



Centurion
UNIVERSITY

SOLVED QUESTION BANK OF AGRICULTUR INFORMATICS

Short Question's Answers: -

a) **What do you mean by software? Explain different types of software.**

Ans: **Software: -**

It is a generic term for organized collections of computer data and instructions, often broken into two major categories: system software that provides the basic non-task-specific functions of the computer, and application software which is used by users to accomplish specific tasks.

Types: -

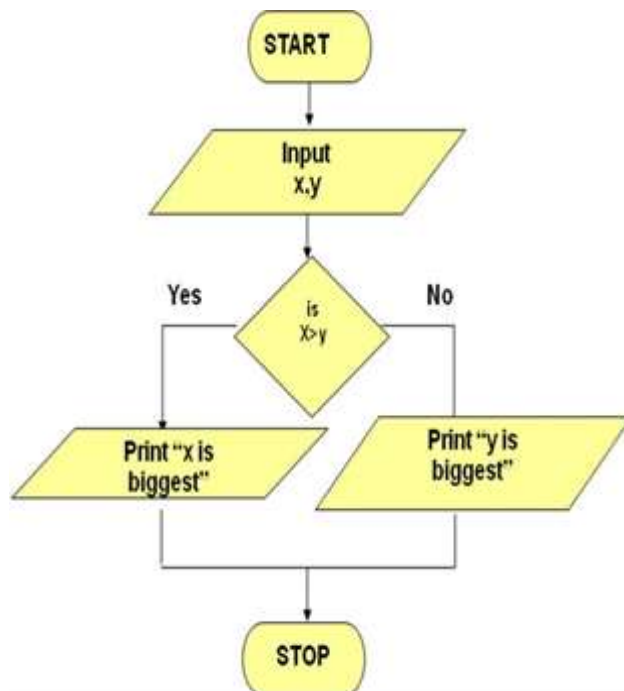
A. System software

It is responsible for controlling, integrating, and managing the individual hardware components of a computer system so that other software and the users of the system see it as a functional unit without having to be concerned with the low-level details such as transferring data from memory to disk, or rendering text onto a display.

B. Application software

It is used to accomplish specific tasks other than just running the computer system. It may consist of a single program or a small collection or a larger collection of programs. It is commonly known as an 'application' or 'app'.

b) **Draw the flow chat to find the biggest number between two numbers.**



Ans:

c) **Write different input and output devices of a computer.**

Ans: **Input Devices: -**

It is any peripheral piece of computer hardware equipment to provide data and control signals to an information processing system such as a computer or other information appliance. It

translates data from form that humans understand to one that the computer can work with. Most common are keyboard and mouse.

Examples: - 1. Keyboard 2.Mouse (pointing device) 3.Microphone 4. Touch screen 5. Scanner 6.Webcam 7.Touchpads 8. MIDI keyboard 9. 10. Graphics Tablets 11. Cameras 12.Pen Input 13.Video Capture Hardware 14.Microphone 15.Trackballs 16.Barcode reader 17.Digital camera 18.Joystick 19.Gamepad 20.Electronic Whiteboard.

Output devices: -

An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human-readable form.

Examples: - 1. Monitor 2. LCD Projection Panels 3.Printers (all types) 4. Computer Output Microfilm (COM) 5. Plotters 6.Speaker(s) 7.Projector.

d) What is Computer Virus?

Ans:**Computer Viruses: -**

Viruses: A virus is a small piece of software that piggybacks on real programs.

For example, a virus might attach itself to a program such as a spreadsheet program. Each time the spreadsheet program runs, the virus runs, too, and it has the chance to reproduce (by attaching to other programs) or wreak havoc.

e) What is an operating system?

Ans:**Operating Systems:**

It is a control program that provides an interface between the computer hardware and the user. Part of this interface includes tools and services for the user.

- The operating system is the most important program that runs on a computer.
- Operating system is an interface between computer and user.
- It is responsible for the management and coordination of activities and the sharing of the resources of the computer.

Types: -

Real-time

Multi-user vs. Single-user

Multi-tasking vs. Single-tasking

Distributed

Embedded

g) List any four features of MS Word.

Ans: **Features of MS-Word:**

1. **WYSIWYG** (what-you-see-is-what-you-get) display: It ensures that everything you see on screen will appear the same way when printed or moved to another format or program.
2. **Spell check:** Word comes with a built-in dictionary for spell checking; misspelled words are marked with a red squiggly underline. Sometimes, Word auto-corrects an obviously misspelled word or phrase.
3. **Text-level features** such as bold, underline, italic and strike-through.
4. **Page-level features** such as indentation, paragraphing and justification.
5. **Some other features** like **cut, copy, paste, replace and find data, Page headers, footers, numbers and watermarking, insertion of pictures, tables and shapes.**

h) What RAM and ROM?

Ans: **Primary Memory:** -

1. RAM: Random Access Memory (RAM) is a memory scheme within the computer system responsible for storing data on a temporary basis, so that it can be promptly accessed by the processor as and when needed. It is volatile in nature, which means that data will be erased once supply to the storage device is turned off. RAM stores data randomly and the processor accesses these data randomly from the RAM storage. RAM is considered "random access" because you can access any memory cell directly if you know the row and column that intersect at that cell.

2. ROM (Read Only Memory): ROM is a permanent form of storage. ROM stays active regardless of whether power supply to it is turned on or off. ROM devices do not allow data stored on them to be modified.

i) What are the features of EDIT Menu?

Ans: **Features of EDIT MENU** (ALT E):

1. Undo - Will take the previous command (ctrl +Z)
2. Redo - Will take the opposite action of undo (Ctrl + Y)
3. Cut - Can cut a selected text (Ctrl + X)
4. Copy - Can copy a selected text (Ctrl + C)
5. Paste - Can paste the selected text (Ctrl + V)
6. Del - Removes the selected text
7. Find - Used to find the part of text word \ character in the file (Ctrl + F)
8. Find Next – (F3) Finding \ finding next: Used to repeat the finding process.
9. Replace - Used to replace any part of Text / word / Character with another word/ character. (Ctrl + H)

10. Paste special – This will paste the copied (or) cut text in a form of an object. It will paste in box which cannot be altered.

11. Go To - Curser goes to the specified page, specified line, specified paragraph. (Ctrl + G)

j) What is the difference between cold booting and warm booting?

Ans: In the world of computers, "boot" means to start up. The difference between a warm boot and a cold boot lies in whether your computer needs to be started from a power-off state. To perform a cold boot, just turn on your computer.

k) What are the different unites of a computer memory?

Ans: Central Processing Unit (CPU)

A CPU is brain of a computer. It is responsible for all functions and processes. Regarding computing power, the CPU is the most important element of a computer system.

The CPU is comprised of three main parts:

Arithmetic Logic Unit (ALU): Executes all arithmetic and logical operations. Arithmetic calculations like as addition, subtraction, multiplication and division. Logical operation like compare numbers, letters, or special characters

Control Unit (CU): controls and co-ordinates computer components.

1. Read the code for the next instruction to be executed.
2. Increment the program counter so it points to the next instruction.
3. Read whatever data the instruction requires from cells in memory.
4. Provide the necessary data to an ALU or register.
5. If the instruction requires an ALU or specialized hardware to complete, instruct the hardware to perform the requested operation.

l) What is WWW?

Ans: **World Wide Web (WWW):**

The World Wide Web (abbreviated as WWW or W3, commonly known as the web) is a system of interlinked hypertext documents accessed via the Internet.

It is invented by Tim Berners-Lee.

It is collection of big amounts of information. It consists of millions & millions of pages of text, pictures, sounds and animation on various topics. Generally, World Wide Web includes web pages, web sites, web browser and web server.

Web page: -

1. It is a single document /page in a website.

2. It is formed with the help of HTML (hypertext mark-up language).

Web site: -

1. It is a collection of web pages linked together.
2. It maintains hyperlink to move from one page to another page.

Web browser: -

1. It is an interface between web client and web server.
2. It is an application program used to access the World Wide Web.
3. It is used to storing and retrieving information from the web. EX: Mozilla Firefox, internet explorer, Google chrome, safari, opera.

m) With a neat diagram explain different parts of a computer?



Ans:

n) What is computer?

Ans: **Computer:**

A computer is an electronic device, operating under the control of instructions stored in its own memory that can accept data (input), process the data according to specified rules, produce information (output), and store the information for future use.

o) What is the function of a control unit?

Control Unit (CU): controls and co-ordinates computer components.

1. Read the code for the next instruction to be executed.
2. Increment the program counter so it points to the next instruction.
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4. Provide the necessary data to an ALU or register.

5. If the instruction requires an ALU or specialized hardware to complete, instruct the hardware to perform the requested operation.

p) Write the components of the MS-Office.

Ans: Office is a suite of eleven applications. These are: **Access**, **Excel**, InfoPath, OneNote, Outlook, **PowerPoint**, Project, Lync, Publisher, Visio and **Word**.

q) Write the process to start MS-Excel.

Ans: Getting started with Excel:

Start → Programs → Microsoft office → Microsoft > → hit enter.

r) Write the extension file name of word, excel and power point.

Ans: The extension name of:

MS- PowerPoint → (.ppt)

MS- word → (.doc) or (.docx)

MS- Excel → (.xls) or (.xlsx)

s) Write to characteristics of a computer?

