicking on it in Access
  2. Click the "Create" tab at the top, find the Forms Section and Select Form.
  3. Microsoft Access will create a new form with all the columns of your table as fields.
  4. You can now edit and also add new data to your table with this form.
  5. Click the "Safe" icon at the top left corner to save your newly created form.
  6. Enter a descriptive name for your form and click ok to save it.

## Chapter 4. Data Types in C

### Page No. 36-37

#### I. Answer the following:

1. The data type in a programming language, is the collection of data with values having fixed meaning as well as characteristics. Example: integer, float, character.
2. Write down the different data types in C.  
Data types in C
  1. Primary (Build-in) data types
  2. Derived data types
  3. User defined data types
3. Derived data types  
Arrays, References, Pointers
4. Primary data type with variable names  
int age;  
char letter;  
float height, width;

#### II. Answer in detail:

1. i) Primary data types.  
C compiler supports five primary data types
  1. void - It holds no value and is generally used for specifying the type of function or what it returns.
  2. int - Used to denote an integer type
  3. char - Used to denote a character type
  4. float, double - Used to denote a floating point type
  5. int \*, float \*, char\* - used to denote a pointer type
- ii) Derived data types  
C supports three derived data types
  1. Arrays – Arrays are sequences of data items having homogeneous values
  2. References – Function pointers allow referencing functions with a particular signature
  3. Pointers – Pointers are used to access the memory and deal with their addresses
- iii) User defined data types  
There are three such types
  1. Structure – It is a package of variables of different types under a single name

2. Union – These allow storing various data types in the same memory location
  3. Enum – Enum consists of integral constants, and each of them is assigned with a specific name.
- ```

2. #include <stdio.h>
int main()
{
    int a = 1000; || positive integer data type
    float b = 3.1743; || float data type
    char c = 'S'; || char data type
    long d = 43657; || long positive integer
    long e = -216556; || long negative
    data type
    int f = -195; || negative integer data type
    short g = 160; || short positive integer
    double h = 4.1234567890 || double
    float data type
}

```

## Chapter 5. ROBOTICS WITH LEGO MINDSTORMS EV3

### Page No. 48

#### I Fill in the blanks:

1. Lego Mindstorm
2. EV3 software
3. Ultrasonic sensor
4. Color

#### II True or False:

1. True
2. True
3. False
4. True

#### III. Answer the following:

1. Lego Mindstorms EV3 Core Kit is a robotic kit that lets you build and program starter robot models. It has a programmable power brick, plus servo motors and color, touch and infra-red sensors that help the robot move and communicate.

2. Distinguishes between seven different colors and can also detect the absence of color. It also serves as a light sensor by detecting light intensities.
3. Color sensor, touch sensor, ultra sonic sensor, gyro sensor, accelerometer temperature sensor, light sensor.
4. Measures the robot's rotational motion and changes in its orientation. We can measure angles, create balancing robots and other things.

#### IV. Answer in detail:

1. 1. Lego mind storms EV3 kit  
2. EV3 software  
3. Technic parts
  - Build a robot using Lego Technic pieces and the EV3 brick computer.
  - Download a program to make the robot drive
  - Experiment making your own programs using the EV3 software
  - EV3 uses drag and drop programming, we can drag and drop the code blocks to program your robot.
2. Main Components of Lego Mind Storm
  1. EV3 Brick  
Serves as the Control Center and Power Station for your robot, just like the CPU of a computer.
  2. Color Sensor  
Distinguishes between seven different colors and can also detect the absence of color.
  3. Ultrasonic Sensor  
Generates sound waves and reads their echoes to detect and measure distance from objects.
  4. Gyro Sensor  
Measures the robot's rational motion and changes in its orientation.
  5. Medium Motor  
Can be programmed to turn on or off, control its power level.
  6. Large Motor  
Is optimized to be the driving base on your robots. Move steering or move tank programming block in the EV3 software, the large motors will coordinate the action simultaneously.

