POLYTECHNIC IN AGRICULTURE
ANAND AGRICULTURAL UNIVERSITY
ANAND & VASO

Semester: First (Regular) (Course 2015)

Examination: Semester End Theory Examination (Year: 2018-19)

Course Title: **Organic Farming and Sustainable Agriculture** **(Agron 5.9) (1+1)**

Date: 28/12/2018 Friday **Time:** 10.00 am to 12.00 hrs **Marks:** 40

Note : 1. Support your answer with suitable examples and diagrams wherever necessary.
2. Figures to the right side indicate the marks.

Q.1 Fill in the blanks **(8.00)**

1. The process of composting organic wastes through domesticated earthworms under controlled conditions is Vermicomposting
2. Manures are defined as the plant and animal wastes which are used as sources of plant nutrients.
3. Insects which passes at least one stage of their life cycle inside the host is called Parasite C. Parasitoides
4. Rhizobium free living aerobic N-fixing bacteria used in cereals Azatobactor
5. By products like molasses and pressmud from Sugar industry possess good manurial value.
6. Yellow sticky traps are used to monitor aphids and white fly.
7. Principle of Fairness is characterized by equity, respect and justice both among people and their relationship to other living beings.
8. Contour farming is a practice in which farming is practiced across the slope, keeping the same level, as far as possible.
9. Azadirachtine abstracted from neem oil acts as a repellent and antifeedent.
10. An agricultural product can only be exported as an organic product if it is certified by a certification body duly accredited by APEDA.
11. Sex Pheromones are mostly emitted by female insects to attract the male insect for matting.
12. There are two major components of crop residues available, *i.e* Cereals and Pulses.
13. Mycorrhizae are the symbiotic association of fungi with roots of vascular plants.
14. The microbes in root zone are maintained due to a variety of secretions from the roots and constitute what is often described as _____.
15. _____ are considered as complete plant food.

Q.2 Match the groups **(4.00)**

Group "A"		Group "B"	
1.	Azatobactor E	A.	Processed waste
2.	Endogeics H	B.	Soft body insects like aphids
3.	Cotton stalk G	C.	Symbiotic N fixer
4.	Lepidopterous pests F	D.	*Eisenia foetida*
5.	Chrysoperla B	E.	Non symbiotic N fixer
6.	Epigeics D	F.	Bacillus thurengensis
7.	Rhizobium C	G.	Crop residue
8.	Oilcake A	H.	*Lampito mauritii*

Q.3 **Define / Explain** (4.00)

1. Organic farming
2. Sustainable agriculture
3. Land degradation
4. Bio fertilizers
5. Parasitoids
6. Organic certification
7. Vermicomposting
8. Crop residues

Q.4 **State whether the following statements are true or false** (8.00)

1. Crops grown for the purpose of restoring or increasing the organic matter content in the soil are called cover crops.
2. The birthright of all living things is wealth.
3. Bench terracing has been practiced in the steep hill slopes.
4. The label should convey clear and accurate information on the organic status of the product.
5. Only leaves of neem tree possess insecticidal property.
6. The average nutrient content of vermicompost is much lower than that of FYM.
7. Voluntary/ Civil certification norms are stricter then statutory certification norms
8. Synthetically compounded fertilizers and pesticides generally suppress the biological activity in the soil.
9. Bird perches helps in attracting birds.
10. All types of land degradation are induced or aggravated by human activities.
11. Compartmental bunds are used for safe disposal of excess run-off in high rainfall areas and regions where the soil is relatively impervious
12. Species of earthworms that live above the mineral soil surface is called endogeics.
13. Agronomic measures are generally recommended on mildly sloping areas(1 to 6 %).
14. Synthetically compounded fertilizers and pesticides generally suppress the biological activity in the soil.
15. A wind break is a longer barrier than a shelter belt and consists of a combination of shrubs and trees
16. Mulching is a process heating the soil by polythene cover for 3-4 weeks during summer months.

Q.5 **Do as directed (Any eight)** (16.00)

1. Write the full name of APEDA, NPOP, IFOAM and INDOCERT.
2. Write any eight objectives of organic farming.
3. Justify: "Legume crops are essential in any rotation".
4. Write the effect of organic farming on soil quality.
5. Differentiate: Bulky organic manures and concentrated organic manures
6. Briefly explain the methods of recycling.
7. Give benefits of bio- fertilizers in organic farming.
8. Enlist the different methods of disease and pest management in organic farming.
9. Narrate the goals of sustainable agriculture.
10. Mention the causes of land degradation.