Ans: The characteristics of computer: -

Speed, accuracy, diligence, storage capability and versatility are some of the key characteristics of a computer. A brief overview of these characteristics is

- **Speed**: The computer can process data very fast, at the rate of millions of instructions per second. Some calculations that would have taken hours and days to complete otherwise, can be completed in a few seconds using the computer. For example, calculation and generation of salary slips of thousands of employees of an organization, weather forecasting that requires analysis of a large amount of data related to temperature, pressure and humidity of various places, etc.

- **Accuracy**: Computer provides a high degree of accuracy. For example, the computer can accurately give the result of division of any two numbers up to 10 decimal places.

- **Diligence**: When used for a longer period of time, the computer does not get tired or fatigued. It can perform long and complex calculations with the same speed and accuracy from the start till the end.

- **Storage Capability**: Large volumes of data and information can be stored in the computer and also retrieved whenever required. A limited amount of data can be stored, temporarily, in the primary memory. Secondary storage devices like floppy disk and compact disk can store a large amount of data permanently.

- **Versatility**: Computer is versatile in nature. It can perform different types of tasks with the same ease. At one moment you can use the computer to prepare a letter document and in the next moment you may play music or print a document. Computers have several limitations too. Computer can only perform tasks that it has been programmed to do.

Computer cannot do any work without instructions from the user. It executes instructions as specified by the user and does not take its own decisions.

t) What is OS?

Ans: OS → Operating System

An operating system (OS), in its most general sense, is software that allows a user to run other applications on a computing device. While it is possible for a software application to interface directly with hardware, the vast majority of applications are written for an OS, which allows them to take advantage of common libraries and not worry about specific hardware details.

The operating system manages a computer's hardware resources, including:

Input devices such as a keyboard and mouse

- Output devices such as display monitors, printers and scanners
- Network devices such as modems, routers and network connections
- Storage devices such as internal and external drives

u) What is GIS?

Ans: **Geographic information systems (GIS)**

This is extensively used in agriculture, especially in precision farming. Land is mapped digitally, and pertinent geodetic data such as topography and contours are combined with other statistical data for easier analysis of the soil. GIS is used in decision making such as what to plant and where to plant using historical data and sampling.

v) Write two uses of GIS?

Ans: **Computer-controlled devices (automated systems)**

Automatic milking systems are computer-controlled stand-alone systems that milk the dairy cattle without human labor. The complete automation of the milking process is controlled by an agricultural robot, a complex herd management software, and specialized computers.

Smartphone mobile apps in agriculture

Smartphone mobile applications designed and developed by JayalaxmiagrotechPvt Ltd from India are the most commonly used agriculture apps in India. Their mobile apps are in regional language are designed to break the literacy barrier and deliver the information in most simple manner. Several thousands of farmers across Asia are empowered with these apps.

w) What is E-mail?

Ans: **E-Mail**

E-mail or electronic mail is a service for sending or receiving messages electronically through a computer network.

The electronic mail uses various technologies that support electronic transmission of text, data and graphics.

EX: Gmail, yahoo mail, Rediff mail

x) What are the advantages of E-mail?

Ans: 1. It is much faster. Messages can be sent within a matter of seconds to any part in the world.

2. It can be sent to many people at the same time

3. E-mail is cheaper than a phone call and an ordinary mail

4. It can access information and file libraries on request

5. E-mail user can have a mail box which is accessed through a computer terminal

6. An E-mail message consists of two parts

a) a header specifying the address of the sender and the address of the receiver

b) the text of the message

7. The mailing system allows selecting messages for reading, displaying, saving, deleting, forwarding and replying.

8. Mailing list can be created to send the same message to a group of people

9. It is used to store some important data.

a. The person's Login name

b. @ sign

c. Domain name

*A domain represents organization, network, and country name.

y) What is MS-Access?

Ans: **MS ACCESS:**

It is a tool for managing the databases. It is a program included in the Microsoft Office suite of applications.

It can store any kind of data (numbers, text, pictures....)

It is a database management system (DBMS) for creating, organizing and managing the database.

Data in Access is stored in tables, which are a lot like Sheets in Excel.

The extension name of MS- ACCESS is **mdb(2003) or .accdb(2007)**.

The key components of MS Access are **tables, forms, reports and queries**.

Table = Where Raw data is stored.

Form = A place to key in data and Open reports.

Query = Ask questions about your data.

Report = Create a paper document that is professional looking.

z) Write the extension file name of MS-access?

Ans: The extension name of MS- ACCESS - **.mdb** (2003) or **.accdb**(2007)

aa) What is Internet?

Ans: **INTERNET**:

- It is a network of networks
- Computers are connected via a huge network of telecommunication links.
- It allows millions of users throughout the world wide to have the connectivity with the people, products, resources and services
- It uses TCP/IP protocol to connect all networks.

ab) What is web server?

Ans: -**Web server**

It is a computer that is used to provide the files, program and information requested by the client connected to the network.

It is used to process and give the response to the client request.

ac) Write two features of Web browser?

Ans: **Web browser features**:

- Mailing
- IRC- internet relay chat
- User can interact with multiple websites at a time

ad) What is LAN and WAN?

Ans: **Local Area Network**: If a network is confined to a single location, typically a building, it is called a **LAN**.

Ex: Set of interconnected computers within an office.

Wide Area Network: When a network is located over wide areas such as cities, states, countries or even continents, it is called a **WAN**.

Ex: I. Computers in different branches of a Globalized company.

II. Internet

ae) What is query design?

Ans: It is used to write queries.

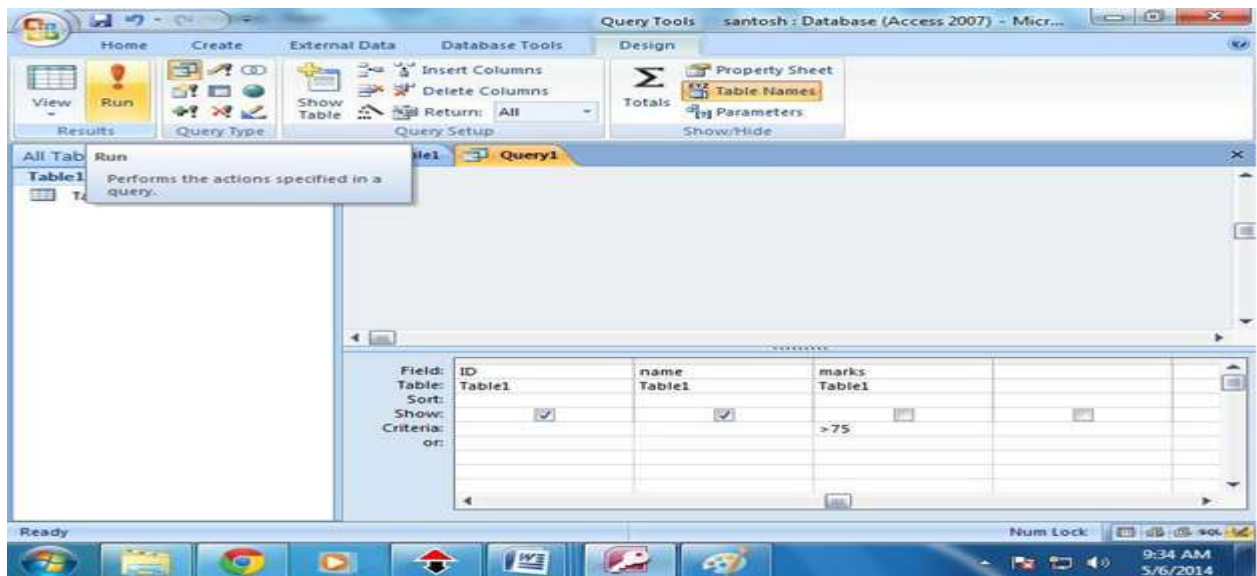
Go to create → select query design

Add the table then write query, Press run.



Ex-

Here the query is student who got more than 75 mark and the fields I want to display only id and name.



Press run.

af) What is Compiler?

Ans: **Compiler:**

A compiler is a special program that processes statements written in a particular programming language and turns them into machine language or "code" that a computer's processor uses. After you write a program, your source language statements are compiled into machine code that is stored as an executable file.

ag) Write two features of Java and FORTRAN?

Ans: **Main Features of JAVA:**

Java is a platform independent language Compiler (javac) converts source code (.java file) to the byte code (.class file). As mentioned above, JVM executes the bytecode produced by compiler. This byte code can run on any platform such as Windows, Linux, Mac OS etc.

Which means a program that is compiled on windows can run on Linux and vice-versa. Each operating system has different JVM, however the output they produce after execution of bytecode is same across all operating systems. That is why we call java as platform independent language.

Main Features of Fortran:

Fortran77 programs are typed in lines of up to 72 characters, with the first six columns of each line reserved for special purposes. As a result, Fortran77 statements ALWAYS BEGIN AT, OR AFTER, COLUMN 7. One of the special purposes for which the first six columns may be used is shown in the projectile program: if the first column contains a 'c' or a '*' then the whole line is treated as a COMMENT and is ignored when the program is compiled into executable code. A second special use of the first six columns is to specify a CONTINUATION LINE. If column 6 of a line contains any character other than a space or a zero then the line is treated as a continuation of the previous line. In this case columns 1-5 of the continuation line MUST BE BLANK, and column 7 is treated as if it came immediately after column 72 of the previous line! The third special use of the first six columns (actually, the first five columns) is for identifying a statement by means of a STATEMENT LABEL, which is an integer, written in columns 1-5. The number chosen can be any integer in the range 1-99999 as long as it is unique to the statement being labelled. We will encounter uses of statement labels later in the tutorial; for now, note that they are not generally required and their use is DISCOURAGED.

ah) What are the basic input and output functions of C?

