1) Precision Agriculture, Concept, tools & techniques

Q. 1. Fill in the blanks.

a) Precision agriculture also known as _____ agriculture as needed farming &site specific crop management.

b) The concept of precision is strictly based on _____.

c) The goal of grid soil sampling is to generate a map of nutrients and water requirement is called _____

d) In India overall fertilizer consumption rate ____.

e) _____ as a system for capturing, storing, checking, manipulating, analyzing & displaying data which are spatially referenced to earth.

Q. 2. Match the pairs.

a) Sensor technology   i)Grain flow sensor

b) Uncorrected GPS signal accuracy   ii)To measure humidity, vegetation etc.

c) PLF system   iii)Fertilizer & pesticide application

d) VRT technique   iv)Information about livestock

e) Yield monitor   v)300 feet

Q. 3. True or false.

a) The unique character of GPS is precision in time and space.

b) GPS systems help users to record positional information with an accuracy between 10 to 0.1m.

c) Mass flow sensors works on principle of transmitting beams of microwave energy

d) Seeding/sowing critical stage in crop growing.

e) Precision farming can be utilized in every crop.

Q. 4. Choose correct option.

a) Grid soil sampling use the same principle of soil sampling but ____ the intensity of sampling

   i)Increases   ii)Decreases

   iii)Remain constant   iv)none of the above

b) BMPS stands for ____

   i)Bad Management Practice   ii)Best management Practice

   iii)Brief Management Practice   iv)Brief Management process

c) Which of the following is correct sentence Precision farming deals with ____

   i)Decrease productivity with decreasing   ii)Decrease productivity with increasing
   production cost.   production cost.

   iii)Increase productivity with increasing   iv)Increase productivity with decreasing
   production cost   production cost.

d) ____ is the key information in agricultural decision making policy formulation policy.

   i)GIS   ii) Geo-information

   iii) Agro-geoinformation   iv)GPS

e) Which of the following is automatic technology

   i)GIS   ii)GPS

   iii)VRT   iv)None

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Q. 5. **Do as directed**

a) Give long form of i)SSCM. ii)DGPS

b) Write use of DGPS

c) What are the two steps of precision farming?

d) Define Precision agriculture.

e) Give any two comments of precision farming.

f) Give any two applications of geo-informatics.

Ans Key:

Q. 1.

a) Satellite

b) GPS

c) Application map

d) 84.3 kg/ha

e) Geographic information system

Q. 2.		Q. 3.		Q. 4.	
a)	ii)	a)	True	a)	i)
b)	V)	b)	False (100 to 0.01m)	b)	ii)
c)	iv)	c)	True	c)	iv)
d)	iii)	d)	True	d)	iii)
e)	i)	e)	False (can not used in every crop)	e)	iii)

Q. 5.

a) i)Site Specific Crop Management
   ii)Differential Global Positioning System

b) Precise location of activities

c) 1)Identification &assessment of variability
   2) Management of variability.

d) Precision agriculture is technique of applying right amount inputs at right location at right time to enhance production.

e) GIS. GPS.

f) i)crop yield management
   ii)pest and disease management.

2) Geo-informatics system- Concept, tools & techniques

Q. 1. **Fill in the blanks.**

a) _____ helps to conversion of raw data of GIS into maps

b) _____ & _____ are forms of geo-spatial data

c) The imagine file format originally created by _____

d) A popular public domain raster data is the _____

e) _____ define the range of distinct value the Raster can store

Q. 2. **Match the pairs.**

a)	.dbf	i) Attribute index
b)	.shp	ii) Attribute information
c)	.shx	iii) Spatial index
d)	.ain	iv) Feature geometry
e)	.sbn	v) Feature geometry index

Q. 3. **True or false.**

a) Geographical data describe Building

b) GIS is computer based tool

c) GIS helps to make maps

d) GIS have ability to link data sets together by geographically

e) Raster are in parts and define by their pixel depth

Q. 4. **Choose correct option.**

a) a) Mapmakers use GIS to
i) store geographical information
ii) use geographical information
iii) view geographical information
iv) store ,use & view geographical information

b) The information GIS entered and stored as
i) panels
ii) layers
iii) single panel
iv) dual panel

c) The users Use GIS for
i) complex analysis only
ii) Display maps only
iii) complex analysis and display maps
iv) none of above

d) GIS deals with which kind of data
i) Numerical
ii) Binary
iii) spatial
iv) complex

e) Spatial Data also called as
i) Geodatabase
ii) Mono database
iii) current Data base
iv) None of above

Q. 5. **Do as directed**

a) Write down any one use of GIS?

b) Full Form Of GIS?

c) Write down three main system of GIS?

d) Write down component of GIS?

e) Define GIS ?

f) Define Geo-spatial Data ?