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POLYTECHNIC IN AGRICULTURE
ANAND AGRICULTURAL UNIVERSITY
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Semester: Fifth(Regular) (Course 2015)

Examination: Semester End Theory Examination (Year: 2018-19)

Course Title: Entrepreneurship Development (Ag. Extn. 5.2) **(1+1)**

Date: 29/12/2018, Saturday, **Time:** 10.00 am to 12.00 pm **Marks: 40**

Note : 1. Support your answer with suitable examples and diagrams wherever necessary.
2. Figures to the right side indicate the marks.

Q.1 Fill in the blanks **(8.0)**

1. The entrepreneur is a person while entrepreneurship is a Process
2. Peace is commonly understood to mean the absence of hostilities.
3. Project report serves like a kind of big road map to reach the destination determined by the entrepreneur.
4. Richard Cantillon was the first person who introduced the term entrepreneur in the early 18th century.
5. Morality refers to the concept of human ethics which pertains to matters of good and evil.
6. David C. McClelland is a well-known behavioral scientist in three countries like India, Malawi and Equador.
7. Innovation and Risk bearing are regarded as the two basic elements involved in entrepreneurship.
8. Full form EDI is Entrepreneurship development Institute, Ahmedabad.
9. The function of the project report is to attract lenders and Investors.
10. PERT and CPM can also be used to get better insights into all activities related to implementation of the project.
11. Persons possessing proper knowledge and skill acquired through education and experience can become successful entrepreneurs.
12. Business ethics is a form of applied ethics that examines ethical rules and principles within a commercial context.

Q.2 Match the groups **(4.0)**

Group "A"	Group "B"
D 1. Entrepreneur	A. Not less than 85%
C 2. Job creators	B. Utilizes inventions and discoveries
F 3. Manager	C. Not more than 15%
E 4. Inventor	D. Owner of the enterprise
A 5. Job seekers	E. Discovers new methods and new materials
B 6. Innovator	F. Servant of the enterprise
H 7. Marketing ethics	G. Animal rights and animal testing
G 8. Ethics of production	H. Anti-competitive practices

Q.3 Define / Explain

1. Entrepreneurship
2. Knowledge
3. Motive
4. Innovation
5. Competence
6. Skill
7. Project report
8. Break-even point

Q.4 State true or false

1. The entrepreneur is a risk bearer while entrepreneurship is a leadersh
2. Assertive able to successfully convince others to do what he actually w from them.
3. An import distributor promotes and transports Indian made product services to other countries.
4. Crop cultivation can be considered as agriculture related entrepreneur opportunity.
5. A serial entrepreneur is an entrepreneur who works primarily toward foundation of social organizations.
6. Distributor is person who involves contracting to sell products or serv for a fee or commission.
7. Ethics of human resource management (HRM) covers moral principles behind the operation and regulation of marketing.
8. Manager is one who has leadership ability, management ability and t building capacity.
9. An entrepreneur is a person, who organizes, operates and assumes the for a business venture.
10. Information seeker takes individual research and consults experts to g information to help reach the goal.
11. The basic principle of land ethic stated by Leopold.
12. An export distributor or agent brings products and services from anot country into his own country for distribution and resale.
13. Dr. Verghese Kurein is a political entrepreneur.
14. The market entrepreneur operates without special favors from government.
15. Professional ethics covers the myriad of practical ethical problems wh arise out of specific functional areas of companies
16. Agent is a person who buys a producer's products or services and then resells them to retail outlets.

Q.5 Write short note(Any two)

1. Contents of good project report.
2. Need of entrepreneurship development
3. Describe roles of entrepreneur

Q.6 Do as directed (Any four)

1. Write down functions of an entrepreneur.
2. Entrepreneurial opportunities related to agriculture.
3. Characteristics of an ideal Entrepreneur.
4. Differentiate entrepreneur and manager.
5. Describe types of entrepreneurs.

