

B.Sc.(Hons.) AGRICULTURE – 1st SEMESTER EXAMINATION; DECEMBER - 2017
SUB:- FUNDAMENTALS OF RURAL SOCIOLOGY AND EDUCATIONAL PSYCHOLOGY]
(PAPER CODE:-17010108)

TIME: 03:00 Hrs.**Max Marks:80****Instructions:-**

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Each Part is compulsory. Marks are indicated against each question.
4. Draw the diagram wherever required.

PART-A(DISRIPTIVE TYPE)

Q.1. Elaborate Auguste Comte's theory of classification of sciences. (10)

OR

How to conduct field work to study rural society?

Q.2. Write short notes of the following? (5x2=10)

- a) Social Change b) Rural Sociology c) Family d) Religion e) Mordenization

Q.3. Define the following concepts. (5x1=5)

- a) Sociology b) Peasant c) Social control d) Rural Development
e) Psychology

Q.4. Differentiate between: (2x3=6)

- a) Gram Sabha and Gram Panchayat b) Rural and urban society

Q.5. Explain: (3x2=6)

- a) Changing rural society b) Rural leadership

Q.6. Write role of the following institutions in agricultural development: (3x1=3)

- a) PRI's b) Village Cooperatives c) Social institutions

PART-B(OBJECTIVE TYPE QUESTIONS)

Q.7. Tick the appropriate answer/answers:- (10x1=10)

I) Which one is not a function of family:-

- a) Regulation of sexual behaviour b) Care and trainee of children
c) Cooperation & division of labour d) Monogamy marriage

II) Father of Sociology:-

- a) H. Spencer b) A.R. Desai c) Auguste comte d) K. Marx

III) Sociology is the science of:-

- a) Caste system b) Rural School c) Society d) People

IV) Which is not a tool of data collection:-

- a) Reasant study b) Interviews c) Observation d) Case study

P.T.O.

V) Which is not a mean of social control:-

- a) Belief b) Mores c) Customs d) Community

VI) Most common form of marriage to-day in human society is:-

- a) Monogamy b) Polyandry c) Polygyny d) Arranged marriage

VII) Which is not the method of Sociology:-

- a) Observation b) Field work c) Comparison d) Mores

VIII) Which is not the subject matter of social change:-

- a) Social problems b) Social stratification c) Social conflict d) Case study

IX) Which one is the internal cause of social change:-

- a) Social problems b) Environmental degradation
c) Political revolution d) Non-social environmental

X) Which one is not a factor of social change:-

- a) Biological b) Technological c) Cultural lag d) Primitive culture

Q.8. Write True(T) OR False (F):-

(10x1=10)

- a) Social change is universal phenomena.
b) Earthquakes/Cyclones/Floods are the internal causes of social change.
c) Everything is in the state of flux.
d) Social change taking place from backwardness to development is called linear change.
e) Psychology is the study of human behavior.
f) The bonds of blood or marriage in group are called community.
g) A peasant is one who tills the land.
h) The Community Development Project (CDP) was launched on 2nd October, 1950.
i) Cultural lag is not a factor of social change.
j) Extension education is an agricultural science.

Q.9. Match the following:-

(10x1=10)

- | | |
|-----------------------------|-----------------------------------|
| 1) Scences of society | a) A territory and group feelings |
| 2) Logos meaning word | b) Primary and Secondary |
| 3) Socius meaning companion | c) Organised Procedure |
| 4) Rural's | d) A Greek word |
| 5) Culture | e) Auguste Comte |
| 6) Community | f) Social stratification |
| 7) Social group types | g) An abstract Science |
| 8) Mathematics | h) A Latin word |
| 9) Slavery | i) Man made part of Environment |
| 10) Institution | j) Doshi, S.L. & Jain, P.C. |

Q.10. Arrange the following in sequence:-

(10x1=10)

I) Hierarchy of Sciences:-

- a) Astronomy b) Mathematics c) Chemistry d) Physics
e) Biology f) Sociology

II) Chronology of rural development Program:-

- a) Community Development Project (1952).
- b) MGNREGA
- c) Panchayati Raj Institutions
- d) Small Farmers Development Agencies
- e) High yielding varieties programme.