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Ans Key:

Q. 1.
a) GIS software
b) Raster based & vector based
c) ERDAS
d) GeoTIFF
e) Pixel depth

Q. 2.
a) ii
b) iv
c) v
d) i
e) iii

Q. 3.
a) True
b) True
c) True
d) True
e) True

Q. 4.
a) iv
b) ii
c) iii
d) iii
e) i

Q. 5.
a) Used in map making
b) Geographical Information System
c) Data acquisition system, Database management system, Visualization & reporting system
d) Software, Hardware, Spatial database, Producers, Expertise
e) Geographic Information System (GIS) is a computer system build to capture, store, manipulate, analyze, manage and display all kinds of spatial or geographical data.
F) Geographical data that has geographical aspect to it , or positioning is called as geospatial data

3) Crop discrimination & yield monitoring

Q. 1. Fill in the blanks

a) .... is an important step for development and management of crop monitoring systems

b) Most valuable sources of spatial data for precision agriculture is ....

c) The ratio of the actual yield to the field average is called as ....

d) .... is essential in dividing a large farm into management zones.

.... can be used to develop digital maps that transform spatial information.

Q. 2. Match the pairs.

a) Yield mapping   i)Graphic document

b) Grain flow sensor   ii)Satellite signal

c) GPS antenna   iii)Georeferenced data

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d)   Travel speed sensor   iv) Grain volume

e)   Soil mapping   v)GPS receiver

Q. 3.   True or false.

a)   Travel speed is measured with a ultrasonic sensor.

b)   Yield maps cannot be used in precision agriculture.

c)   GPS is used for calculating yield at each location.

d)   Soil mapping provides a structured representation of knowledge about the distribution of soils across the landscape.

e)   Yield maps represent the input of crop production.

Q. 4.   Choose correct option.

a)   Yield monitoring equipment was introduced in the early.........

i) 1999   ii)2000

iii)1992   iv)1990

b)   Which sensor is used by some mapping systems to improve accuracy of grain flow measurements.

i) Grain moisture sensor   ii) clean grain elevator speed sensor

iii) Grain flow sensor   iv)Travel speed sensor

c)   Typical values of grain crops ranging from ....

i) 10-12 sec   ii) 15-16 sec

iii) 14-16 sec   iv) 18-20 sec

d)   ....is powerful set of tools for collecting, storing, and retrieving the data .

i) Precision agriculture   ii) Yield monitoring

iii) GIS   iv) GPS

e)   Automated farm machineries are operated with the help of ....

i) SVM   ii) NGIS

iii) MLC   iv) SSNM

Q. 5.   Do as directed

a)   Define yield mapping.

b)   Which sensor distinguishes measurements logged during turns.

c)   Define soil mapping.

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d) Which system is used to operating automated farm machineries.

e) Write full form of NDVI.

f) Which map is one of the most valuable sources of spatial data for precision agriculture.

Ans Key:

Q. 1.

a) Crop discrimination

b) Yield map

c) Normalized yield

d) Remote sensing

e) GIS software

Q. 2.	Q. 3.	Q. 4.
a) Georeferenced data	a) True	a) 1990
b) Grain volume	b) False	b) Clean grain elevator speed sensor
c) Satellite signal	c) False.	c) 10-12 sec
d) GPS receiver	d) True	d) GIS
e) Graphic document	e) False	e) NGIS

Q. 5.

a) It is the process of collecting georeferenced data on crop yield and characteristics such as moisture content, while the crop is being harvested.

b) Header position sensor.

c) It is an approximation of the reality of the land, and one whose accuracy increases at higher densities of observation and more detailed scales.

d) NGIS (Navigation Geographic Information system)

e) Normalized Difference Vegetation Index.

f) Yield map.

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6) Remote sensing- Concepts, applications

Q. 1.   Fill in the blanks.

a)   .... Data provides the actual synoptic view of large area at a time .

b)   The collection of information relating to object without being physical contact with them is called as........

c)   The full form of GIS........ and GPS...........

d)   .... Sensor detects natural radiation that is emitted or reflected by the object

e)   Map maker is called as......

Q. 2.   Match the pairs.

a)   Passive Sensor   i) Map maker

b)   Active Remote Sensing   ii) Infra-red

c)   Cartographer   iii) Geographic Information System

d)   Microwave Sensing   iv) RADAR

e)   GIS   v) Very long Wavelength

Q. 3.   True or false.

a)   Sound waves are used in sonar types of remote sensing.

b)   Radar is used to detect things under water.

c)   Radar is example if active remote sensing.

d)   Remote sensing is not good to use when comparing an area after tsunami and then after tsunami.

e)   Passive sensor detects artificial radiation that is emitted or reflected by the object.

Q. 4.   Choose correct option.

a)   A Map maker is called as
     i) Cartographer   ii) Photographer
     iii) Geographer   iv) Map quester

b)   The first time Remote sensing were
     i) Paintings From air balloon   ii) TV remote control
     iii) Sketches from french map maker   iv) aerial photos

c)   Sound waves are used in what type a of remote sensing
     i) Radar   ii) microwave
     iii) Infra-red   iv) sonar

d)   What sensing is used under water to detect things
     i) Infra-red   ii) Radar
     iii sonar   iv) Microwave

e)   Types of remote sensing
     i) Passive sensor   ii) Active Remote sensing
     iii) Both i & ii   iv) None of these

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Q. 5. **Do as directed**

a)   Definition of Remote sensing?

b)   Enlist Application of Remote sensing ?

c)   Full form of GPS and GIS

d)   What is passive sensing ?

e)   What is Active Sensing ?

f)   Enlist types of Remote sensing ?