ANAND AGRICULTURAL UNIVERSITY
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Semester: Fifth (Regular) (2018)
Examination: Semester End Theory Examination (Year: 2018)

Course Title: **Agricultural Statistics** **(Ag. Stat.5.2)** **(2+1)**

Date: 31/12 /2018, Monday, **Time:** 10:00 to 12:00 **Marks: 40**

Que. I Tick mark the appropriate answer. **(08)**

1. Which of the following is ideal measure of central tendency:
   (a) Standard Deviation (b) Range (c) Mode (d) Arithmetic Mean
2. F-test is given by:
   (a) G W Snedecor (b) W S Gossett (c) R A Fisher (d) None of them
3. Statistics deals which characteristics :
   (a) Quantitative (b) Qualitative (c) both (a) and (b) (d) none of these
4. Range is:
   (a) Highest -Lowest (b) Highest +Lowest (c) both (a) and (b) (d) None of them
5. The test used to compare two different population with respect to their mean is:
   (a) F-test (b) t-test (c) χ^2 –test (d) None of them
6. Standard deviation is the square root of:
   (a) Variance (b) Coefficient of variance (c) SEm (d) Range
7. If a constant 5 is added from each observation of a set, the S.D. is:
   (a) Unaltered (b) divided by 100 (c) multiplied by 100 (d) multiplied by 10
8. Which is not a measure of dispersion:
   (a) Median (b) Mean Deviation (c) Range (d) Coefficient of variance
9. The range of F- test is
   (a) 0 to ∞ (b) 0 to 1 (c) $-\infty$ to $+\infty$ (d) -1 to +1
10. The probability of committing Type-II error is denoted as :
    (a) α (b) β (c) ρ (d) none
11. A.M. of 2 and -2 is:
    (a) 2 (b) -2 (c) 4 (d) 0
12. SEm is ratio of Standard deviation and :
    (a) $\sqrt{n}$ (b) n (c) n^2 (d) n^3
13. Cumulative frequency is used in:
    (a) Histogram (b) Frequency curve (c) Frequency Polygon (d) O-give curve
14. Which of the following design of experiment deals with one way ANOVA:
    (a) RBD (b) CRD c) LSD (d) None of these
15. A.M. = 4 and H.M.= 9 then G.M. is:
    (a) 5 (b) 13 (c) 6 (d) 9
16. The word statistics means data, when it is used as:
    (a) Plural (b) Singular (c) Both (a) & (b) (d) None of these

Que. II Match the pairs: (04)

A	B
1. Randomization	A) n-1
2. Seed shape	B) No difference
3. CRD *Error d.f*	C) Mode
4. Null hypothesis	D) Average of lower and upper limit
5. Positional Average	E) Unit less measure of dispersion
6. Class mid point	F) Time-wise data
7. Chronological Classification	G) Unbiaseness
8. C.V.	H) Qualitative

Que. III Define/Explain following words: (04)

1. Sample
2. Weighted mean
3. Variable
4. Two fold Classification
5. Inclusive Class Interval
6. Frequency
7. Class width
8. Local control

Que. IV Write following sentences are True or False. (08)

1. The square of algebraic sum of the deviations from mean is maximum.
2. Mode is suitable average for quantitative data only.
3. Rejecting true null hypothesis is called Type I error.
4. Mean is highly affected by extremely large values.
5. Paired observations are essential in case of paired t-test.
6. Alternate hypothesis means there is no significant difference.
7. If the sample size n < 30 then it is considered as large sample.
8. Repetition of treatment in an experiment is called local control.
9. We must arrange the data before calculating Mode.
10. Geometric mean is square of arithmetic mean and harmonic mean.
11. Geometric mean of the two numbers 2 and 2 is 4.
12. It is possible to calculate geometric mean if observations are negetive.
13. Mean square deviation is variance.
14. Statistics play important role in different divisions of agriculture.
15. Point of intersection of less than O-give and more than O-give curve on same data series is median.
16. Harmonic mean is positional average.

Que. V Write answer any *four* questions (08)

1. Write merits of arithmetic mean.
2. Write importance of statistics.
3. Write the characteristics of an ideal measure of dispersion.
4. Mention the properties of variance.
5. Write demerits of mean deviation.
6. Write uses of t-test?