Ans: The basic input/output functions are getchar ,putchar , puts , scanf and printf.

ai) What is e-Agriculture?

Ans: **e-Agriculture:**

e-Agriculture is a global Community of Practice, where people from all over the world exchange information, ideas, and resources related to the use of information and communication technologies (ICT) for sustainable agriculture and rural development.

aj) Write advantages of ICT in agriculture.

Ans: **Advantages of ICT in E-agriculture:**

1) It can initiate new agricultural and rural business such as e-commerce, real estate business for satellite offices, rural tourism, and virtual corporation of small-scale farms.

2) It can support policy-making and evaluation on optimal farm production, disaster management, agro -environmental resource management etc., using tools such as geographic information systems (GIS).

3) It can improve farm management and farming technologies by efficient farm management, risk management, effective information or knowledge transfer etc., realizing competitive and sustainable farming with safe products. For example, farmer has to make critical decisions such as what to plant? When to plant? how to manage pests? while considering off farm factors such as environmental impacts, market access, and industry standards. IT-based decision support system (DSS) can surely help their decisions.

4) It can provide systems and tools to secure food traceability and reliability that has been an emerging issue concerning farm products since serious contamination such as chicken flu was detected.

5) It can facilitate rural activities and provide more comfortable and safe rural life with equivalent services to those in the urban areas, such as provision of distance education, telemedicine, remote public services, remote entertainment etc.

6) Empowerment of Stakeholders (Government Officials, Research, Education & Extension Scientists, farmers and other service providers such as Community Information centers.

7) Development of Knowledge Management, Decision Support and Advisory Systems to strengthen Extension services and also used for Farmers Redressal system

8) Efficient management (Development, Conservation, allocation and utilization) of resources.

9) Improved productivity and profitability of farmers through better advisory systems.

ak) What is Computer model in agriculture?

Ans: Computer Models in Agriculture: statistical, weather analysis and crop simulation models: *statistical, weather analysis and crop simulation models*

Climate Models Climate models are primarily used to forecast substantial changes in the earth's climate. Climate is the average weather conditions in an area for a prolonged period of time. Therefore, climate models use a combination of statistical and current data to provide a reasonable forecast. The CFS is one of the primary climate models used for forecasting planetary scale weather conditions such as: El Nino, Madden Julian Oscillations (MJO), and monsoons. **Mesoscale Models** Mesoscale models are mainly used to forecast the weather locally. Mesoscale in meteorological terms means the atmospheric conditions ranging usually from two to 20 km. Synoptic and climate models usually do not have enough resolution to forecast localized weather conditions such as: single cellular thunderstorms and tornadoes. The North American Model (NAM) is commonly used to forecast local weather conditions.

Dynamic Models Dynamic models are the most sophisticated and costly tools used to forecast the weather. Dynamic models use advanced fundamental equations of the atmosphere to predict changes in the weather based on current conditions. Despite their efficiency, dynamic models can make errors during the initial runs. According to the National Hurricane Center (NHC), the GFS, ECMWF, NOGAPS, UKMET, and CMC, are some of the dynamic models used for forecasting.

Statistical Models Statistical models are primarily used to help meteorologist provide accurate analog forecasts. Statistical models use data from previous storms and weather conditions to help meteorologists get a better idea of how to track current weather systems. Statistical models are commonly used to track tropical and mid latitude cyclones. If the dynamical model consensus is not reasonable, meteorologists often use statistical models to provide better forecasts. **Crop Simulation Model** A Crop Simulation Model (CSM) is a simulation model that describes processes of crop growth and development as a function of weather conditions, soil conditions, and crop management.

al) How smart phone mobile apps useful in agriculture.

Ans: **Smartphone mobile apps in agriculture:**

1. The use of mobile technologies as a tool of intervention in agriculture is becoming increasingly popular. Smartphone penetration enhances the multi-dimensional positive impact on sustainable poverty reduction and identify accessibility as the main challenge in harnessing the full potential (Silarszky et al., 2008) in agricultural space. The reach of smartphone even in rural areas extended the ICT services beyond simple voice or text messages. Several smartphone apps are available for agriculture, horticulture, animal husbandry and farm machinery.

2. Smartphone mobile applications designed and developed by JayalaxmiaggrotechPvt Ltd from India are the most commonly used agriculture apps in India. Their mobile apps are in regional language are designed to break the literacy barrier and deliver the information in most simple manner. Several thousands of farmers across Asia are empowered with these apps.

am) Write the key features of soil information system.

Ans: **Soil Information System:** Soil Information System (SIS) solution is an industry leading soil map solution that uses advanced sensors and intelligent targeting and geo-processing algorithms to produce high resolution, accurate soil and topographic information.

Key Features:

- Assess detailed soil properties for each field such as soil texture, compaction, root zone depth, moisture retention and availability, and soil fertility.
- View soil analysis for the top 48 inches (122 cm) of the field 's surface in 3D.
- Download soil maps into your farm management software application, including Trimble Ag Software or other third-party software systems.
- Create variable rate application maps from the soil map to help maximize plant growth.

an) What is GEOGLAM?

Ans: **GEOGLAM**

It is the Group on Earth Observations Global Agricultural Monitoring Initiative. It was initially launched by the Group of Twenty (G20) Agriculture Ministers in June 2011, in Paris. The G20 Ministerial Declaration states that GEOGLAM "will strengthen global agricultural monitoring by improving the use of remote sensing tools for crop production projections and weather forecasting". By providing coordinated Earth observations from satellites and integrating them with ground-based and other in-situ measurements, the initiative will contribute to generating reliable, accurate, timely and sustained crop monitoring information and yield forecasts.

GEOGLAM provides a framework which strengthens the international community 's capacity to produce and disseminate relevant, timely and accurate forecasts of agricultural production at national, regional and global scales through the use of Earth Observations (EO) including satellite and ground-based observations. This initiative is designed to build on existing agricultural monitoring programs and initiatives at national, regional and global levels and to enhance and strengthen them through international networking, operationally

focused research, and data/method sharing. Within this framework, GEOGLAM developed the Crop Monitor reports which provide global crop condition assessments in support of the AMIS market monitoring activities. The first issue of the Crop Monitor appeared in the September 2013 issue of the AMIS Market Monitor. Given the success of the AMIS Crop Monitor, in 2016, GEOGLAM developed the Early Warning Crop Monitor. The Early Warning Crop Monitor brings together international, regional, and national organizations monitoring crop conditions within countries at risk of food insecurity.

Long Question's Answers: -

1. a) Explain different features of Power point.

b) What is GIS? Explain any two uses of GIS.

Ans: a) **Features of MS PowerPoint:**

Easy to create colourful, attractive designs using the standard templates and themes.

- Easy to modify compared to other visual, such as charts, and easy to drag and drop slides to re-order presentation.
- easy to present and maintain eye contact with a large audience
- Design

The design features of PowerPoint allow you to customize the appearance and format of the slides.

Animation

PowerPoint animation is divided between slide transitions and element animation. Using slide transition adds an effect when switching slides during a slide show. You can edit the transition effect and timing, as well as opt for an on-click or automatic transition between slides. Element animation adds movement and sounds to the objects within the slide. For example, if you're constructing a photo gallery as a slide show, you can choose which pictures enter the slide first, how they enter and add a sound as they enter.

Presentation

The presentation function of PowerPoint is largely designed to accommodate public speaking. PowerPoint comes with a built-in notes function; when printing out presentation slides, you can add presenter notes beside each slide as accompanying content. This is useful to clarify points in the slide without sacrificing the slide's readability. As of the 2007 version of PowerPoint, you can pre-record narration for a presentation. PowerPoint also has a rehearsal function as well, allowing you or your team to practice your timing and monitor the length of your presentation.

Integration

PowerPoint is compatible with all other software in the Microsoft Office suite; you can export slides into Word documents or use Excel charts within your presentation. In addition to image and audio support, PowerPoint 2007 also has video-integration functionality; you can embed videos within a presentation for easy playback without exiting the program. You can also export presentation files to an online interface for multi-user remote editing and presentation practice.

b) **Geographic information systems (GIS):**

A suite of software tools for mapping and analysing data which is georeferenced (assigned a specific location on the surface of the Earth, otherwise known as geospatial data). GIS can be used to detect geographic patterns in other data, such as disease clusters resulting from toxins, sub-optimal water access, etc.

USES:

Computer-controlled devices(automated systems) Automatic milking systems are computer controlled stand-alone systems that milk the dairy cattle without human labour. The complete automation of the milking process is controlled by an agricultural robot, a complex herd management software, and specialized computers. Automatic milking eliminates the farmer from the actual milking process, allowing for more time for

supervision of the farm and the herd. Farmers can also improve herd management by using the data gathered by the computer. By analysing the effect of various animal feeds on milk yield, farmers may adjust accordingly to obtain optimal milk yields. Since the data is available down to individual level, each cow may be tracked and examined, and the farmer may be alerted when there are unusual changes that could mean sickness or injuries

Smartphone mobile apps in agriculture.