III) Stages in crop production process:-

- a) Threshing
- b) Seed treatment
- c) Sowing
- d) Harvesting

IV) Historical development of rural sociology as an academic discipline:-

- a) International Rural Sociology Association was formed.
- b) Country life commission was formed by President Roosevelt of America (1907).
- c) Rural Sociology Journal was started in the U.S.A. (1935).
- d) American Sociology Society's annual meeting discussed rural social problems.

V) Systematical steps involved in field study:-

- a) Report writing
- b) Interviews
- c) Observations
- d) Data analysis

VI) Agrarian unrest in india:-

- a) Moplah Rebellion in Malabar
- b) Champaran (Bihar) Movement
- c) Peasant revolt in Punjab
- d) Bardoli Satyagraha

VII) Caste Hierarchy among Hindus:-

- a) Akshyatrias
- b) Brahamans
- c) Sudras
- d) Vaishas

VIII) Typology by size of landholding:-

- a) Landless peasants
- b) Rich peasants
- c) Marginal farmers
- d) Small peasants

IX) Typology of PRIS in independent India:-

- a) Ashok Mehta committee
- b) Balwant Rai Mehta committee
- c) 73rd constitutional amendment act
- d) None of the above

X) Major classes that exist in India:-

- a) Middle class
- b) Working class
- c) Upper class
- d) Very rich

B.Sc.(Hons.) AGRICULTURE – 1ST SEMESTER EXAMINATIONS; DECEMBER - 2017
(SUB:-INTRODUCTION TO SOIL SCIENCE; PAPER CODE:-17010109)

TIME: 03:00 Hrs.**Max Marks:60****Instructions:-**

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencements of the Exam. No complaint(s) will be entertained thereafter.
3. Attempt six (06) questions in all and question **one (01)** is compulsory. Students are required to attempt **five (05)** questions from Part-B. Marks are indicated against each question.
4. Draw the diagram wherever required.

PART-A**Q.1. Write Short Notes on followings:-****(10x1=10)**

- a) Define Soil.
- b) Soil Structure.
- c) Particle density.
- d) Immobilization.
- e) Porosity.
- f) Field capacity.
- g) Aeration.
- h) Define Humus.
- i) Soil temperature.
- j) Useful microorganisms.

PART-B**Attempt any five (05) questions of the following. Each question carries equal marks.****(5x10=50)****Q.2. Define Soil Profile? Describe it with the help of neat and clean diagram.****Q.3. What is weathering? Describe the different types of weathering in detail.****Q.4. What is organic matter? Describe the decomposition of organic matter.****Q.5. What is soil water? Describe the different types of water in soil and discuss the role of soil water.****Q.6. What are the soil forming processes? Describe about the factors affecting soil formation.****Q.7. What do you mean by soil taxonomy? Write the Categories of soil taxonomy and enlist the soil orders present now days.****Q.8. Define soil texture. Classify the soil texture with different system. Describe the role of soil texture in relation to plant growth.**

**B.SC.(HONS) AGRICULTURE –1ST SEMESTER EXAMINATION;
DECEMBER-2017**

(SUBJECT- INTRODUCTION TO SOIL SCIENCE; PAPER CODE-17010109)

Time : 03:00 Hours

Maximum Marks –60

Instruction :

1. Write your Roll No. on the question paper.
2. Candidate should ensure that they have been provided with correct question paper. Complaints in this regard, if any, should be reported to the invigilator on duty in the examination hall within 15 minutes of the commencement of the exams. No complaints shall be entertained thereafter.
3. Each Part is Compulsory. Marks are indicated against each question.
4. Draw diagram wherever required.

PART- A (Descriptive Type)

1. (Long Essay-1)

- Q1. What is soil texture? Describe in brief the characteristics of soil separates. (5)

OR

What are the factors affecting soil temperature?