Ans Key:

Q. 1.

a)   Satellite

b)   Remote sensing

c)   Geographical information systems and global positioning system

d)   Passive sensor

e)   Cartographer

Q. 2.	**Q. 3.**	**Q. 4.**
a) Infrared	a) True	a) Cartographer
b) RADAR	b) True	b) Aerial photos
c) Map maker	c) True ·	c) Sonar
d) Very long Wavelength	d) False	d) Sonar
e) Geographic information system	e) False	e) Both I & ii

Q. 5.

a)   The collection of information relating to object without being physical contact with them is called as remote Sensing.

b)   Metrology, forest, Botany, hydrology, Planting application, urban ,sea ,rock etc.

c)   Global positioning system and global information systems

d)   Detect natural radiation that is emitted or reflected by the object or surrounding area being observed.

e)   On the other hand, emits energy in order to scan objects and areas where upon a sensor then detects and measures the radiation that is reflected or backscattered from the target.
   A) Active remote sensing
   B) passive sensor

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7) Image processing

Q. 1.   Fill in the blanks.

a)   _____ is an act of examining image for the purpose of the identifying object ang judging their significance.

b)   _____is used to correct uneven sensor over whole image and _____ to correct the geometric distribution due to earth's rotation.

c)   Image can be enhanced by simple_____.

d)   In _____classification the computer programs automatically group the pixels in image into separate clusters, depending on their spectral features.

e)   Each class of land cover is referred as a_____" and each product of classification is known as_____.

Q. 2.   Match the pairs.

a)   Pre-processing   i)shadow

b)   Image enhancement   ii) theme

c)   Bio-geophysical parameter   iii) linear gray level stretching

d)   Class of land cover   iv)stratospheric zone

e)   Identification of object   v) Initial processing of raw data

Q. 3.   True or false.

a)   Initial processing of raw data is usually carried out in pre-processing step of image processing.

b)   GCP is stand for global control point.

c)   Supervised classification, the computer program automatically groups the hpixels in image into separate clusters depending on their spectral features.

d)   A multi resolution approach is also a useful strategy when dealing with high resolution imagery.

e)   Each class of land cover I referred as map.

Q. 4.   Choose correct option.

a)   An image enhancement pixel values ranges between _____and_____.
i)1 and 20   ii)0 and 250
iii) 0 and 255   iv0 and 1

b)   Which are the following are the types of classification
i)supervised   ii)unsupervised
iii)Both   iv)none

c)   Which of the following is not the element of image Intepretation ?
i) colour   ii)size
iii) structure   iv)texture

d)   LCCS stands for.........
i) Large colour composites   ii) less colour composites
iii) liner class composites   iv) liner colour composites

e)   .... is the smallest element image.
i) point   ii)pixel
iii)polygon   iv)non

Q. 5. Do as directed

a) Define image processing.

b) Give the types of image classification.

c) Give the types of image processing.

d) Give the full form of FCC.

e) Write the basic maps used in thematic map presentation.

f) Define thematic map.

Ans Key:

Q. 1.

a) Image processing

b) Radiometric correction and geometric correction

c) Linear gray level streching

d) Unsupervised

e) Theme and thematic map

Q. 2.		Q. 3.		Q. 4.	
a)	v	a)	True.	a)	0 and 255
b)	iii	b)	False. (GCP stands for ground control point)	b)	Both
c)	iv	c)	False. (In unsupervised classification)	c)	Structure
d)	ii	d)	True	d)	Less colour composites
e)	i	e)	False. (Theme)	e)	Pixel

Q. 5.

a) Image processing=the act of examination images to identify objects and judge their significance by Concedering their their location is known as image processing.

b) a) Supervised b) unsupervised

c) a) Digital image , B) Analog image .

d) False colour composites

e) Topographic map, plan/ortho photomap.

f) Thematic map =A map that displays the spatial distribution of an attribute that relates to a single topic, theme, or subject of discours.

8) Global positioning system- Components & its functions

Q. 1. Fill in the blanks.

a) _____tool of precision agriculture is used in determination of boundaries.

b) Master control station is located at _____ country.

c) GNSS stands for _____.

d) Mapping is one of important function of _____.

e) GPS is started by _____ in 1973.

Q. 2. Match the pairs.

a) Satellite   i) Colorado

b) Remote tracking station   ii) 1970s

c) Master control station   iii) Space segment

d) GPS   iv) California

e) Alternate master control station   v) Hawaii

Q. 3. True or false.

a) User segment of GPS includes satellites,

b) India have Alternate master station of control segment of GPS at Guvahati.

c) Airplane and boat pilots use GPS for navigation.

d) GPS was invented before independence of India.

e) GPS works mainly through three segments.