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Geospatial Technologies

Geospatial technologies are terms used to describe the range of modern tools contributing to the geographic mapping and analysis of the Earth and human societies. These technologies have been evolving in some form since the first maps were drawn in prehistoric times. In the 19th century, the long important schools of cartography and mapmaking were joined by aerial photography as early cameras were sent aloft on balloons and pigeons, and then on airplanes during the 20th century. The science and art of photographic interpretation and map making was accelerated during the Second World War and during the Cold War it took on new dimensions with the advent of satellites and computers. Satellites allowed images of the Earth's surface and human activities therein with certain limitations. Computers allowed storage and transfer of imagery together with the development of associated digital software, maps, and data sets on socioeconomic and environmental phenomena, collectively called geographic information systems (GIS). An important aspect of a GIS is its ability to assemble the range of geospatial data into a layered set of maps which allow complex themes to be analysed and then communicated to wider audiences. This layering is enabled by the fact that all such data includes information on its precise location on the surface of the Earth, hence the term '**geospatial**'. Especially in the last decade, these technologies have evolved into a network of national security, scientific, and commercially operated satellites complemented by powerful desktop GIS. In addition, aerial remote sensing platforms, including unmanned aerial vehicles (e.g. the Global Hawk reconnaissance drone), are seeing increased non-military use as well. High quality hardware and data is now available to new audiences such as universities, corporations, and non-governmental organizations. The fields and sectors deploying these technologies are currently growing at a rapid pace, informing decision makers on topics such as industrial engineering, biodiversity conservation, forest fire suppression, agricultural monitoring, humanitarian relief, and much more. There are now a variety of types of geospatial technologies potentially applicable to human rights, including the following:

Remote Sensing: imagery and data collected from space- or airborne camera and sensor platforms. Some commercial satellite image providers now offer images showing details of one-meter or smaller, making these images appropriate for monitoring humanitarian needs and human rights abuses.

Geographic Information Systems (GIS): a suite of software tools for mapping and analysing data which is georeferenced (assigned a specific location on the surface of the Earth, otherwise known as geospatial data). GIS can be used to detect geographic patterns in other data, such as disease clusters resulting from toxins, sub-optimal water access, etc.

Global Positioning System (GPS): a network of U.S. Department of Defence satellites which can give precise coordinate locations to civilian and military users with proper receiving equipment (note: a similar European system called Galileo will be operational within the next several years while a Russian system is functioning but restricted). Internet Mapping Technologies: software programs like Google Earth and web features like Microsoft Virtual Earth are changing the way geospatial data is viewed and shared. The developments

in user interface are also making such technologies available to a wider audience whereas traditional GIS has been reserved for specialists and those who invest time in learning complex software programs.

2. What do you mean by GIS? How it is helpful in agriculture data analysis? *

Ans: **Geographic Information Systems (GIS)**: a suite of software tools for mapping and analysing data which is georeferenced (assigned a specific location on the surface of the Earth, otherwise known as geospatial data). GIS can be used to detect geographic patterns in other data, such as disease clusters resulting from toxins, sub-optimal water access, etc

USES:

The home page of the expert system has three important components viz., Information System, Decision Support System, Diagnosing System (Crop Doctor)

A. **Information System**: Information system is web based static information wherein all the technological and complementary information from A to Z about the crop are pooled and loaded in this component. It is a ready reckoner and user-friendly navigation with image-based presentation, up scaling and updating the content at any time. The static information system is highly useful for the extension officials, scientists, policy makers and administrators.

B. **Decision Support System**: " Decision support system is a computer-based information system including knowledge-based system that support decision making activities. A decision is a choice between alternatives based on estimates of the values of those alternatives " Accordingly, the DSS has been contemplated and designed to get best possible options and decision by farmer themselves for the day today agriculture operation. Customized tools such as Menus, Popup Windows, drop down Boxes or inter-related Multiple Combo Boxes, Video Plug-ins etc., were incorporated using Dot net programme. " The Decision Support System is consisting of details about Season, Climate, Variety, Nursery Management, Cultivation Practices, Irrigation Management, Nutrient Management, Crop Protection, Farm Implements, Post-Harvest Technology, Marketing, Institutions, Schemes and FAQ"s.

C. **Crop Doctor**: Crop doctor is a vital component in the Expert system which acts as artificial intelligence. It is picture and image based „if and then rule“ based programme which has written using Dot net programme. It deals with diagnosing the pest, disease and nutritional disorders affecting the selected crops. The first obvious sign is given as thumbnail images in the Key Visual Symptoms (Primary Symptom) with multiple sub levels (Secondary Symptoms). Farmers by selecting the symptoms, they will make a conclusion on the causes for the damage, identification of pest or pathogens, nutritional disorders and control measures to be taken in the field. " In crop

doctor component of expert system, major pests, diseases and deficiency disorders were included. " Regarding management, different control methods like cultural 448 methods, chemical methods, biological methods, preventive methods, eco-friendly methods and trap

methods are given with suitable and relevant photographs. " Nutrient management is the major and most important practice that is to be carried out in correct time with suitable methods. " Deficiency detection is the very crucial part in managing nutrients for proper crop production. Crop doctor helps the user to decide the causal agent or reason behind the occurred symptom. " After attaining the conclusion, different methods or choices to come out of the problem are given in this system that is the main and vital role to ward off the problems of cultivation. " Video documentation of each and every method will guide the farmers to use the control measures in proper way and it will give exposures like hands on trainings. It provides flexibility in management methods and gives autonomy state in the process of planning and execution of control measures.

3. Explain about

a) **GUI**

b) **RAM & ROM**

c) **E-Mail**

Ans: a) **GUI:**

b) **Primary Memory:** -

1. **RAM:** Random Access Memory (RAM) is a memory scheme within the computer system responsible for storing data on a temporary basis, so that it can be promptly accessed by the processor as and when needed. It is volatile in nature, which means that data will be erased once supply to the storage device is turned off. RAM stores data randomly and the processor accesses these data randomly from the RAM storage. RAM is considered "random access" because you can access any memory cell directly if you know the row and column that intersect at that cell.

2. **ROM** (Read Only Memory): ROM is a permanent form of storage. ROM stays active regardless of whether power supply to it is turned on or off. ROM devices do not allow data stored on them to be modified.

c) **E-Mail**

E-mail or electronic mail is a service for sending or receiving messages electronically through a computer network.

The electronic mail uses various technologies that support electronic transmission of text, data and graphics.

EX: Gmail, yahoo mail, Rediff mail

4. What is Database? What are the advantages of using database?

Ans: **Database:**

Database is a collection of related data and data is a collection of facts and figures that can be processed to produce information. Mostly data represents recordable facts. Data aids in producing information, which is based on facts. For example, if we have data about marks obtained by all students, we can then conclude about toppers and average marks. A database management system stores data in such a way that it becomes easier to retrieve, manipulate, and produce information.

Characteristics: Traditionally, data was organized in file formats. DBMS was a new concept then, and all the research was done to make it overcome the deficiencies in traditional style of data management. A modern DBMS has the following characteristics:

- **Real-world entity:** A modern DBMS is more realistic and uses real-world entities to design its architecture. It uses the behavior and attributes too. For example, a school database may use students as an entity and their age as an attribute.
- **Relation-based tables:** DBMS allows entities and relations among them to form tables. A user can understand the architecture of a database just by looking at the table names.
- **Isolation of data and application:** A database system is entirely different than its data. A database is an active entity, whereas data is said to be passive, on which the database works and organizes. DBMS also stores metadata, which is data about data, to ease its own process.
- **Less redundancy:** DBMS follows the rules of normalization, which splits a relation when any of its attributes is having redundancy in values. Normalization is a mathematically rich and scientific process that reduces data redundancy.
- **Consistency:** Consistency is a state where every relation in a database remains consistent. There exist methods and techniques, which can detect attempt of leaving database in inconsistent state. A DBMS can provide greater consistency as compared to earlier forms of data storing applications like file-processing systems.
- **Query Language:** DBMS is equipped with query language, which makes it more efficient to retrieve and manipulate data. A user can apply as many and as different filtering options as required to retrieve a set of data. Traditionally it was not possible where file-processing system was used.