### I. Fill in the blanks:

1. Analog
2. Red
3. Pressed Released Bumped
4. Loop code

### II. State True or False:

1. True
2. False
3. True
4. True

### III. Answer the following:

1. The touch sensor is an analog sensor that can detect when the sensor's red button has been pressed and when it is released. The sensor can be programmed to trigger any action using three conditions. Pressed, released or bumped.
2. The ultrasonic sensor is a digital sensor that can measure the distance to an object in front of it. It does this by sending out high-frequency sound waves and measuring how long it takes the sound to reflect back to the sensor.
3.
  1. Open the EV3 software and create a new project.
  2. Drag and drop the following blocks from the block palette to the programming canvas  
**Stat block:** This block is used to start the program  
**Move Tank block:** Set the tank block to move the robot forward for a specific number of steps  
**Wait block:** This block is used to pause the program execution for a specified duration  
**Gyro Sensor block:** Set the Gyro sensor block to measure the rotation angle of the robot.  
**Move Steering block:** Set the move steering block to turn the robot to a specific angle.

### 3. connect the blocks as follows :

- Connect the start block to the Move Tank block
- Connect the move tank block to the wait block
- Connect the wait block to the Gyro Sensor block
- Connect the Gyro Sensor block to the move steering block.

### 4. Configure the blocks as follows

#### Move Tank block :

- Select the motors you want to use for movement (e.g left motor and right motor)
- Set the power level (e.g 50% power)
- Specify the number of steps you want the robot to move forward.
- Wait block: Set the duration for which you want the program to pause (e.g 1 second)

#### Gyro sensor block

- Select the gyro sensor connected to the EV3 robot.
- Set the mode to "Angle" to measure the rotation angle of the robot.

#### Move steering block

- Select the motors you want to use for turning (e.g left motor and right motor)
- Set the power level (e.g 50% power)
- Specify the angle you want the robot to turn (e.g 90 degrees)

### IV. Answer in detail:

1. Gyro Sensor  
Gyro sensor detects rotational motion of your robot. The sensor measures the rate of rotation in degrees per second.
2. Touch Sensor  
The Touch sensor is an analog sensor that can detect when the sensor's red button has been pressed and when it is released. The sensor can be programmed to trigger any action using three conditions. Pressed, released or bumped.
3. Ultrasonic Sensor  
The Ultrasonic sensor is a digital sensor that can measure the distance to an object in front of it. The Ultrasonic sensor can help your robots avoid furniture, track a

moving target detect an intruder in your room or “Ping” with increasing volume or frequency as an object gets closer to the sensor.

2. 1. Open the EV3 software and create new project
2. Drag and drop the following blocks from the block palette to the programming canvas

**Start block:** This block is used to start the program

**Loop block:** This block is used to continuously check the touch sensor.

**Touch Sensor block:** Set the touch sensor block to detect when the touch sensor is pressed.

**Move steering block:** Set the move steering block to turn the robot.

**Wait block:** This block is used to pause the program execution for a specified duration.

3. Connect the block as follows
  - Connect the start block to the Loop block
  - Connect the Loop block to the Touch sensor block
  - Connect the Touch sensor block to the move steering block
  - Connect the move steering block to the wait block
  - Connect the wait block to the loop block

4. Configure the blocks as follows

**Touch sensor block:** Select the touch sensor connected to the EV3 robot.

**Move steering block:** Select the motors you want to use for turning (e.g left motor and right motor)

Set the power level (e.g 50% power)

Specify the angle you want the robot to turn(e.g 180 degrees)

Wait block

Set the duration for which you want the program to pause (e.g 1 second)

## Chapter 7. SENSORS IN MICRO BIT

Page No. 67-69

### I. Fill in the blanks:

1. Touch capacity
2. Light
3. USA 1950
4. Temperature
5. Movement

### II. State True or False:

1. True
2. True
3. False
4. True
5. True

### III. Answer the following:

1. A sensor is a device that detects and responds to some type of input from the physical environment.
2. A temperature sensor is an input device that measures temperature. The BBC micro: bit has a temperature sensor inside the processor which can give you an approximation of the air temperature.
3. The touch logo used capacitive touch, sensing tiny changes in electrical fields to know when your finger is pressing it. Just like your phone or tablet screen.
4. An accelerometer is a motion sensor that measures movement. The accelerometer in the BBC micro: bit detects when you tilt it from left to right, backwards and forwards and up and down. You can program the micro: bit to use the accelerometer to create interesting applications.



#### IV. Answer in detail:

1. a. Accelerometer  
An accelerometer is a motion sensor that measures movement.
- b. Temperature sensor  
A temperature sensor is an input device that measures temperature. The BBC micro: bit has a temperature sensor inside the processor which can give you an approximation of the air temperature.
- c. Light sensor  
A light sensor is an input device that measures light levels.
- d. Touch sensor  
The touch logo uses capacitive touch, sensing tiny changes in electrical fields to know when your finger is pressing it. Just like your phone or tablet screen.