Q. 4. Choose correct option.

a) Mapmakers use GPS to verify the..

    i) Boundaries   ii) Towns

    iii) Roads   iv) Places

b) GPS was invented in..

    i) 1960s   ii) 1980s

    iii) 1970s   iv) 1990s

c) GPS includes..

    i) Space segment   ii) User segment

    iii) Control segment   iv) All of the above

d) GPS stands for

    i) Geo positioning system   ii) Geographic position system

    iii) Global positioning system   iv) Global people survey

e) GPS can be applicable for

    i) Population count   ii) Both i and iii

    iii) Military   iv) None of the above

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Q. 5.   Do as directed

a)   Give the segments of GPS.

b)   Give two functions of GPS.

c)   Mention any   of receivers of global positioning system on basis of accuracy.

d)   Give full form of – GIS, GNSS.

e)   What is GPS?

f)   Give minimum two major sectors in which GPS is applied.

Ans Key:

Q. 1.

a)   GPS

b)   United states of America

c)   Global Navigation Satellite System

d)   GPS

e)   Defense department of USA

Q. 2.		**Q. 3.**		**Q. 4.**	
a)	iii	a)	False	a)	i
b)	v	b)	False	b)	iii
c)	i	c)	True	c)	iv
d)	ii	d)	False	d)	iii
e)	iv	e)	True	e)	iii

Q. 5.

a)   1. space segment 2. control segment, 3. user segment.

b)   1. navigation 2. mapping

c)   1.DGPS, 2.RTK GPS, 3.dual frequency GPS.

d)   GIS :- Geographic information system, GNSS :- Global Navigation Satellite System.

e)   The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather condition, anywhere on or near earth.

f)   1.Defense 2.Agriculture

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9) Introduction to crop simulation model

Q. 1.   Fill in the blanks.

a) _____ is a simplified representation of a system or a process.

b) _____ is considered as act of mimicry.

c) The full form of IBSNAT is _____.

d) The full form of DSSAT is_____.

e) The full form of CERES is _____.

Q. 2.   Match the pairs.

a) Mechanistic model   i)defines behavior in a simple manner

b) Static model   ii)time is not included as variable

c) Dynamic model   iii)based on physical selection

d) Descriptive model   iv)outputs are given along with probabilities

e) Stochastic model   v)Time is included as variable

Q. 3.   True or false.

a) Mechanical models system use statistical techniques.

b) Verification is used for evaluation of truthfulness or correctness.

c) Validation is used for evaluation of model for its usefulne5.

d) Stochastic models include time as variable.

e) Statistical models are expressed as regression equations

Q. 4.   Choose correct option.

a) Modelling and simulation concepts were given by?
i)Zeigler   ii)Zedler
iii) Dalton   iv)none of the above

b) _____ is the hypothetical, abstract representation of the objects properties.
i) Base Model   ii)modelling
iii)simulation   iv)crop model

c) _____ is used to design crop Ideotypes.
i)GIS   ii) GPS
iii)Crop simulation models   iv)Precision agriculture

d) _____ model has been used to evaluate erosion risks due to cropping practices.
i)EPIC   ii)APSIM
iii)COTTAM   iv)DSSAT

e) Most crucial steps in preparing simulation models are?
i)validation   ii)calibration
iii)data input   iv)both (I) and (ii)

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Q. 5. Do as directed

a)   Expand: APSIM

b)   Expand: AAS

c)   Define model.

d)   Define simulation.

e)   Name the simulation model used in sugarcane.

f)   Define crop model.

Ans Key:

Q. 1.

a)   Model

b)   Simulation

c)   The International Benchmark Site Network For Agrotechnology Transfer

d)   Decision Support System for Agrotechnology transfer

e)   The Crop Environment Resource Synthesis

Q. 2.		Q. 3.		Q. 4.	
a)	iii	a)	False	a)	Zeigler
b)	ii	b)	True	b)	Base model
c)	v	c)	True	c)	Crop simulation models
d)	i	d)	False	d)	EPIC
e)	iv	e)	True	e)	Both (I) and (II)

Q. 5.

a)   Agricultural production system simulator

b)   Agromet advisory system

c)   A model is a simplified representation of a system or a process.

d)   A simulation is the imitation of the operation of real world process or system over time.

e)   APSIM

f)   Crop model is a simple representation of a crop.

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10) Uses of crop stimulation model for optimization of agricultural inputs

Q. 1. Fill in the blanks.

a) .... Is a new discipline & back ground literature is scarce.

b) Researchers used the modelling approach to design ....for specific environment .

c) The .... Model has been used a long the same line in South African Sugar industry.

d) For crop stimulation model knowledge of .....&..........is essential .

e) .....&....towards modelling is the limitations of crop stimulation modelling .

Q. 2. Match the pairs.

a) Environmental impact   i)Erosion risk

b) EPIC model   ii)Genetic improvement

c) CANEGRO model   iii)percolation N losses

d) APSIM software   iv)Sugar industry

e) NTKenaf model   v)Integration of knowledge

Q. 3. True or false.

a) Model performance is limited to quality of output data.

b) Model estimate potential of yield

c) Models can help to formulate hypothesis &improve efficiency of field experiment.

d) Model is applied as a research tool

e) A model is not a tool for improving critical thought not substitute of it.