6. What is internet? Write the steps to create an E-mail account.

Ans: **INTERNET**

- It is a network of networks
- Computers are connected via a huge network of telecommunication links.
- It allows millions of users throughout the world wide to have the connectivity with the people, products, resources and services

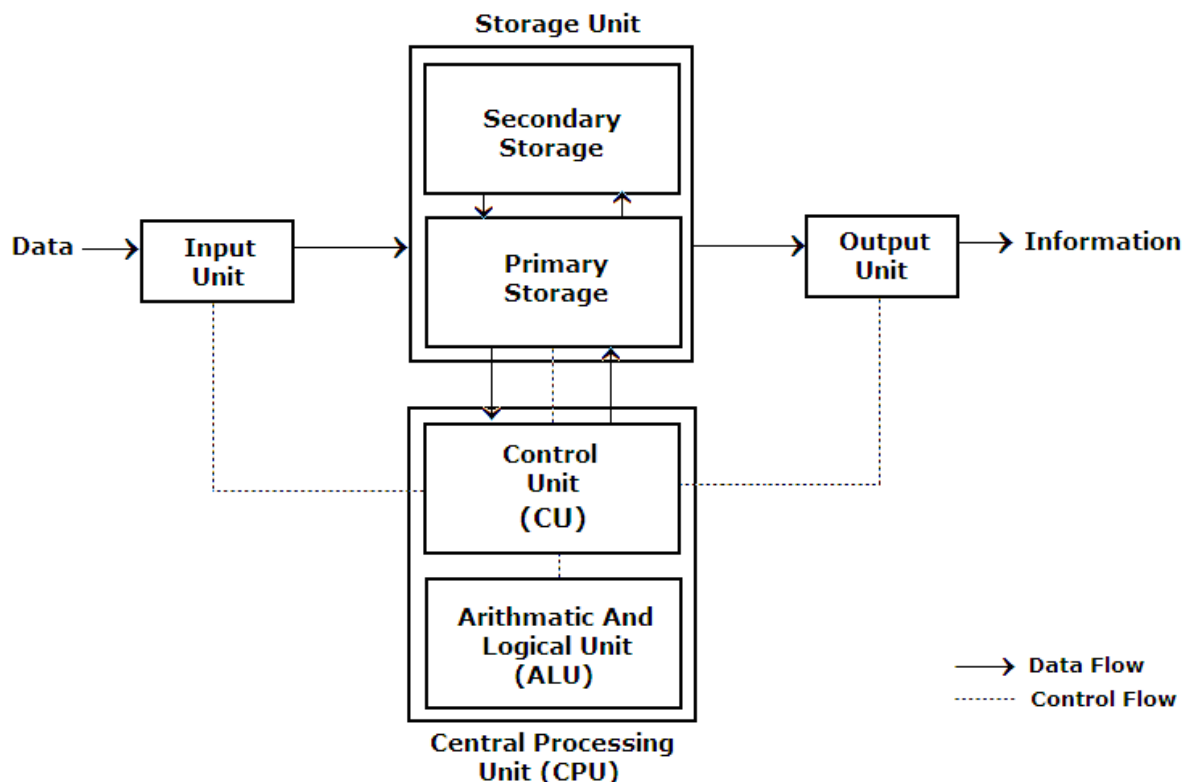
- It uses TCP/IP protocol to connect all networks

Steps to create an E-mail account:

- Here we can learn about creating a new email ID or email address using Gmail.
- We even we can say how to create a new Gmail ID or new Gmail address.
- Open a Web browser (internet explorer or google chrome or Mozilla etc).
- Write in address bar www.gmail.com.
- Now click on "**CREATE AN ACCOUNT**"
- Fill all the details; here the user name is the desired user ID which you want to create.
-
- after felling all the details click on "Next step" Button
- After next step it will ask for Phone number for verification, enter cell phone number and click on next
- Confirmation check with the password on your mobile
- Now almost you ID completed there is an option for upload you image.
- Now click on "next step" button and you will get you inbox.

7. Draw and explain about block diagram of computer.

Ans:



Input Devices

Input device is any peripheral (piece of computer hardware equipment to provide data and control signals to an information processing system such as a computer or other information

appliance. Input device Translate data from form that humans understand to one that the computer can work with. Most common are keyboard and mouse.

Central Processing Unit (CPU)

A CPU is brain of a computer. It is responsible for all functions and processes. Regarding computing power, the CPU is the most important element of a computer system.

The CPU is comprised of three main parts :

Arithmetic Logic Unit (ALU): Executes all arithmetic and logical operations. Arithmetic calculations like as addition, subtraction, multiplication and division. Logical operation like compare numbers, letters, or special characters.

Control Unit (CU): controls and co-ordinates computer components.

1. Read the code for the next instruction to be executed.
2. Increment the program counter so it points to the next instruction.
3. Read whatever data the instruction requires from cells in memory.
4. Provide the necessary data to an ALU or register.
5. If the instruction requires an ALU or specialized hardware to complete, instruct the hardware to perform the requested operation. **Registers:** Stores the data that is to be executed next, "very fast storage area".

Primary Memory

1. RAM
2. ROM

Secondary Memory: -

Stores data and programs permanently: its retained after the power is turned off.

Output devices

An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human-readable form.

8. Write Short notes on

a) E-mail

b) WWW

c) LAN

Ans: a) **E-Mail**

E-mail or electronic mail is a service for sending or receiving messages electronically through a computer network.

The electronic mail uses various technologies that support electronic transmission of text, data and graphics.

EX: Gmail, yahoo mail, Rediff mail

Some of the features of E-mail are

1. It is much faster. Messages can be sent within a matter of seconds to any part in the world.
2. It can be sent to many people at the same time
3. E-mail is cheaper than a phone call and an ordinary mail
4. It can access information and file libraries on request
5. E-mail user can have a mail box which is accessed through a computer terminal
6. An E-mail message consists of two parts
 - a) a header specifying the address of the sender and the address of the receiver
 - b) the text of the message
7. The mailing system allows selecting messages for reading, displaying, saving, deleting, forwarding and replying.
8. Mailing list can be created to send the same message to a group of people

b) **World Wide Web (WWW):**

The World Wide Web (abbreviated as WWW or W3, commonly known as the web) is a system of interlinked hypertext documents accessed via the Internet.

- It is invented by Tim Berners-Lee
- It is collection of big amounts of information. It consists of millions & millions of pages of text, pictures, sounds and animation on various topics

*In generally World Wide Web includes web pages, web sites, web browser and web server.

Web page: -

1. It is a single document /page in a website.
2. It is formed with the help of HTML (hypertext mark-up language).

Web site: -

1. It is a collection of web pages linked together.
2. It maintains hyperlink to move from one page to another page.

Web browser: -

1. It is an interface between web client and web server.
2. It is an application program used to access the World Wide Web.
3. It is used to storing and retrieving information from the web. EX: Mozilla Firefox, internet explorer, Google chrome, safari, opera.

c) LOCAL AREA NETWORK (LAN):

If a network is confined to a single location, typically a building, it is called a LAN.

Ex: Set of interconnected computers within an office.

9. What is Operating system? Explain its relevance to a computer.

Ans: **Operating Systems:**

It is a control program that provides an interface between the computer hardware and the user. Part of this interface includes tools and services for the user.

- The operating system is the most important program that runs on a computer.
- Operating system is an interface between computer and user.
- It is responsible for the management and coordination of activities and the sharing of the resources of the computer.

Types of Operating System:

- Real-time
- Multi-user vs. Single-user
- Multi-tasking vs. Single-tasking
- Distributed
- Embedded

Real-Time

- A real-time operating system is a multitasking operating system that aims at executing real-time applications. □ Responds to input instantly.

Multi-user vs. Single-user

- A multi-user operating system allows multiple users to access a computer system concurrently.
- Time-sharing system can be classified as multi-user systems as they enable a multiple user access to a computer through the sharing of time.
- Single-user operating systems, as opposed to a multi-user operating system, are usable by a single user at a time

Multi-tasking vs. Single-tasking

- When a single program is allowed to run at a time, the system is grouped under a single-tasking system
- While in case the operating system allows the execution of multiple tasks at one time, it is classified as a multi-tasking operating system.

Distributed

- A distributed operating system manages a group of independent computers and makes them appear to be a single computer.
- The development of networked computers that could be linked and communicate with each other, gave rise to distributed computing.

Embedded

- Embedded operating systems are designed to be used in embedded computer systems.
- They are designed to operate on small machines like PDAs with less autonomy.
- They are able to operate with a limited number of resources.

10. Write the steps for creating and resizing the chart.

Ans: **Creating Charts:**

Charts in Excel are used to represent data pictorially. We can use different types of charts to represent data.

Types of charts which are available in Excel:

1. Column charts
2. Bar charts
3. Line
4. Pie
5. XY (scatter)
6. Area

A. Pie chart:

It is a graphic representation of numerical information by a circle divided into sectors. Sectors are proportional to the frequencies or percentages of cases under various categories.

A Pie Chart can only display one series of data.

None of the values that you want to plot are negative.

Almost none of the values that you want to plot are zero values.

B. Column chart:

It is a graphic representation of numerical information, in which the data are represented by symbols such as vertical bars.

It is used to show comparisons between items of data. Each column in the chart represents the value of one item of data.

It can display one or more series of data.

C. Bar chart:

It is a graphic representation of numerical information, in which the data are represented by symbols such as Horizontal bars.

It is used to show comparisons between items of data. Each Horizontal bar in the chart represents the value of one item of data.

It can display one or more series of data.

D. Line chart:

The Line Chart is especially effective in displaying trends. In a Line Chart, the vertical axis (Y-axis) always displays numeric values and the horizontal axis (X-axis) displays time or another category.

Each line in the graph shows the changes in the value of one item of data.

Line graphs are often used to plot changes in data over time, such as monthly temperature changes or daily changes in stock market prices.

E. Area chart:

Area Charts are like Line Charts except that the area below the plot line is solid.

Area Charts are like Line Charts used primarily to show trends over time or another category.

Unfortunately, data series with smaller values that are plotted in the back of an area chart may be completely or partially hidden behind data series with larger values that are plotted in front of them.

F. Scatter chart:

Scatter Chart is to observe how the values of two series compare over time or another category.

Scatter plots show how much one variable is affected by another. The relationship between two variables is called their correlation."

The series pair has a Positive Correlation if they increase similarly and a Negative Correlation if they both decrease in like manner. Otherwise, they have No Correlation.