2. (Short Notes – 2)

- Q2. Write short notes on any three of the following (2x3=6)

- | | |
|---------------------|-----------------|
| a) Particle Density | b) Soil Profile |
| c) Minerals | d) Solum |

3. (Definitions-2)

- Q3. Define any three of the following (2x3=6)

- | | |
|-------------------|-------------|
| a) Soil | b) Rocks |
| c) Soil structure | d) Pedology |
| e) Soil porosity | |

4. (Discriminatory/Differentiation-5)

- Q4. Differentiate between (2x2=4)

- | |
|---|
| a) Plate like structure and Prism –like structure |
| b) Soil and Earth |

5. (Problem Based question-2)

- Q5. Write about the Soil formation. (3)

- Q6. Write down the Importance of physical properties of soil. (3)

6. (Interpretation question-5)

- Q7. Write down alfisol (3x1=3)

- | | | |
|----------|--------------|----------|
| a) Order | b) Sub order | c) Group |
|----------|--------------|----------|

P.T.O.

ii) A. Macro-gnisum and microorganisms

R. It is living in soil in small numbers

a) Both A and R is correct

b) A is correct but R is incorrect

c) R is correct but A is incorrect

d) Both A and R is incorrect

Q11. Multiple response questions - 5

(5x1=5)

a). In which soil structure infiltration, permeability and aeration are good

a) Platy

b) Prism-like

c) Block -like

d) Spherical -like

b). Bulk density of a clay soil is

a) 1.51

b) 1.58

c) 2.50

d) 2.80

c). At PF wilting percentage arrives

a) 4.5

b) 4.2

c) >4.5

d) 6.0

d) Soil colloids is a part of

a) Sand

b) Silt

c) Loam

d) Clay

e) Which soil warmed up quickly?

a) Sandy soil

b) Clayey soil

c) Loamy soil

d) Silt soil

Q12. Text-Numerical question-3

(3X1 = 3)

a) Saline soil pH content

a) 6

b) 4

c) 8

d) 7

b) Composition of soil

a) 8

b) 6

c) 3

d) 4

c) Montmorillonite type clay is:

a) 2:1

b) 1:1

c) 2:1:1

d) 1:0

Q13. Match the following-

(4X1= 4)

i) Acid soil

i) 45%

ii) Mass/Unit volume

ii) More than 6 pH

iii) Soil Water

iii) 25%

iv) Mineral matter

iv) Bulk Density

P.T.O.

Q14. Sequencing- 3 Questions

(3X1=3)

Arrange in sequence

1. Arrange the following cereals according to soil reaction (pH) preference of crop plants:
a) Maize b) Rice c) Barley d) Wheat
2. Arrange the following herbicides in ascending order according to their adsorption capacity
a) Bentazon b) atrazine c) dalapon d) 2,4-D
3. Arrange the following Soil structure according to shape of aggregation
a) Platy b) Prismatic c) Blocky d) Spheroidal

B.Sc.(Hons.) AGRICULTURE – 1st SEMESTER EXAMINATION; DEC.-2017
(SUB:-INSECT MORPHOLOGY AND SYSTEMATIC; PAPER CODE:-17010110)

TIME: 03:00 Hrs.**Max Marks:60****Instructions:-**

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencements of the Exam. No complaint(s) will be entertained thereafter.
3. Attempt the questions as per instruction mentioned below with each part. Marks are indicated against each part.
4. Draw the diagram wherever required.

PART-A**Q.1. Fill in blanks:-****(20x1=20)**

- a) Entomology is the _____ word.
- b) Mite has _____ legs.
- c) The insects which lay eggs are called _____.
- d) Insect has _____ pairs of legs.
- e) Body wall of insect is known as _____.
- f) Digging type of legs are found in _____.
- g) Lice has _____ type of legs.
- h) Sound producing legs also known as _____.
- i) Insect body is divided into _____ parts.
- j) House fly has _____ type of mouth parts.
- k) Endoskeleton of head in insects is called _____.
- l) Respiration in insects takes place by _____.
- m) _____ is a link animal between arthropods and annelids.
- n) Insects which have wings are called _____.
- o) Mustard sawfly belong to family _____.
- p) Weevils belong to family _____.
- q) Larva of house fly is called _____.
- r) Antenna is divided into _____ parts.
- s) Filiform type of antenna is also known as _____.
- t) Biting and chewing type of mouth parts are found in _____.