Q. 4. Choose correct option.

a) ....model has been used to evaluate erosion risk due to cropping practices & tillage.

  i)EPIC model   ii) CANEGRO model

  iii)NTKenaf model   iv)DSSAT model

b) Choose correct application of Crop Stimulation Model.

  i)As a research tools   ii) As a crop system management tool

  iii)As a policy analysis   iv) All of above

c) Which software allows integration of knowledge across crop as well as across discipline for particular crop.

  i)CANEGRO   ii)NTKenaf

  iii)APSIM   iv)EPIC

d) Stimulation model applied in.....purpose

  i)As a research   ii)village

  iii)industry   iv)None of these

e) Application of as a research tool includes.....

  i)research understanding   ii)Genetic improvement

  iii)Integration of knowledge   iv) All of above

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Q. 5. Do as directed

a) Who developed the Agricultural model.
b) Where the stimulation model is applied?
c) Which are the non climatic causes by which yield is reduced .
d) Detailed & mechanistic model.
e) Model used in south African sugar industry
f) For fertilizers recommendation which model is given.

Ans Key:

Q. 1.

a) Crop modelling
b) Crop ideotypes
c) CANEGRO
d) Computer & Computer language
e) Awareness & acceptance

Q. 2.
a) Percolation, N losses
b) Erosion risk
c) Sugar industry
d) Integration of knowledge
e) Genetic improvement

Q. 3.
a) False
b) True
c) True ·
d) True
e) False

Q. 4.
a) EPIC model
b) All of these
c) APSIM
d) As a Research
e) All of these

Q. 5.

a) Agricultural scientist.
b) Research, teaching, farm & resource management, policy analysis & production forecasts.
c) Delayed sowing, soil fertility, pest and diseases .
d) Genetic improvement
e) CANEGRO model
f) STCR model

11) STCR approach for precision agriculture

Q. 1. Fill In the blanks.

a) _____ is important tool to monitor the soil health and resilience.

b) Critical level concept was developed by_____

c) Soil fertility status is high. when nutrient index is_____

d) Basic cation saturation approach was useful for_____

e) STCR stands for_____

Q. 2. Match the pairs.

a) DRIS approach   i)To maintain soil fertility status for future years

b) Zinc   ii)Ca:K ratio is very high

c) Calcareous soil   iii)Ca, Mg and K

d) Basic cation saturation approach   iv)List the nutrients in order of their importance

e) Build up and maintenance   v)<0.8

Q. 3. True or false.

a) Sufficiency approach aims to maximize the profitability in a future years.

b) Assessment of specific soil condition which can be improved by using soil amendments.

c) During general recommendation variation in soil fertility is taken into consideration.

d) DRIS is the holistic approach to the mineral nutrition of the soil.

e) Quantitative approach is irrespective of yield goal and variation in soil type.

Q. 4. Choose correct option.

a) Soil fertility status is low, when nutrient index is
   i)<0.25   ii)<1.3
   iii)<1.5   iv)<1.0

b) Which of the following approach is irrespective of yield goal and variation in soil type
   i)Basic cation saturation   ii)Build up and maintenance
   iii)Sufficiency   iv)Quantitative approach

c) Ca:K ratio was very high in
   i)Sandy soil   ii)Calcareous soil
   iii)Red soil   iv)Black soil

d) The SSNM recommendation could be evolved on the basis of
   i)Chemical analysis   ii)Biological analysis
   iii)Soil cum plant analysis iv)None of the above

e) Critical limit of Fe is
   i)<4.3   ii)<4.1
   iii)<4.5   iv)<3.9

Q. 5. Do as directed

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a) Define soil testing.

b) Give formula of NI.

c) What is the goal of sufficiency approach?

d) Give full form of SSNM & DRIS.

e) Define SSNM.

f) Write critical limits of micronutrients.

Ans key:

Q. 1 Fill in the blanks.

a) Soil testing

b) Cate & Nelson

c) >2.5

d) recommendation of Ca, Mg, K

e) Soil Test Crop Response

Q. 2 Match the pairs.

a) List the nutrients in order of importance

b) < 0.6

c) Ca:k ratio is very high

d) Ca, Mg, K

e) to maintain soil fertility for future year

Q.3 True or False

a) False

b) True

c) False

d) True

e) False

Q. 4 Choose correct option

a) Sufficiency approach

b) <1.5

c) Calcareous Soil

d) Soil cum plant analysis

e) <4.5

Q. 5 Do as directed

a) Soil testing is the scientific diagnostic tool to evaluate soil fertility for recommending balanced nutrients to crops to achieve profitability, higher production, improving fertilizer use efficiency & reduces the environment pollution.

b) Nutrient Index = $(NL \times 1) + (NM \times 2) + (NH \times 3) / NT$

c) To maximize the profitability in a given years.

d) SSNP- Site Specific Nutrient Management

DRIS- Diagnosis and Recommendation Integrated system

e) SSNM is a new approach nutrient recommendation is mainly based on indigenous nutrient supply of the soil and nutrient demand of crop for achieving targeted yield.

f) Fe- <4.5, Zn- <0.6, B- <0.05, Mn- <2.0, Cu- <0.2, Mo- <0.05.