11. what is the use of graph objects in a chart? List the items where we can insert the label's in a chart.

Ans: Charts in Excel are used to represent data pictorially. We can use different types of charts to represent data.

Types of charts which are available in Excel:

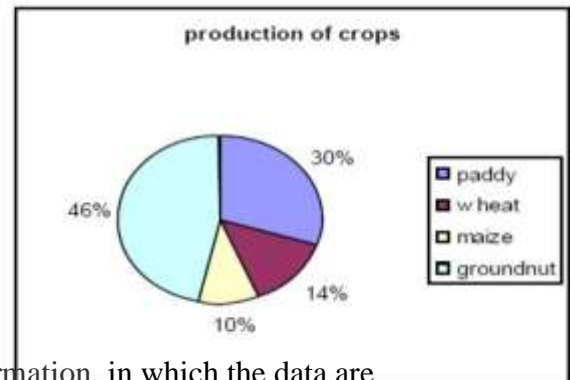
1. Column charts
2. Bar charts
3. Line
4. Pie
5. XY (scatter)
6. Area

Pie chart:

- It is a graphic representation of numerical information by a circle divided into sectors. Sectors are proportional to the frequencies or percentages of cases under various categories.
- A Pie Chart can only display *one series of data*.
- None of the values that you want to plot are negative.
- Almost none of the values that you want to plot are zero values.

For example, to draw a pie chart for the production of different crops in a region:

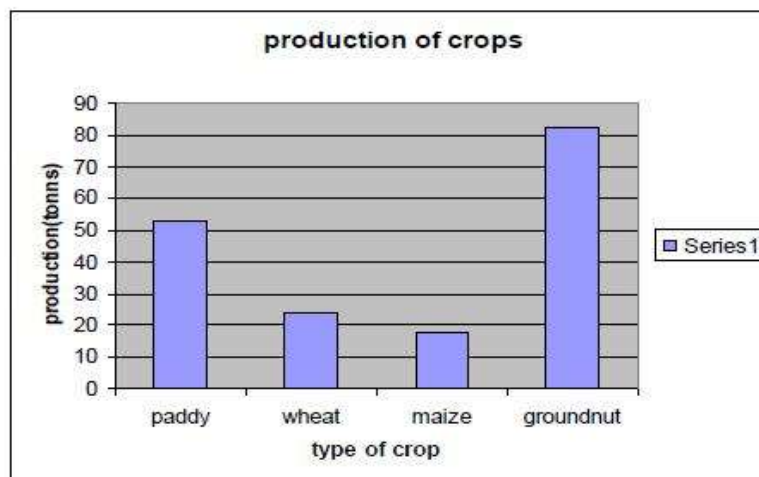
S.No.	A	B
	crop	Production(tons)
1	Paddy	53
2	Wheat	24
3	Maize	18
4	Groundnut	82



Column chart:

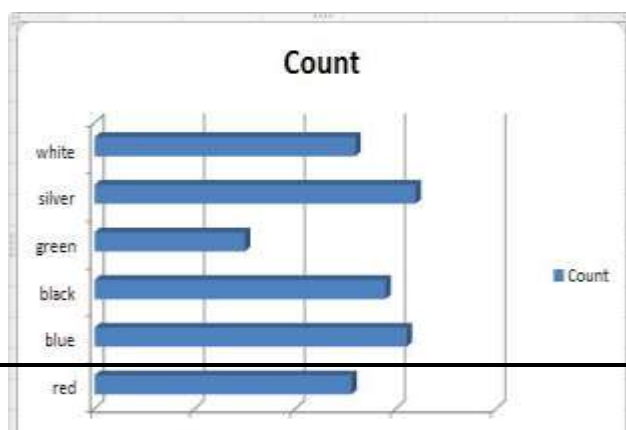
- It is a graphic representation of numerical information, in which the data are represented by symbols such as vertical bars.
- It is used to show comparisons between items of data. Each column in the chart represents the value of one item of data.
- It can display *one or more series of data*.

For the Above table column chart is



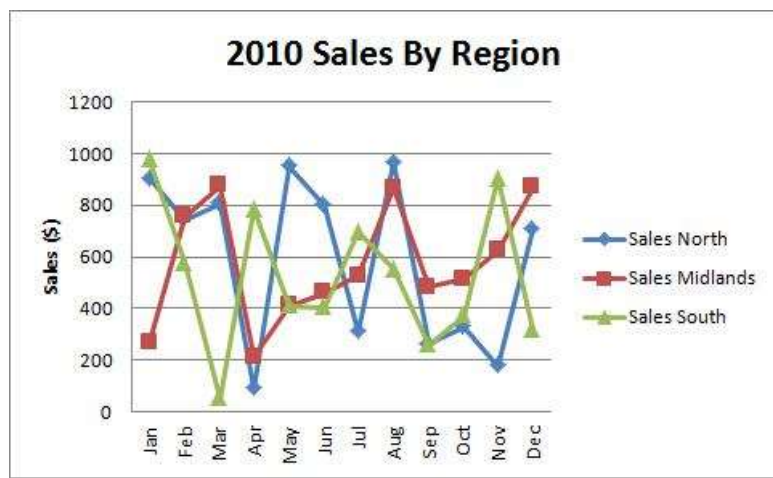
Bar chart:

- It is a graphic representation of numerical information, in which the data are represented by symbols such as Horizontal bars.
- It is used to show comparisons between items of data. Each Horizontal bar in the chart represents the value of one item of data.
- It can display *one or more series of data*.



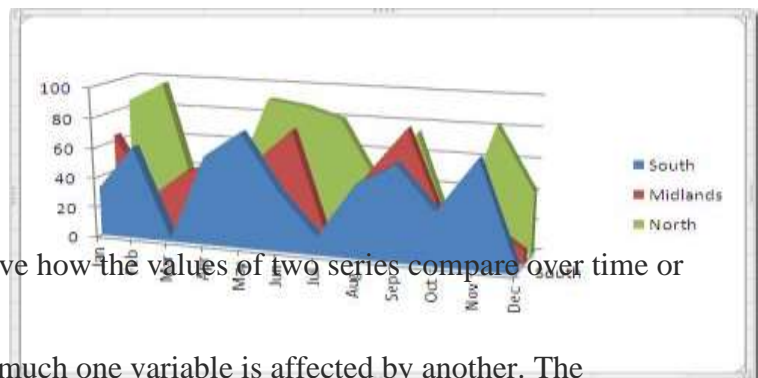
Line chart:

- The Line Chart is especially effective in displaying trends. In a Line Chart, the vertical axis (Y-axis) always displays numeric values and the horizontal axis (X-axis) displays time or other category.
- Each line in the graph shows the changes in the value of one item of data.
- Line graphs are often used to plot changes in data over time, such as monthly temperature changes or daily changes in stock market prices.



Area chart:

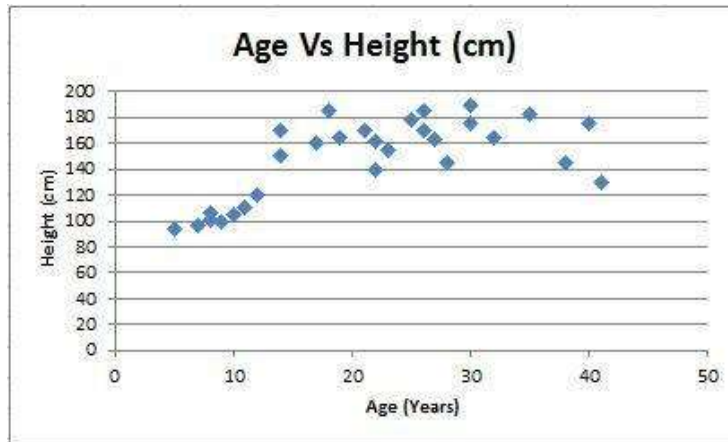
- Area Charts are like Line Charts except that the area below the plot line is solid.
- Area Charts are like Line Charts used primarily to show trends over time or other category.
- Unfortunately, [data series](#) with smaller values that are plotted in the back of an area chart may be completely or partially hidden behind data series with larger values that are plotted in front of them.



Scatter chart:

- Scatter Chart is to observe how the values of two series compare over time or other category.
- Scatter plots show how much one variable is affected by another. The relationship between two variables is called their correlation."

- The series pair has a Positive Correlation if they increase similarly and a Negative Correlation if they both decrease in like manner. Otherwise, they have No Correlation.



12. Explain different features of a power point.

Ans: **Features of MS PowerPoint:**

- Easy to create colourful, attractive designs using the standard templates and themes.
- Easy to modify compared to other visual, such as charts, and easy to drag and drop slides to re-order presentation.
- easy to present and maintain eye contact with a large audience

Design.

The design features of PowerPoint allow you to customize the appearance and format of the slides.

Animation

PowerPoint animation is divided between slide transitions and element animation. Using slide transition adds an effect when switching slides during a slide show. You can edit the transition effect and timing, as well as opt for an on-click or automatic transition between slides. Element animation adds movement and sounds to the objects within the slide. For example, if you're constructing a photo gallery as a slide show, you can choose which pictures enter the slide first, how they enter and add a sound as they enter.