PART-B**Attempt any eight (08) questions of the following. Each question carries equal marks.****(8x5=40)**

- Q.2.** Write down the characters of class chilopoda, crustacean, arachnida and hexapoda.
- Q.3.** Draw neat and labeled diagrams of insect head (frontal view) write down types of head with suitable example.
- Q.4.** Draw neat and labeled diagram of general digestive system and female reproductive system of insects.
- Q.5.** What is metamorphosis? Write down the different types of metamorphosis in detail with suitable examples.

P.T.O.

Q.6. Write down the functions of the followings:

- | | | | |
|---------------------------|-----------------------|----------------------------|---------------------------|
| a) Labrum | b) Hypopharynx | c) Natatorial type of legs | d) Halteres |
| e) Raptorial type of legs | f) Antennae | | g) Trachea |
| h) Cardiac valve | i) Malpighian tubules | | J) Fossorial type of legs |

Q.7. Write down the characteristics of order Orthoptera, Diptera, Hemiptera and Coleoptera.

Q.8. Write down the characters of agriculturally important families of order Lepidoptera with suitable example.

Q.9. Write down the scientific names and hierarchy of the following insects:-

- a) Gram pod borer
- b) Whitefly
- c) Honey bee
- d) House fly
- e) Red hairy caterpillar
- f) Mustard sawfly
- g) Gram Dhora
- h) Sugarcane pyrilla
- i) Brown plant hopper
- j) Tobacco caterpillar

Q.10. Draw a neat and labeled diagram of insect integument and write down its functions.

Q.11. Define the following:-

- | | | | |
|-----------------|---------------|--------------------|-------------------------|
| a) Insect | b) Viviparity | c) Parthenogenesis | d) Peritrophic membrane |
| e) Nomenclature | | | |

40

Sr. No 100545

Roll No. _____

**B.SC.(HONS) AGRICULTURE –1ST SEMESTER EXAMINATION;
DECEMBER-2017**

(SUBJECT- INSECT MORPHOLOGY AND SYSTEMATICS; PAPER CODE-17010110)

Time : 03:00 Hours

Maximum Marks –60

Instruction :

1. Write your Roll No. on the question paper.
2. Candidate should ensure that they have been provided with correct question paper. Complaints in this regard, if any, should be reported to the invigilator on duty in the examination hall within 15 minutes of the commencement of the exams. No complaints shall be entertained thereafter.
3. Each Part is Compulsory. Marks are indicated against each question.
4. Draw diagram wherever required.

PART- A (SUBJECTIVE)

Q1. Elaborate the insect cuticle by drawing a neat and labeled diagramme. (5)

OR

Explain the digestive system of grasshopper in detail supporting with a neat and labelled diagram.

Q2. Write short notes on any three of the following (3x3=9)

- a) Insect blood
- b) Insect haemocoel
- c) Insect circulatory system
- d) Mouth parts of grasshopper
- e) Frontal view of Grasshopper head

Q3. Define any two of the following (2x2=4)

- a) Insect morphology
- b) Diapause
- c) Species
- d) Insect
- e) Taxonomy

Q4. Differentiate between (2x2=4)

- a) Order Thysanura and Order Thysanoptera
- b) Class Hexapoda and Class Arachnida

Q5. How the insects' population dominates the animal on earth? (3)

P.T.O.

- Q6. Name any four most important families of order Lepidoptera which are important from agricultural point of view, give examples (Scientific Names). (2)
- Q7. Write down the hierarchy of the following insects along with scientific names. (3x1=3)
- a) Silver fish ; b) Citrus butterfly ; c) Red pumpkin beetle

PART- B (OBJECTIVE)

- Q8. Tick the appropriate answer/answers (10x1=10)
- i) An insect has
- a) Two b) Four legs c) Six legs d) Eight legs
- ii) The Siphoning type of mouth parts are present in
- a) Butterfly b) Beetle c) Thrip d) Mosquito
- iii) The Tegmina is a fore wing of
- a) Grasshopper b) Thrip c) Mosquito d) House fly
- iv) The antennae of house fly is of
- a) Clavate b) Filiform c) Moniliform d) Aristate type
- v) *Lipaphis erysimi* is a pest of
- a) Rice b) Fodder c) Cocoa d) Sarson
- vi) The young one of grasshopper is called
- a) Larva b) Nymph c) Egg d) Pupa
- vii) Millipede is a
- a) Carnivorous b) Herbivorous c) Omnivorous d) All of these
- viii) The class of Centipede is
- a) Insecta b) Onychophora c) Diplopoda d) Chilopoda
- ix) Tomato pod borer is a
- a) Useful insect b) Harmful insect c) Reptile d) Aves
- x) The small wasp, *trichogramma* is a
- a) Diplopod b) Predator c) Pathogen d) Egg Parasite