Que. VI Write answer of any *two* questions (08)

1. Write procedure for testing two sample t-test.
2. Draw layout and ANOVA table for RBD.
3. Enlist four measure of central tendency with their formula for calculation of grouped

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Semester: Fifth (Regular)(course 2015)

Examination: Semester End Theory Examination (Year: 2018-19)

Course Title: Production technology of flower crops and Gardening **(HORT.5.4)** **(1+1)**

Date: 01/01/2019, Tuesday, **Time:** 10.00 am to 12.00 am **Marks: 40**

Note : 1. Support your answer with suitable examples and diagrams wherever necessary.
2. Figures to the right side indicate the marks.

Q.1 **Fill in the blanks** **(8.0)**

1. Hybrid Tea is obtained by crossing between _____ and _____.
2. Botanical name for chameli is _____.
3. _____budding is the commonly use method for rose propagation.
4. Propagation of golden rod and gaillardia should be done by _____ and _____ , respectively.
5. Series of Arches over a garden walk is called _____.
6. _____ method of propagation can be used for climbing and rambling type o rose.
7. _____ variety of gaillardia can be grown as a perennial.
8. To break the dullness of cement wall in a garden we should grow _____types of plant to cover it.
9. _____ plants referes to grows over an area to covered the area against drought and erosion.
10. _____ plants can be grown in a hanging basket.
11. Bonsai is a technique discovered in_____country.
12. Baradari is the main features of _____ garden.
13. Gaillardia is also known as _____ flower due to its spreading habit.
14. _____ flower is commonly known as daisy.

3,

Q.2 **Match the groups** **(4.**

Group "A"		Group "B"	
C	1. Rose	A.	*Jasminum sp.*
H	2. Gerbera	B.	*Chrysanthemum indicum*
B	3. Chrysenthemum	C.	*Rosa sinensis*
F	4. Merigold	D.	*Salidago Canadensis*
A	5. Jasmine	E.	*Gaillardia pulchella*
E	6. Gaillardia	F.	*Tagetus erecta*
G	7. Gladiolus	G.	*Gladiolus prittacinus*
D	8. Golden Rod	H.	*Gerbera jamesonii*

Q.3 **Define / Explain**

1. Floriculture
2. Topiary
3. Garden component
4. Hedge
5. House plant
6. Succulent
7. Edge
8. Cut flower

Q.4 **State true or false**

1. *Rosa indica* is the commonly used rootstock for budding in Rose.
2. Pest and disease transmission can be prevented by using seed for propaga
3. Colour and contrast in the garden are not much important.
4. Jasmine flower should harvest at fully mature but unopened bud condition
5. Formal garden is difficult to layout.
6. Climbers are the plants which can climb over the support.
7. Duranta and ficus both are very suitable for topiary work.
8. Japanese garden is informal type.
9. Corms are use for propagation of gladiolus flower plant.
10. Polyantha group of rose are light pruned whereas miniature rose are gene not pruned.
11. Live plants are not used for hedge.
12. Gaillardia needs full sunshine for good flowering.
13. Italian garden is the example of informal garden.
14. R. *damascena* gives the maximum oil yield.
15. Late harvest of rose results in less vase life as cut flower and lower oil con loose flower.
16. Average yield of gerbera flower grown in open field condition is higher as compare to green house.

.5 **Answer the followings: (any 4)**

1. Write the Family, flower colour and varieties for the following flower crops: Gerbera, Chrysanthemum, Rose, Gladiolus
2. Enlist all the components of a garden and explain any one of them.
3. Explain bonsai in detail.
4. Give the examples for the following plant groups:
   Winter season annual, Indoor plants, Shrubs, Climbers
5. What is garden? Explain different styles of garden.

.6 **Do as directed.**

1. Write the importance of cultivation of rose.
2. Write the use of annuals in a garden.
3. Define shrub and write its use in a garden.
4. Write the importance flower production.
5. Write the importance of tree in general.
6. Explain different techniques of rose cultivation. pmchyms / budding / layering /
7. Differentiate between African marigold and French marigold
8. Differentiate between formal and informal types of garden

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Semester: Fifth (Regular)

Examination: Semester End Theory Examination (Year: 2018-19)

Course Title: Principles of Plant Breeding **(PBG-5.3)** **(2+1)**

Date: 02/01/2019, Wednesday **Time:** 10.00 am to 12.00 am **Marks: 40**

Note : 1. Support your answer with suitable examples and diagrams wherever necessary.
2. Figures to the right side indicate the marks.