## Chapter 8. MORE ON THE INTERNET

Page No. 76-77

#### I. Choose the correct answer:

1. a) electronic mail
2. c) irctc.co.in
3. b) ATM
4. b) 2GB
5. c) Netiquette

#### II. Answer the following:

1. Internet is a network of networks having number of computers connected to each other to share information, programs, data and other media elements among themselves.
2. Video conferencing is a process in which two or more people have a real-time conversation face to face but being in different locations. It is one of the most popular type of communication in this modern era of computers and smart phones.
3. E\_learning enables online educational programs that help in obtaining degrees and certifications. An e\_learning course could be as simple as making a lemon juice to building a rocket.

4. Some of the most popular social networking sites:  
Facebook.com, twitter.com, instagram.com, youtube.com, linkedin.com
5. Team viewer is a proprietary computer software program for remote control, desktop sharing, online meetings, web conferencing and file transfer between computers.

#### III. Answer in detail:

1.
  - We can add photos and albums of our choice
  - We can search for our friends and relatives
  - Songs and videos can be uploaded and shared
  - These websites help us chat with people of our choice
2. 1. **Communication:**  
One should be courteous and respectful to others while sending e\_mail or chatting on the internet. Do not use offensive language or word.
2. **Be tolerant and careful:**  
One should be tolerant and careful while listening to others and should not jump to any conclusions as different people from all over the world may have different views.
3. **Keep personal information private:**  
One should keep personal information private and should not share it over the internet, as it can have serious consequences.
4. **Cyber Bullying:**  
Intention to hurt or embarrass another person by sending or posting wrong text or images through the internet, cell phones or other devices is defined as cyber bullying.
5. **Language issues:**  
One should not use offensive language /comments and hurt other people's feelings.
6. **Copyright laws:**  
Copyright laws should always be obeyed while copying text or saving any picture.

### I. Choose the correct answer:

1. d) Vital information resource under siege
2. b) macro
3. c) wings.zmist
4. c) program
5. d) both a and c

### II. Answer the following questions:

1. A virus is a self-replicating program that can cause damage to data and files stored on your computer. Virus stands for Vital Information Resource Under Siege.
2. From pen drives or other portable storage devices, From a computer network, From the internet, From E-mail
3. Anti virus is a computer software that helps detect malicious software such as viruses and worms. They are installed in a computer to detect and eliminate known viruses.
4.
  - Cleans infected files and system
  - Detects infected programs
  - Blocks the user from accessing an infected file
5. Anti-virus software
  - Avast
  - McAfee
  - Norton
  - Sophos
  - AVG
  - Kaspersky
  - Panda
  - VFT
  - F-secure

### III. Answer in detail:

1.
  - Scan your system regularly
  - Keep a backup
  - Scan downloaded files
  - Scan removable disks such as CD's, Pen drives, etc.
  - Turn e-mail preview option off and scan all e-mail attachments

- Update the anti-virus on a regular basis
  - Do not download pirated software, movies, songs, games
  - Do not visit unauthorized web sites
  - Use an original operating system
2.
    - Computer programs take longer to boot than normal
    - The hard drive runs when not used
    - New files or folders keep appearing on the system
    - Beeping noises come from the computer
    - Strange graphics are displayed on the computer monitor
    - Program size keeps changing
    - Programs act erratically
  3.
    - Log on to Microsoft Security Essentials
    - Page and download the software. Click on the download new button
    - After the downloading is completed double click the MSE Install icon to begin the installation process
    - The installation is generally self-explanatory just follow the instructions that appear on screen. Click on the check box to turn on the Windows Firewall when asked to.
    - When it is done, it will ask you to run a scan. Click on Yes and it will download the latest virus definitions and run its first scan.
  4.
    - Microsoft Security Essentials will now run in the background constantly monitoring your computer for any viruses
    - The green icon means that the security status of your computer is good
    - Whenever your computer has an issue the appearance of the Microsoft Security Essentials home page changes
    - The status pane will turn either yellow or red depending upon the type of issue, the antivirus software has detected.
    - A yellow icon means that your computer is unprotected and that some action should be taken
    - A red icon means that your computer is at risk and that immediate action is required to protect it