Q9. Write True (T) or False (F)

(3x1=3)

- a) Red spider mite is an insect
- b) Beetle is an arachnid
- c) An insect has two pairs of wings

Q10. Mark the appropriate answer

(2x1 =2)

**i) A. The elytra is hard opaque because
R. It protects the fore wing**

- a) Both A and R are correct
- b) A is correct but R is not correct
- c) A is not correct but R is correct
- d) Both A and R are incorrect

**ii) A. Yellow wasp is an useful insect because
R. It damages the crops.**

- a) A is correct but R is incorrect
- b) Both A and R are correct
- c) R is correct but A is incorrect
- d) Both A and R are incorrect

Q11. Multiple response questions (Tick more than one answer)

(5x1=5)

- a). A house fly has
 - a) Exoskeleton
 - b) Decentralized nervous system
 - c) Dorsal heart
 - d) One pair of antennae
- b). Dorsal heart is found in
 - a) Buffalo
 - b) Dragonfly
 - c) Cockroach
 - d) Ant lion
- c). The compound eye in insects is
 - a) Wing
 - b) Sense organ
 - c) Ophthalmic organ
 - d) Johanston organ
- d) A red spider mite has
 - a) No wings
 - b) Cephalothorax
 - c) Tail
 - d) Lungs

P.T.O.

- e) An insect has
 - a) Six legs
 - b) Two antennae
 - c) Three pairs of wings
 - d) Lungs

Q12. Tick the correct answer

(3X1 = 3)

- a) An insect thorax has number of segments
 - a) 2 b) 3 c) 6 d) 8
- b) A velvet mite has number of legs
 - a) 2 b) 4 c) 6 d) 8
- c) A spider mite has body segments
 - a) 1 b) 2 c) 3 d) 4

Q13. Match the following-

(4X1= 4)

- | | |
|----------------------------------|----------------|
| i) Syrphid fly feeds on | i) Hymenoptera |
| ii) Yellow wasp belongs to order | ii) Sugarcane |
| iii) The order of house fly | ii) Diptera |
| iv) Gurdaspur borer is a pest of | v) Aphids |

Q14. Arrange in Sequencing-

(3X1=3)

Put the following events/activities in ascending order

- 1. a) Adult b) larva c) Pupa d) Egg
- 2. a) Nymph b) Egg c) Adult
- 3. a) Mid gut b) Fore gut c) Hind gut

B.Sc. (HONS.) AGRICULTURE - 1ST SEMESTER EXAMINATIONS; DEC.-2017
(SUBJECT: INTRODUCTION TO STATISTICAL METHODS; PAPER CODE – 17010111)

Time: 03:00 Hrs.

Max Mark: 80

Instructions:

1. Write your Roll No. on the Question Paper.
2. Candidate should ensure that they have been provided with the correct question paper. Complaints in this regards. If any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Each Part is Compulsory. Marks are indicated against each question.
4. Draw the diagram wherever required.

PART-A (OBJECTIVE TYPE QUESTIONS OMR SHEETS)