Q.1 Fill in the blanks **(8.0)**

1. In Pedigree method, individual plants are selected from F_2 and subsequent generations and their progenies are tested.
2. The bulk method was first proposed by Nelson & Ehle in 1908.
3. Back cross method is used to improve or correct one or two specific defect of high yielding variety, which is well adapted to the area.
4. In Bulk method, F_2 and subsequent generations are grown in bulk.
5. General combining ability (GCA) is not tested in production of _____ variety.
6. Plant Breeding is a science of changing and improving the heredity of plants.
7. The concept of pureline theory was proposed by ~~Thonson~~ Johannsen in 1903.
8. A flower containing both stamens and pistil is known as Hermophrodite flower.
9. Production of microspore and megaspore is known as Sporogenesise.
10. Maturation of anthers and stigma of a flower at the same time is called Blomogamy
11. Opening of flowers only after the completion of pollination is known as chasmogamy.
12. When styles and filaments in a flower are of different lengths, it is called clystostyle.
13. Pearl millet is a Cross pollinated crop.
14. Thomas Fair Child produced the first artificial hybrid, popularly known as Fair child's mul
15. Plant introduction consists of taking a genotype or a group of genotypes of plants into new environments where they were not being grown before.
16. Isolation of desirable plant types from the population is known as Selectron.

Q.2 Match the groups **(4.0)**

Group "A"		Group "B"	
D	1. Apomixis	A.	Hermaphrodite Flower
F	2. Pedigree method	B.	First hybrid in Cotton
H	3. Donor parent	C.	Given by Harlan and Pope
G	4. Synthetic variety	D.	Embryo develops without fertilization
A	5. Bisexuality	E.	Crosses between different species
B	6. Dr. C. T. Patel	F.	No opportunity for natural selection
C	7. Backcross method	G.	GCA is tested
E	8. Distant Hybridization	H.	Provide one or two useful genes

Q.3 Define / Explain **(4.0)**

1. Synthetic variety
2. Mass selection
3. Primary introduction
4. Cliestogamy
5. Back cross method
6. Heterosis/ Hybrid
7. Pure line selection
8. Top cross

State true or false

1. Plant breeding deals with the genetic improvement of crop plants also known as scienc crop improvement.
2. The ultimate aim of plant breeding is to improve the yield of economic produce.
3. The embryo develops from embryo sac without pollination is known as parthenogenesi
4. Varieties are not uniform in mass selection.
5. Records are not maintained in pedigree method.
6. The new variety is not identical with the recurrent parent in back cross method.
7. Mass selection can be practiced in both self and cross pollinated crops.
8. Pure lines are not stable.
9. Bulk method gives maximum opportunity for the breeder to use his skill and judgment selection of plants.
10. In single seed decent (SSD) method record of all parents off spring relationship is kept.
11. The procedure for the transfer of dominant and recessive genes is same in back cross m
12. Artificial selection is not done in bulk method.
13. The concept of double cross hybrids was proposed by Jones in 1917.
14. In back cross method, the hybrid and the progenies in the subsequent generations are repeatedly back cross to one of their parents.
15. Bulk method is also known as mass method or population method of breeding.
16. The cost of seed of synthetic varieties is relatively lower than that of hybrid seeds.

1. Discuss the objectives of plant breeding in detail

2. Explain pedigree method

3. Differentiate pure line and mass selection

1. Write down mechanism promoting self and cross pollination

2. Discuss advantages and disadvantages of Bulk method

3. Differentiate synthetic and composite variety

---X---X---X---

2A

POLYTECHNIC IN AGRICULTURE
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Semester: Fifth (Regular) (Course 2015)
Examination: Semester End Theory Examination (Year: 2018-19)
Course No: Ag Micro 5.1 **Course Title:** Agricultural Microbiology **(2+1)**
Date: 03/01/2019 **Day:** Thursday **Time:** 10:00 to 12:00 hrs. **Marks:** 40.0

Note: 1. Support your answers with suitable examples and diagrams wherever necessary.
2. Figures in the right side indicate the marks.