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12) Nanotechnology- Concepts and techniques

Q. 1. Fill in the blanks.

a) A nanometer is ___ the diameter of a human pair.

b) ____ is a multidisciplinary science.

c) One mole of water for instance weights __ gr.

d) Nanometer is conventionally definited as ___.

e) 1 nanometer is ___ of one metre.

Q. 2. Match the pairs.

a) Nanoscale   i) nano-gift

b) Nanoparticle   ii) 1 to 100nm

c) Seed   iii) 6.022×10^{23}

d) One mole of any material   iv) used to detect pathogens

e) Nanosensors   v) Arrangement into orded layers

Q. 3. True or false.

a) Nanotechnology isn't art and science of manipulating matter at the nanoscale.

b) Size of nanoparticle is 10 to 100nm

c) In nanoparticle production two methods.

d) Nano technology is a multi-disciplinary science.

e) Smart seed cannot be used for germination.

Q. 4. Choose correct option.

a) Method of Nanoparticle production.

  i) Bottom up   ii) down

  iii) top up   iv) low

b) In bottom up method which types of steps .

  i) parallel   ii) perpendicular

  iii) rectangle type   iv) triangle

c) A disturbing fact is that the fertilizer use efficiency is __N?

  i) 10%   ii) 15%

  iii) 30%   iv) 20-50%

d) A disturbing fact is that the fertilizer use efficiency is _%P?

  i) 10-25%   ii) 32%

  iii) 35%   iv) 5-10%

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e)   CMC stands for _____

i) Carbon Monoxide cellulose   ii) Carboxy Methyl Cellulose

iii) Carbon Methyl Cellulose   iv) Corboxy Methyl Carbon

Q. 5.   Do as directed

a)   Definition of nanotechnology.

b)   Nanotechnology used in?

c)   One mole of any material Contains ?

d)   Nanosensor can be used to detect?

e)   Nanometer scale?

f)   State use of nano-sensor.

Ans Key:

Q. 1.

a)   1/80000

b)   Multidisciplinary

c)   18 gm

d)   1 to 100 nm

e)   One billionth

Q. 2.		Q. 3.		Q. 4.	
a)	ii	a)	False	a)	i
b)	v	b)	False	b)	i
c)	i	c)	True	c)	iv
d)	iii	d)	True	d)	i
e)	iv	e)	False	e)	ii

Q. 5.

a)   It is defined as science & technology of such tiny things, of that materials less than 100nm in size.

b)   Used in physical and chemical properties of a substance to explore & medicine in agriculture.

c) 6.022×10^{23}

d)   Pathogens

e)   1 to 100nm

f)   To detect pathogens.

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13) Brief introduction about nano-scale effect

Q. 1. Fill in the blanks.

a) The term nano is adapted from the _____ word meaning _____

b) _____ is a top down fabrication technique where a bulk material is reduced in size to Nano scale pattern

c) _____ is important technique for both characterization and synthesis of Nano material

d) A fascinating and powerful result of quantum effect of the nanoscale is the concept of _____ of properties

e) _____ nanoparticle used as plant fertilizer mung bean to enhance crop production

Q. 2. Match the pairs.

a) Hydrazine   i) stabilizing agent

b) Polyvinyl pyrrolidone   ii) reducing agent

c) Chitosan   iii) prevent conidiophores develop

d) Silver nanoparticles   iv) antifungal agent

e) Zno nanoparticles   v) antimicrobial agent

Q. 3. True or false.

a) Nanoscale gold appear as a red or purple

b) When particle size is made to nano scale properties such as melting point, flurosense, electrical conductivity, chemical reactivity changes as a function of the size of particle

c) Sodium Nano fertilizer used to enhance crop production of pennisetum amaricanum

d) Importance of nano scale delivery system in agriculture is because of its improve solubility and stability to degrade in the environment

e) Carbon nanotubes can be used as a regulator of seed germination and plant growth

Q. 4. Choose correct option.

a) Size of nano particles is
i) 1-100nm   ii) 1-10nm
iii) 1-1000nm   iv) none of these

b) 1nm = ---- meter
i) 10-8   ii) 10-9
iii) 10-7   iv) 10-6

Nano particles can be produced by
i) bottom up approach   ii) top down approach
iii) both 1&2   iv) none of these

d) Carbon nanotube discovered by S Ligima in
i) 1991   ii) 1995
iii) 1998   iv) 2000

e) Scanning acoustic microscope developed by Calvin Quate in
i) 1950   ii) 1960
iii) 1970   iv) 1980

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Q. 5. **Do as directed**

a) Define nanoparticle.

b) Give two drawback of bottom up approach of synthesis of nano particles

c) Write two uses of nano material in agriculture

d) Write two principle factor causes the properties of nano material to differ significantly from other materials

e) Who give the idea of nanotechnology

f) Which method is used for physical synthesis of metallic nanoparticles

Ans Key:

Q. 1.

a) Greek &dwarf

b) Lithography

c) Scanning probe microscopy

d) Tunability

e) TiO2

Q. 2.		Q. 3.		Q. 4.	
a)	ii	a)	True	a)	i
b)	i	b)	True	b)	ii
c)	iv	c)	False (zinc)	c)	iii
d)	v	d)	True	d)	i
e)	iii	e)	True	e)	iii

Q. 5.

a) Nanoparticle is defined as a particle of matter that is between 1 and 100 nm in diameter

b) 1-contamination from precursor chemicals, 2-generation of hazardous by product

c) Bio sensors for aqua culture, Analysis of gene expression and regulation, Nano sensors

d) Increased relative surface area and quantum effect

e) The idea of nanotechnology was first time introduce in 1959 by Richard Feynman a physicist at Caltech, Attrition and pyrolysis

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Q. 1. Fill in the blanks.

a) Nano fertilizers are nutrient carriers of nanodiamens ranging from __ to __.

b) _____ can be used to detect pathogens as well as micro and nano conditions in the field.

c) _____ act as a reservoir for nutrients that are slowly released on demand.

d) _____ have been developed as carriers of pesticides at low cost, for extended release and better contact with plants.

e) _____ is an object that has at least one dimension in nanometer scale.

Q. 2. Match the pairs.

a) Nano pesticide   i) Nutrient use efficiency

b) Encapsulation   ii) Polymer film

c) Nano sensor   iii) Clay nanotubes

d) Zeolite   iv)Honey comb like structure

e) Nano fertilizers   v) Nano cantilevers

Q. 3. True or false.

a) Nano fertilizers are ecofriendly in nature.

b) Urea fertilized zeolite chips can be used as fast release nitrogen fertilizer.

c) Nano pesticides will increase the rate of application.

d) Zeolite holds nutrients in the root zone of plants to use when required.

e) Nano fertilizers decreases the nutrient use efficiency.

Q. 4. Choose correct option.

a) CRF refers to
    i) Continuous Releasing Fertilizer   ii) Constant Rate of Fertilizer
    iii) Controlled Rate of Fertilizer   iv) Controlled Release Fertilizers

b) Nano sensors are used to detect
    i) Pathogens   ii) Temperature of soil
    iii) Pesticide level of soil   iv) All of these

c) Nano fertilizers are nutrient carriers of nanodiamensions ranging from...
    i) 10 to 20 nm   ii) 30 to 40 nm
    iii) 15 to 30 nm   iv) 20 to 30 nm

d) _____ can be used as slow released nitrogen fertilizer.
    i) Ammonium chloride   ii) Both
    iii) Urea fertilized zeolite chips   iv) None of these

e) One mole of water for instance weights ___ gm.
    i) 10   ii) 18
    iii) 20   iv) 15

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Q. 5. Do as directed

a) Define Nano sensors.

b) Name the nano fertilizer used as slow Release fertilizer in sulphur deficient soil.

c) Give the full form of CDA.

d) Give any two devices used as nanosensors.

e) Give any two formulation types of nanopesticides.

f) Give the full form of CRFs.

Ans Key:

Q. 1.

a) 30 to 40 nm

b) Nanosensors

c) Zeolite

d) Clay nanotubes

e) Nano-material

Q. 2.		**Q. 3.**		**Q. 4.**	
a)	iii) Clay nanotubes	a)	True	a)	iv) Controlled Release Fertilizer
b)	i) Polymer film	b)	False (Urea fertilized zeolite can be used as slow release N fertilizer)	b)	iv) All of these
c)	v) Nano cantilevers	c)	False (It decrease the rate of application)	c)	ii) 30 to 40 nm
d)	iv) Honey comb like structure	d)	True	d)	iii) Urea fertilized zeolite chips
e)	i) Nutrient use efficiency	e)	False (It increases the NUE)	e)	18 gm

Q. 5.

a) 'Nano sensors' are any biological, chemical or surgical sensory points used to convey information about nanoparticles to macroscopic world.

b) Sulphur Nano coating fertilizers

c) CDA - Controlled Droplet Application

d) Nanocantilevers, carbon nanotube, nanowires

e) Formulation types of nanopesticides- Nanoemulsions, nanocapsules.

f) Control Release Fertilizer.

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15) Use of nanotechnology in seed and water for scaling up farm productivity

Q. 1. Fill in the blanks.

a) Use of _____ can help to alert the pollen contamination.

b) Tracking of sold seeds could to done with _____.

c) Full form of CNTs _____.

d) _____ as new pores for water permeation by penetration of seed coat and act as a passage to channelize the water from the substrate into the seed.

e) _____ are used for analytical detection of contaminants in water samples.

Q. 2. Match the pairs.

a) Nanocoating   i)Smart seed

b) Natarajan and Siva Subramanian   ii)Quantum dots

c) Nano filtration   iii)Zn,Mn,Pa,Pt,Au,Ag

d) Nanosensors   iv)Carbon nanotubes and alumina fibers

e) Su and Li   v)Titanium oxide nanowires or palladium nanoparticles

Q. 3. True or false.

a) Conventional methods can clean water by back flushing.

b) Smart seeds reduce seed rate.

c) Carbon nanotubes can be used to facilitate germination in rainfed crops.

d) Nanofibrius alumina filter helps to remove negatively charged contaminants.

e) Carbon nanotube membrane removes water contaminants.