ATTEMPT ALL QUESTIONS:-

- Q. 1.** A specific characteristic of a population is called:- (1)
a) Statistic b) Parameter c) Variable d) Sample
- Q. 2.** A specific characteristic of a sample is called:- (1)
a) Statistic b) Constant c) Parameter d) Variable
- Q. 3.** The data collected from published reports is known as:- (1)
a) Discrete b) Arrayed data c) Secondary data d) Primary data
- Q. 4.** The variable that is being predicted is called:- (1)
a) Independent variable b) Dependent variable c) Discrete variable d) Continuous variable
- Q. 5.** Weights of students in a class is:- (1)
a) Discrete data b) Constant data c) Continuous data d) Qualitative data
- Q. 6.** If the lower and upper limits of a class are 10 and 40 respectively, the mid points of the class is:- (1)
a) 15 b) 30 c) 12.5 d) 25
- Q. 7.** We arrange the data before calculating:- (1)
a) Median b) Mean c) Variance d) Mode
- Q. 8.** The mean of 5 values is 8. Four values are 8, 7, 6 and 9. The fifth value is:- (1)
a) 8 b) 11 c) 10 d) 12
- Q. 9.** Which of the following statistics measures the most frequently occurring value in a set of data? (1)
a) Range b) Mode c) Median d) Mean
- Q. 10.** Range of the given values $-4, -6, -3$ and -7 is:- (1)
a) -4 b) -10 c) -3 d) 4
- Q. 11.** Which of the following average cannot be calculated for the observations 2, 2, 4, 4, 6, 6, 8, 8, 10, 10? (1)
a) Mean b) Mode c) Median d) All of the above
- Q. 12.** The model letter of the word "STATISTICS" is:- (1)
a) S b) T c) Both S and I d) Both S and T
- Q. 13.** The variance is zero only if all observations are the:- (1)
a) Different b) Square c) Square root d) Same

- Q. 14. If there are ten values each equal to 10, then standard deviation of these values is:- (1)
- a) 100 b) 20 c) 0 d) 10
- Q. 15. To compare the variation of two or more than two series, we use:- (1)
- a) Standard deviation b) Correlation c) Regression d) Coefficient of variation
- Q. 16. The variance of 14, 16, 18, 20 and 22 is:- (1)
- a) 8 b) 18 c) 9 d) 22
- Q. 17. For a set of values 6,6,6,6,6,6, the variance is:- (1)
- a) Zero b) 6 c) 12 d) 36
- Q. 18. The value of the coefficient of correlation lies between:- (1)
- a) 0 and 1 b) -1 and 0 c) +1 and 0 d) -1 and +1
- Q. 19. For a bivariate population $b_{xy} = -0.4$ and $b_{yx} = -1.6$, the coefficient of correlation is:- (1)
- a) -2 b) -0.8 c) 0.64 d) 0.80
- Q. 20. The geometric mean of the two-regression coefficients b_{xy} and b_{yx} is equal to:- (1)
- a) r b) r^2 c) 1 d) \sqrt{r}
- Q. 21. The range of normal distribution is:- (1)
- a) 0 to n b) 0 to ∞ c) $-\infty$ to $+\infty$ d) -1 to +1
- Q. 22. A number between 0 and 1 that is use to measure uncertainty is called:- (1)
- a) Random variable b) Trial c) Simple event d) Probability
- Q. 23. A random experiment contains:- (1)
- a) At least one outcome b) At least two outcomes
c) At most one outcome d) At most two outcome
- Q. 24. When each outcome of a sample space is as likely to occur as any other, the outcomes are called:- (1)
- a) Exhaustive b) Mutually exclusive
c) Equally Likely d) Not mutually exclusive
- Q. 25. When certainty is involved in a situation, its probability is equal to:- (1)
- a) Zero b) Between -1 and +1
c) Between 0 and 1 d) One
- Q. 26. Which is the impossible event when a die is rolled:- (1)
- a) 2 or 3 b) 0 or 7 c) 1 d) 5 or 7
- Q. 27. In a symmetric distribution:- (1)
- a) Mean = Median b) Mean \neq Mode c) Mean > Mode d) Mean < Mode
- Q. 28. Which of the following are characteristics of Normal distribution:- (1)
- a) Symmetric b) Mean=Median=Mode
c) Bell shape d) All of these
- Q. 29. For testing of hypothesis about population mean, we use:- (1)
- a) Z - test b) t - test c) F - test d) Both Z & t - test
- Q. 30. Testing $H_0 : \mu = \mu_0$ against $H_0 : \mu \neq \mu_0$ leads to:- (1)
- a) Left tailed test b) Right tailed test c) Two-tailed test d) None of these