Q.1 Fill in the blanks with an appropriate word **(8.00)**

1. Louis Pasteur scientist gave the method of "pasteurization".
2. Bacteria generally multiply by the Binary fission process.
3. Flagella are made up of Flagellin protein.
4. Cell wall of bacteria is made up of Peptidoglycan (murein)
5. During Log phase of growth curve, number of cells produced is greater than (>) number of cells dying.
6. *Azospirillum* is an Associative type of nitrogen fixing bacteria.
7. *Azolla* is widely recommended biofertilizer in Rice crop.
8. C: N ration of humus is 10:1 to 12:1
9. Rhizobium bacteria form nodules on roots of leguminous plants.
10. Any sensory change in food which the consumer considered to be unacceptable is known as Spoilage.
11. The process of converting Ammonical form (NH_4^+) of Nitrogen first in to Nitrite (NO_2^-) and then in to Nitrate (NO_3^-) is known as Nitrification
12. Bacteria utilizes light as a source of energy and make their own food are known as Autotrophs
13. A bacterial arrangement when two round shape bacteria joined together is known as Diplococcus
14. Heat loving bacteria are known as Thermophile
15. Little leaf of brinjal disease is caused by phytoplasmas / Mycoplasmas / PPLO's / MLO's
16. The science that deals with study of nematodes is known as Nematology.

Q.2 Match the followings **(4.00)**

	Group A		Group B
E 1.	Robert Koch	A.	*VAM*
F 2.	R J Petri	B.	*Azotobacter*
H 3.	F E Hesse	C.	Father of Bacteriology
C 4.	Antony Van Leeuwenhoek	D.	63°C for 30 minutes
A 5.	Fungal biofertilizer	E.	Postulates
B 6.	Bacterial biofertilizer	F.	Petri plates
D 7.	LTLT (Pasteurization)	G.	130-135 °C for 1 second
G 8.	UHT (Pasteurization)	H.	Use of 'Agar agar'

Q.3 State True/ False for the following statements (8.0

1. Viruses are obligate intra-cellular parasite.
2. Life originates from dead organic matter was one of the beliefs in "Spontaneous generation theory".
3. Yeast is a multi-cellular form of fungi. Uni-cellular
4. Fungi cell wall is made up of peptidoglycan. chitin & cellulose
5. Flagella are involved in the process of conjugation.
6. Organism derived energy from inorganic chemicals is known as "heterotroph"
7. Curved/ comma shaped bacteria are known as "vibrio". Chemoautotroph
8. The science that deals with study of virus is known as "mycology" Fungi
9. Biofertilizer can also provide growth hormones in plants.
10. *Acetobacter* is a recommended biofertilizer in Sugarcane crop.
11. VAM is a bacterial biofertilizer. Fungal
12. *Rhizobium* is a recommended biofertilizer for cotton crop. Azospirillum
13. Earthworm can produce nodules in plant roots.
14. Milk is preserved by "boiling" technique of food preservation. Pasteurization
15. Biofertilizers are sensitive to direct sunlight.
16. In gram staining, gram negative bacteria stains red.

Q.4 Define / Explain following terms (Any four) (4.00

1. Bacteriophage
2. Generation time
3. Anaerobic bacteria
4. Chemoheterotroph
5. Soil microbiology
6. Ammonification

Q.5 Answer the followings (Any four) (8.00

1. Enlist Koch's Postulates.
2. Draw clean and labeled diagram of bacteria **or** bacteriophage ultra-structure.
3. Enlist methods/principles of food preservation with examples.
4. Explain humus and its importance.
5. Draw neat and labeled diagram of "Carbon cycle" in nature.
6. Differentiate between Prokaryotes and Eukaryotes.