Q. 4. Choose correct option.

a) CNTs stand for

i)Carbon nano technique   ii)Carbon nanotube

iii)Carbon nanotechnology   iv)All of these

b) Seeds imbibed with nanoencapsutions with specific bacterial strain called as

i)Seed encapsulation   ii)Nano barcodes

iii)Smart seed   iv)All of these

c) Su and Li(2004) developed a technique known as

i)Quantum dots   ii)Nanotechnology

iii)Nanoparticle technique   iv)Both (i) & (ii)

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d) Removal of toxic elements and liquid impurities can be done by

    i)Nanotechnology   ii)Nanosensors

    iii)Nanoparticles   iv)Nanomembrane

e) Water purification using nanotechnology exploits

    i)Nanoscopic materials for ii)Nanoscopic pores for zeolite filtration membranes
    nanofiltration

    iii)Nanocatalyst and magnetic iv)All of these
    particles

Q. 5. Do as directed

a) Which elements are used for nanocoating of seeds?

b) Give the use of carbon nanotubes.

c) Give function of carbon nanotube membrane.

d) Two applications of nanotechnology in agriculture.

e) Give the advantages of nanofilters.

f) Give some applications of nanotechnology in seed science.

Ans Key:

Q. 1.

a) Bionanosensors

b) Nanobarcodes

c) Carbon nanotubes

d) Carbon nanotubes

e) Nanosensors

Q. 2.		Q. 3.		Q. 4.	
a)	iii	a)	False	a)	ii
b)	i	b)	True	b)	iii
c)	iv	c)	True	c)	i
d)	v	d)	True	d)	i
e)	ii	e)	True	e)	iv

Q. 5.

a) Zn,Mn,Pa,Pt,Au,Ag

b) They serve as new pores for water permeation by penetration of seed coat and act as passage to channelise the water from the substrate into the seeds.

c) They can remove all kinds of water contaminants including turbidity, oil, bacteria, viruses and organic contaminants.

d) Nanotechnology in seed science, Nanotechnology in water use

e) They require less pressure to pass water across the filter, they are more efficient

f) Nanocoating of seeds, Nanobarcodes, Bionanosensors, Coatting seeds with nanomembrane, Carbon nanotubes.

16) Use of nanotechnology in fertilizer & plant protection for scaling up farm productivity

Q. 1. Fill in the blanks.

a) Nanotechnology has provided the nanostructure material as controlled vector known as

b) Naturally occuring minerals having a honey comb like layered crystal structure known as

c) .... act as reservoir for nutrients that are slowly released on demand

d) Fertilizers can be coated with .... that facilitate slow and steady release of nutrients.

e) .... are used for herbicide application which claim to include nano materials.

Q. 2. Match the pairs.

a) Nanosulfactant   i) smart fertilizer

b) Nanomaterial   ii)40-70%

c) Nitrogen   iii)50-90%

d) Phosphorus   iv) glyphosate

e) Controlled release Vector   v) kaolin

Q. 3. True or false.

a) Smart fertilizers enhance nutrient use efficiency and increase cast of cultivation

b) Nanofertilizer and nanocomposites are excellent alternative to soluble fertilizer

c) Nano pesticide will reduce the rate of application

d) Size of CDA is(4-28 um)

e) CDA is controlled droplet Applicant

Q. 4. Choose correct option.

a) controlled release vector known as
    i) Smart fertilizer   ii) complex fertilizer
    iii) mixed fertilizer   iv) simple fertilizer

b) Nano-pesticide should be applied time classical formulation
    i)10-15   ii)20-25
    iii)3-4   iv)5-10

    fertilizer with Sulphur nano coatings are used as
    i) Slow release fertilizer   ii) fast release fertilizer
    iii) volatile fertilizer   iv) captan

d) Nanosize fungicide is
    i) mancozeb   ii) AXX
    iii) propiconazole   iv) carbendazim

e) ....is used for pre-emergence and post-emergence application for grassy weeds
    i) pendimethalin   ii) fluchloralin
    iii) paraquat   iv) Atrazine

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Q. 5. **Do as directed**

a) clay nanotubes are also known as

b) CDA stands for

c) Examples of Nano sized fungicide.

d) Examples of Nano material which can be used as potential application.

e) CMC stands for

f) approach used to improve insecticidal value

Ans key:

Q. 1.

a) Smart fertilizer

b) Zeolites

c) Zeolites

d) Nano membranes

e) Adjuvants

Q. 2.		Q. 3.		Q. 4.	
a)	iv	a)	False	a)	i
b)	v	b)	True	b)	i
c)	ii	c)	True	c)	i
d)	iii	d)	False	d)	ii
e)	i		False	e)	iv

Q. 5.

a) Halloysite

b) Controlled droplet Application

c) Banner M , AXX , Syngent

d) Kaolin, Polymeric biocompatible NPs, Polymeric chitosan NPs

e) Carboxy-methyl cellulose

Nanoencopsulation

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