Presentation

The presentation function of PowerPoint is largely designed to accommodate public speaking. PowerPoint comes with a built-in notes function; when printing out presentation slides, you can add presenter notes beside each slide as accompanying content. This is useful

to clarify points in the slide without sacrificing the slide's readability. As of the 2007 version of PowerPoint, you can pre-record narration for a presentation. PowerPoint also has a rehearsal function as well, allowing you or your team to practice your timing and monitor the length of your presentation.

Integration

PowerPoint is compatible with all other software in the Microsoft Office suite; you can export slides into Word documents or use Excel charts within your presentation. In addition to image and audio support, PowerPoint 2007 also has video-integration functionality; you can embed videos within a presentation for easy playback without exiting the program. You can also export presentation files to an online interface for multi-user remote editing and presentation practice.

13. Explain about output device and GUI.

Ans: **Output devices**

An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human-readable form.

Example of Output Devices:

1. Monitor 2. LCD Projection Panels 3. Printers (all types) 4. Computer Output Microfilm (COM) 5. Plotters 6. Speaker(s) 7. Projector

GRAPHICAL USER INTERFACE(GUI)

It is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation. GUIs were introduced in reaction to the perceived steep learning curve of command-line interfaces (CLIs), which require commands to be typed on a computer keyboard.

The actions in a GUI are usually performed through direct manipulation of the graphical elements. Beyond computers, GUIs are used in many handheld mobile devices such as MP3 players, portable media players, gaming devices, smartphones and smaller household, office and industrial controls. The term GUI tends not to be applied to other lower-display resolution types of interfaces, such as video games (where head-up display (HUD) is preferred), or not including flat screens, like volumetric displays because the term is restricted to the scope of two-dimensional display screens able to describe generic

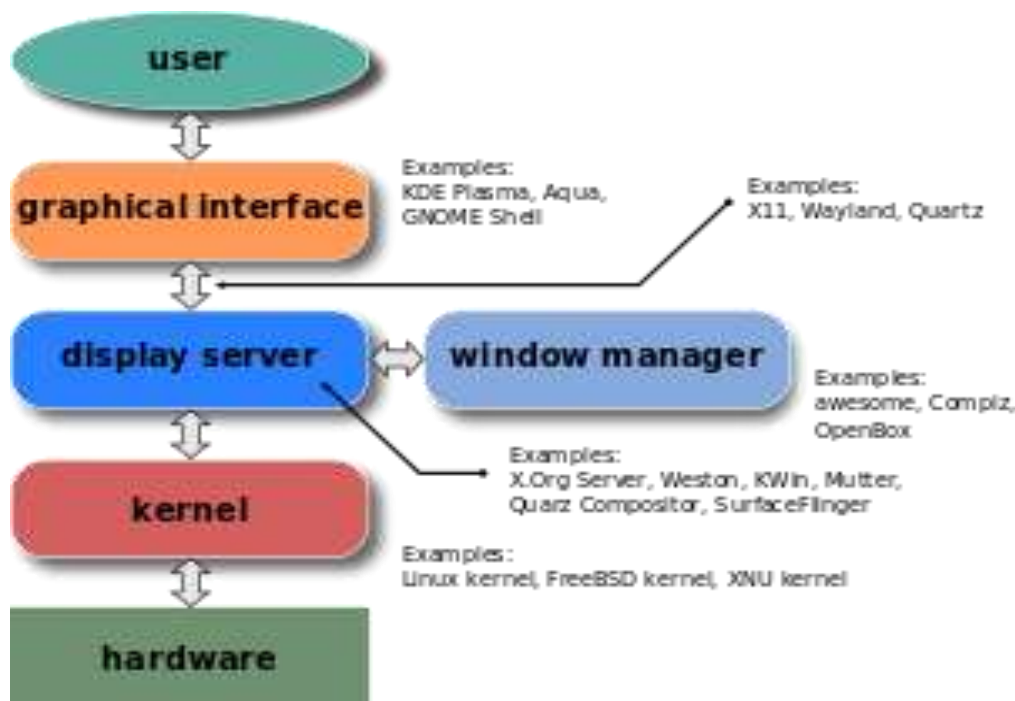
information, in the tradition of the computer science research at the Xerox Palo Alto Research Centre.

Components

A GUI uses a combination of technologies and devices to provide a platform that users can interact with, for the tasks of gathering and producing information.

A series of elements conforming a visual language have evolved to represent information stored in computers. This makes it easier for people with few computer skills to work with and use computer software.

The most common combination of such elements in GUIs is the windows, icons, menus, pointer (WIMP) paradigm, especially in personal computers.



14. Write the formulas for the operations based on the spreadsheet

A	B	C	D	E	F	G	H	I
1	Sl. No	Name of the student	ICA	AS	CP-1	WM	TOTAL	AVG
2	1	SUNIL	45	56	52	65		
3	2	KALYAN	52	65	85	45		

4	3	SIPRA	78	56	45	85		
5	4	MADHU	54	52	65	85		
6	5	PAWAN	75	54	65	45		
7	MAX							
8	MIN							

Ans:

15. Write advantages and disadvantages of MS-Access.

Ans: **Advantages:**

- *Easy to install and use*
- *Ease to integrate* – Access works well with many of the developing software programs based in Windows. It also can be used in the front-end as back-end tables with products like Microsoft SQL Server and non-Microsoft products like Oracle and Sybase.
- *Widely popular* — Microsoft Access is the most popular desktop database system in the world.
- *Saves you money* — Microsoft Access is hundreds of dollars more economical than other larger systems; offering the same functions and usage.
- *Convenient storage capacity* – A Microsoft Access database can hold up to 2 GB of data.
- *Multi-user support* – About ten users in a network can use an Access application.
- *Importing data* — Microsoft Access makes it easy to import data.
- **Disadvantages:**
- *Finite* – Microsoft Access is useful for individual departments or small-to-medium business sectors.
- *One file* — All the information from your database is saved into one file. This limits options and how you choose utilize data; slowing down reports, queries, and forms.
- *Static-Friendly* — It's difficult to publish files a part from static files.
- *Multi-user limited* — Technical limit is 255 concurrent users, but real-world limit is 10 to 80 (depending on type of application).

16. Write a short note on different types of network.

Ans: **Types of Networks**

Networks can range from a small group of computers linked together in a class room to thousands of computers linked together across the globe.

Depending on the geographical location, networks can be classified as -

- a) LAN (Local Area Network)
- b) MAN (Metropolitan Area Network)
- c) WAN (Wide Area Network)

Local Area Network: If a network is confined to a single location, typically a building, it is called a LAN.

Ex: Set of interconnected computers within an office.

Metropolitan Area Network: A metropolitan area network is a network that is larger than a LAN; it connects the computers distributed across multiple buildings.

Ex: the computers in all branches of an office within a city.

Wide Area Network: When a network is located over wide areas such as cities, states, countries or even continents, it is called a WAN.

Ex: i. Computers in different branches of a Globalised company.

ii. Internet

17. What web browser will do describe.

Ans:**Web browser:** -

1. It is an interface between web client and web server.
2. It is an application program used to access the World Wide Web.
3. It is used to storing and retrieving information from the web. EX: Mozilla Firefox, internet explorer, Google chrome, safari, opera.

WHAT WEB BROWSER WILL DO??

1. It is used to send the request to acts as information to the server.
2. It shows the retrieved information to the web client.
3. To send the request, we are using URL.

Web browser features

- Mailing
- IRC- internet relay chat
- User can interact with multiple websites at a time

User interface elements: -

User interface elements provided by web browser.

- i. Forwarding and back warding
- ii. Refresh or reload a web page
- iii. Boom marking (added to the recently visited web sites)
- iv. Address bar (to enter the URL) search engine.
- v. Home page

Web server: -

- It is a computer that is used to provide the files, program and information requested by the client connected to the network.
- It is used to process and give the response to the client request.

18. How to create a new E-mail ID write its procedure.

Ans:**Steps to create an E-mail account:**

- Here we can learn about creating a new email ID or email address using Gmail.
- We even we can say how to create a new Gmail ID or new Gmail address.
- Open a Web browser (internet explorer or google chrome or Mozilla etc).
- Write in address bar www.gmail.com.
- Now click on "CREATE AN ACCOUNT"
- Fill all the details; here the user name is the desired user ID which you want to create.
- after felling all the details click on "Next step" Button
- After next step it will ask for Phone number for verification, enter cell phone number and click on next
- Confirmation check with the password on your mobile
- Now almost you ID completed there is an option for upload you image.
- Now click on "next step" button and you will get you inbox.

19. What is Internet? What are the service provide by the Internet? Describe.

Ans:**INTERNET**

- It is a network of networks

- Computers are connected via a huge network of telecommunication links.
- It allows millions of users throughout the world wide to have the connectivity with the people, products, resources and services
- It uses TCP/IP protocol to connect all networks

Services provided by the Internet:

- www (world wide web) • Internet banking • E-mail • Search engine • Chatting • E-Commerce
- Audio and video conferencing

World Wide Web (WWW): -The World Wide Web (abbreviated as WWW or W3, commonly known as the web) is a system of interlinked hypertext documents accessed via the Internet.

- It is invented by Tim Berners-Lee
- It is collection of big amounts of information. It consists of millions & millions of pages of text, pictures, sounds and animation on various topics

*In generally World Wide Web includes web pages, web sites, web browser and web server

E-Mail

- E-mail or electronic mail is a service for sending or receiving messages electronically through a computer network.
- The electronic mail uses various technologies that support electronic transmission of text, data and graphics.