Q.6 Answer the following in detail (Any two) (8.00

1. What is microbial growth? Draw labeled diagram of bacterial growth curve an explain each phase of the growth curve in details.
2. Define biofertilizer. Give its classification and advantages.
3. Differentiate the followings:
   A. Gram positive cell wall *vs* Gram negative cell wall
   B. Viroids *vs* Prions

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Semester: Fifth (Course-2015)

Examination: Semester End Theory Examination (Year: 2018-19)

Course Title: Fundamentals Soil Water Conservation and Engineering

Ag.Engg.5.3 (2+1)

Date: 04/01/2019 Friday **Time:** 10.00 am to 12.00 am **Marks: 40**

Q.1 Fill in the blanks (8.0)

1. _____ surveying instrument is made of wood
2. Engineer' chain is available in 100 feet of length
3. One hectare is equal to 10,000 m^2
4. The vertical distance above or below the datum is called Elevation
5. The length of Alidade is normally available as 0-5 meter 50 cm
6. Survey carried out accounting the curvature of earth is Geodetic
7. Chute spillway is _____ type of soil erosion structure
8. The longest chain line passing through the centre of the survey area is Base line
9. One yard is equal to 3 feet
10. The datum adopted for bench mark is Madras city in India
11. Wind erosion is common in _____ area
12. For effective erosion control in heavy rainfall areas, Graded terraces are recommended
13. For effective erosion control in low rainfall areas, Level terraces are recommended
14. Widely spaced contour lines indicate flat ground and closely spaced contour lines indicate Steep ground
15. Loose rock dam is used as _____ type of water erosion structure

Q.2 Match the groups (4.0)

Group "A"		Group "B"	
G	1. Check line	A.	To divide area in to right angled triangle and trapezoidal
D	2. Drop spillway	B.	Table top terrace
H	3. Gully Erosion	C.	Potential ability of rain to cause erosion
B	4. Level bench terrace	D.	Permanent soil erosion structure
C	5. small gully	E.	Characteristics of soil to be eroded
I	6. Rainfall erosivity (R)	F.	Having depth less than 1 m
F	7. Soil erodibility(K)	G.	Proof line
A	8. Cross staff	H.	Advance stage of rill
		I	Having depth more than 5 m

Q.3 Answer in short (4.0)

1. Enlist instrument used in surveying and levelling
2. Enlist advantages of plane table surveying
3. What is absorption type terrace?
4. Enlist types of water erosion?

Q.4 State true or false

1. Engineer's chain measures distances in meter
2. Chainage is done prior to ranging in survey work
3. Rill erosion is visible soil erosion
4. Kinetic energy of rain drop creates displacement of soil particles
5. Alidade is used in plane table surveying work
6. Surveyor's compass is supported on tripod during survey work
7. Vegetation is most important control measure of soil erosion, if land slope does not ex 2 percent
8. Gulley erosion is critical soil erosion
9. Chain is suitable where ground condition is rough in surveying
10. In Leveling, vertical distance between two points on earth surface is measured
11. Soil nutrients cannot be eroded with water erosion
12. Strip cropping is one of the soil erosion control practices
13. All the leveling readings between B.S. and F.S. are called I.S
14. Agronomical measures of soil erosion can be adopted for highly erosion prone areas
15. Loose rock dam is a permanent soil erosion control measure
16. Contour bund is embankment of soil along contours of the area

Q.5 Solve following numerical

1 Estimate the peak rate of runoff with rational formula for a catchment having area of 60 ha, runoff coefficient for 35 ha area is 0.50, for 10 ha area is 0.90 and for 15 ha is 0.30. Intensity of rainfall for the duration equal to time of concentration is 0.45 cm/h

2 A 30 m metric chain was found to be 0.06m too long after chaining 2500 m. It was found to be 20 cm too long after chaining 5000 m. If the chain was correct before commencement of work, find the true difference in measurement

Q.6 Do as directed.

1 Describe different stages of water erosion
2 Explain types of surveying
3 Enlist causes and ill effect of soil erosion
4 Enlist different types of water erosion control structures
5 Describe different types of terraces
6 Describe different types of bunds
7 What is levelling? Describe in short

POLYTECHNIC IN AGRICULTURE
ANAND AGRICULTURAL UNIVERSIT, ANAND
Fifth Semester Regular

Semester End Theory Examination (2018-19)

Course No. : **Ag.Met. 5.1 (2+1)** Title of Course : **Agricultural Meteorology**
Date : **05/01/2019, Saturday** Time: **10.00 to12.00 hrs.** Total Marks : **40**

Note: Write all answers in given Answer Book only.