EX: Gmail, yahoo mail, Rediff mail

search engine

It's the address bar to enter the URL.

20. What is GIS? Write advantages and disadvantages of GIS.

Ans: **Geographic information systems (GIS):**

A suite of software tools for mapping and analysing data which is georeferenced (assigned a specific location on the surface of the Earth, otherwise known as geospatial data). GIS can be used to detect geographic patterns in other data, such as disease clusters resulting from toxins, sub-optimal water access, etc.

ADVANTAGES: The advantages of using a geographic information system include:

- Improved decision making – decisions are made easier because specific and detailed information is presented about one or more locations.
- Easy recordkeeping – geographical changes are easily recorded by GIS for those responsible of recording the changes.

DISADVANTAGE:

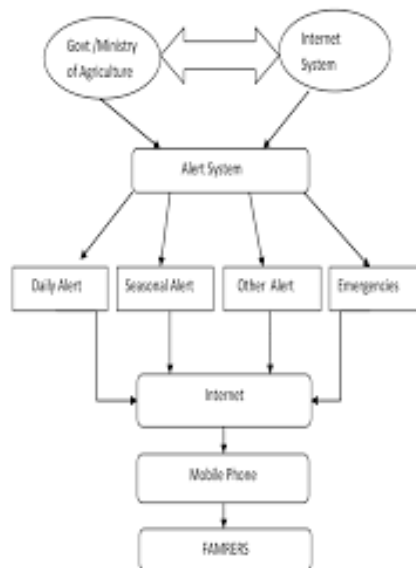
- Expensive software.
- Requires an enormous amount of data inputs to be practical for some tasks and the more data that is put in.
- The earth is round and geographic error is increased as you get into a larger scale.

21. Discuss about the architecture of the modern agriculture system.

Ans: **Design and development**

For improving agricultural productivity an expert agricultural advice is given to the farmers both in a timely and personalized situation. Here, in this system agricultural experts generate the advice by using the modern agriculture which is highly knowledge intensive which also requires timely, reliable and accurate information on natural resource endowments and their usage patterns at present and future technology available for their utilization and other information about markets, weather, insurance, subsidy, etc.

The Architecture of the modern system is as follows:

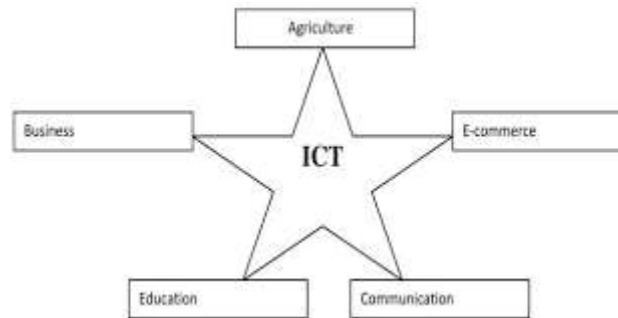


22. Write the role of ICT in agriculture.

Ans: **ROLE OF ICT IN E –AGRICULTURE**

ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, mobile and fixed phones, computer and network hardware and software, satellite systems and so on, (as well as the various services and applications

associated with them, such as videoconferencing, distance learning, etc) necessary for the delivery of information in the form of audio, data, video, image, etc from Point A to Point B. ICT consists of all technical means used to handle information and aid communication. Several reports underscore just how significant and extraordinary ICT productivity gains are not only for individuals and businesses, but for a nation.



23. Discuss different types of computer models in agriculture.

Ans: **Computer Models in Agriculture:**

- statistical
- weather analysis
- crop simulation models

Climate Models

Climate models are primarily used to forecast substantial changes in the earth's climate. Climate is the average weather conditions in an area for a prolonged period of time. Therefore, climate models use a combination of statistical and current data to provide a reasonable forecast. The CFS is one of the primary climate models used for forecasting planetary scale weather conditions such as: El Nino, Madden Julian Oscillations (MJO), and monsoons.

Mesoscale Models

Mesoscale models are mainly used to forecast the weather locally. Mesoscale in meteorological terms means the atmospheric conditions ranging usually from two to 20 km. Synoptic and climate models usually do not have enough resolution to forecast localized weather conditions such as: single cellular thunderstorms and tornadoes. The North American Model (NAM) is commonly used to forecast local weather conditions.

Dynamic Models

Dynamic models are the most sophisticated and costly tools used to forecast the weather. Dynamic models use advanced fundamental equations of the atmosphere to predict changes

in the weather based on current conditions. Despite their efficiency, dynamic models can make errors during the

initial runs. According to the National Hurricane Centre (NHC), the GFS, ECMWF, NOGAPS, UKMET, and CMC, are some of the dynamic models used for forecasting.

Statistical Models

Statistical models are primarily used to help meteorologist provide accurate analog forecasts. Statistical models use data from previous storms and weather conditions to help meteorologists get a better idea of how to track current weather systems. Statistical models are commonly used to track tropical and mid latitude cyclones. If the dynamical model consensus is not reasonable, meteorologists often use statistical models to provide better forecasts.

Crop Simulation Model

A Crop Simulation Model (CSM) is a simulation model that describes processes of crop growth and development as a function of weather conditions, soil conditions, and crop management.

24. Discuss different types of Computer- controlled devices in Agri-input management.

Ans: **Computer-controlled devices (automated systems) for Agri-input management:**

Wireless technologies: -

Wireless technologies have numerous applications in agriculture. One major usage is the simplification of closed-circuit television camera systems; the use of wireless communications eliminates the need for the installation of coaxial cables.

Computer-controlled devices (automated systems)

Automatic milking systems are computer-controlled stand-alone systems that milk the dairy cattle without human labour. The complete automation of the milking process is controlled by an agricultural robot, a complex herd management software, and specialized computers. Automatic milking eliminates the farmer from the actual milking process, allowing for more time for supervision of the farm and the herd. Farmers can also improve herd management by using the data gathered by the computer. By analysing the effect of various animal feeds on milk yield, farmers may adjust accordingly to obtain optimal milk yields. Since the data is available down to individual level, each cow may be tracked and examined, and the farmer may be alerted when there are unusual changes that could mean sickness or injuries.

25. Explain about expert system in agriculture.

Ans: **EXPERT SYSTEM FOR AGRICULTURE**

Components of the Expert system:

The home page of the expert system has three important components:-

- Information System,
- Decision Support System,
- Diagnosing System (Crop Doctor)

A. Information System:

Information system is web based static information wherein all the technological and complementary information from A to Z about the crop are pooled and loaded in this component. It is a ready reckoner and user-friendly navigation with image-based presentation, up scaling and updating the content at any time. The static information system is highly useful for the extension officials, scientists, policy makers and administrators.

B. Decision Support System:

“ Decision support system is a computer-based information system including knowledge-based system that support decision making activities. A decision is a choice between alternatives based on estimates of the values of those alternatives “ Accordingly, the DSS has been contemplated and designed to get best possible options and decision by farmer themselves for the day today agriculture operation. Customized tools such as Menus, Popup Windows, drop down Boxes or inter-related Multiple Combo Boxes, Video Plug-ins etc., were incorporated using Dot net programme. “ The Decision Support System is consisting of details about Season, Climate, Variety, Nursery Management, Cultivation Practices, Irrigation Management, Nutrient Management, Crop Protection, Farm Implements, Post-Harvest Technology, Marketing, Institutions, Schemes and FAQ’s. **C. Crop Doctor:**

Crop doctor is a vital component in the Expert system which acts as artificial intelligence. It is picture and image based „if and then rule“ based programme which has written using Dot net programme. It deals with diagnosing the pest, disease and nutritional disorders affecting the selected crops. The first obvious sign is given as thumbnail images in the Key Visual Symptoms (Primary Symptom) with multiple sub levels (Secondary Symptoms). Farmers by selecting the symptoms, they will make a conclusion on the causes for the damage, identification of pest or pathogens, nutritional disorders and control measures to be taken in the field. “ In crop doctor component of expert system, major pests, diseases and deficiency disorders were included. “ Regarding management, different control methods like cultural 448 methods, chemical methods, biological methods, preventive methods, eco-friendly methods and trap methods are given with suitable and relevant photographs. “ Nutrient management is the major and most important practice that is to be carried out in correct time with suitable methods. “ Deficiency detection is the very crucial part in managing nutrients for proper crop production. Crop doctor helps the user to decide the casual agent or reason

behind the occurred symptom. " After attaining the conclusion, different methods or choices to come out of the problem are given in this system that is the main and vital role to ward off the problems of cultivation. " Video documentation of each and every method will guide the farmers to use the control measures in proper way and it will give exposures like hands on trainings. " It provides flexibility in management methods and gives autonomy state in the process of planning and execution of control measures.

26. How to contingent crop planning and crop calendar using IT tools.

Ans: **Preparation of contingent crop planning and crop calendars using IT tools: -**

The Crop Calendar is a tool that provides timely information about seeds to promote local crop production. It contains information on planting, sowing and harvesting periods of locally adapted crops in specific agro-ecological zones. It also provides information on the sowing rates of seed and planting material and the main agricultural practices.

This tool supports farmers and agriculture extortionists across the world in taking appropriate decisions on crops and their sowing period, respecting the agro-ecological dimension. It also provides a solid base for emergency planning of the rehabilitation of farming systems after disasters.