Q.1 (i) Write the correct option A/B/C/D in CAPITAL LETTERS ONLY **(8.0)**

1 The layer is known as "The seat of all weather phenomena".
(A) Stratosphere (B) Troposphere (C) Mesosphere (D) Thermosphere

2 The annual average rainfall of Gujarat region is
(A)1050 mm (B) 1140 mm (C) 970 mm (D)1200 mm

3 The earth is nearest to the sun is known as
(A) Aphelion (B)Equinoxes (C)Perihelion (D) Solstice

4 Father of Agricultural meteorology in India is
(A) Barahmihir (B) L. S. Rathor (C) K.K. Singh (D) L.A. Ramdas

5 The earth spins on its axis at a speed of about
(A) 1600 km/hr (B) 1700 km/hr (C) 1800 km/hr (D) 1500 km/hr

6 Angular distance from the equator is called
(A) Latitude (B) Longitude (C) Pole (D) Line mark

7 This gas has major role in global warming
(A) Water vapour (B) CO_2 (C) N_2 (D) So_2

8 Optimum cardinal temperature for cool season crop.....^{0}C
(A) 31-37 (B) 15-18 (C) 25-30 (D) None of these

9 Invisible drought occurs in ---------- area
(A) Forest (B) Humid (C) Desert (D) Arid

10 Gujarat received rainfall through
(A) NW monsoon (B) SW monsoon (C) NE monsoon (D) SE monsoon

11 The permanent drought is the common feature in _____ region.
(A) Desert (B) Humid (C) Per humid (D) Non of these

12 The equatorial region is an area of _____ pressure.
(A) High Pressure (B) Low Pressure (C) Equal pressure (D) Non of these

PTO

13 The photo thermal unit (PTU) is product of GDD and _____.
(A) Day length (B) Actual BSS (C) Soil moisture (D) Temperature

14 The movement of earth on its own axis is known as _____.
(A) Speed (B) Path way (C) Revolution (D) Rotation

15 The State Meteorological Centre of Gujarat is located at _____
(A) Gandhinagar (B) Rajkot (C) Ahmadabad (D) Anand

16 The instrument used for continuous measurement of humidity _____
(A) Hygrograph (B) Thermograph (C) Macrograph (D) Non of thease

(ii) Match the following **(4.0)**

H	I	Oxygen	A	21st March
G	II	Isotherm	B	4th July
B	III	Aphelion	C	Silver Iodide
E	IV	CO_2	D	%
C	V	Artificial rain	E	0.03%
F	VI	Hail	F	Ice Ball
A	VII	Vernal Equinox	G	Equal Temperature
D	VIII	Humidity	H	21%

(iii) Define/ Explain following (Any FOUR) **(4.0)**

1. Agricultural Meteorology
2. Frost
3. Equinox
4. GDD
5. Precipitation
6. Global warming

(iv) State whether the following sentences are **True** or **False** **(8.0)**

1 The 8 okta denotes clear sky. X
2 A division of Agricultural Meteorology was started in 1932
3 The WMO day falls on the 23rd June X March
4 Due to revolution, different seasons occurs on the earth
5 Rocks, soil and vegetation reflect from 50 to 60 % of the incident radiation.
6 When rainfall is more than 125 mm in 24 hours is called very heavy rainfall.
7 The N-E monsoon season is from June to September.
8 Rainy day when rainfall recorded is more than or equal to 2.5 mm.
9 Effective rainfall means "utilization rainfall"
10 Drought is a climatic anomaly characterized by excessive supply of moisture.
12 Earth's Average temperature is 14.4 °C

13 Local weather forecast is issued for a shorter period.

14 Common salt is not used for seedling of artificial rain making

15 Head quarter of IMD is located at Pune

16 Base temperature for wheat crop is 10 °C

Q.2 Write the Short notes (Any Two) (5.0)

1. Weather elements
2. Atmospheric layers
3. SW monsoon
4. Artificial rainmaking

Q.3 Define condensation and describe different forms of precipitation (2.5)

Q.4 Write the difference between Weather and Climate. (2.5)

Q.5 What do you mean by weather forecasting? Describe different types of weather forecasting (2.5)

Q.6 What is drought? Enlist the different types of agricultural drought. (3.5)

OR

Define climate change and discuss about impact of climate change on agriculture

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