- Q. 31. The probability of happening of an event lies between:- (1)
 a) -1 and -1 b) 0 and 1 c) 0 and n d) 0 and 1
- Q. 32. The probability that a leap year will have 53 Sundays is:- (1)
 a) $1/7$ b) $2/7$ c) $2/53$ d) $52/53$
- Q. 33. A coefficient of correlation is computed to be 0.99 means that:- (1)
 a) The relationship between two variables is weak
 b) The relationship between two variables is strong and positive
 c) The relationship between two variables is strong and but negative
 d) Correlation coefficient cannot have this value
- Q. 34. If both variables X and Y increase or decrease simultaneously, then the coefficient of correlation will be:- (1)
 a) Positive b) Negative c) Zero d) One
- Q. 35. Test of goodness of fit and test for independence of attributes are two important applications of:- (1)
 a) t - distribution b) χ^2 - distribution c) Z - distribution d) F - distribution
- Q. 36. The probability of rejecting the null hypothesis when it is true is called:- (1)
 a) Level of significance b) Level of confidence c) Power of the test d) None of the above
- Q. 37. The most serious error in testing of hypothesis is:- (1)
 a) Type I error b) Type II error
 c) Both are equally serious d) None of these
- Q. 38. An randomized block design has:- (1)
 a) Two way classification b) One way classification
 c) Three way classification d) No classification
- Q. 39. ANOVA is a statistical method of comparing the _____ of several populations:- (1)
 a) Variance b) Standard deviations c) Means d) All of the above
- Q. 40. The χ^2 - test should not be used if any expected frequency is:- (1)
 a) Less than 10 b) Less than 5 c) Equal to 5 d) More than 5

PART-B (DESCRIPTIVE TYPE)

SHORT ANSWER TYPE QUESTIONS:-

- Q.1. Attempt any seven of the following:- (7x3=21)
 a) What do you mean by measures of central tendency? Explain various measures of central tendency.
 b) Explain the following with suitable examples:-
 (i) Primary and Secondary data
 (ii) Discrete and Continuous data
 (iii) Statistic and Parameter
 c) Following is the data of number of days taken by the two suppliers, A and B , to deliver the ordered goods.

A	11	10	9	10	11	11	10	11	10	10
B	8	10	13	7	10	11	10	7	15	12

- Find: (i) Arithmetic mean for both A and B .
 (ii) Standard deviation for both A and B .

- d) The scores of two candidates A and B in different one-hour examinations are given below. Examine who is the more consistent scorer.

Candidate	One-hour examination					
	I	II	III	IV	V	VI
A	9.0	8.0	7.5	8.5	9.0	8.0
B	5.5	9.5	6.5	8.5	10.0	8.0

- e) Explain the concept of regression and write down the regression equation which could be used to predict the value of Y for any given value of X. Write down the formula for each term used in equation. From the following data, obtain the regression equations and estimate the yield when the rainfall is 29 cm.

	Rain fall (in cm.)	Yield (in kg.)
Mean	26.7	508.4
Standard deviation	4.6	36.8

Coefficient of correlation between yield and rainfall is 0.52.

- f) Give the classical and statistical definitions of probability. Two unbiased dice are thrown. Find the probability that:-
- (i) The sum of the numbers on the dice is 9 (ii) Both the dice show the same numbers
 (iii) The first dice shows 4 (iv) The sum of the numbers greater than 10
- g) Discuss the following with the help of suitable examples:-
- (i) Random experiment (ii) Mutually exclusive events
 (iii) Independent events
- h) Define the following concepts:-
- (i) Null hypothesis & alternative hypothesis (ii) Type-I error and Type-II error
 (iii) Critical region (iv) Level of significance
- i) The mean breaking strength of cables supplied by a manufacturer is 1800 with a standard deviation 100. By a new technique in the manufacturing process, it is claimed that the breaking strength of the cables have increased. In order to test this claim, a sample of 50 cables is tested. It is found that the mean breaking strength is 1850. Can we support the claim at 1% level of significance? (Given $Z_{0.01} = 2.33$).
- j) Write short note on completely randomized design (CRD).

LONG ANSWER TYPE QUESTIONS:-

Q.2. Attempt any one of the following:-

(1x10=10)

- a) Define the term "statistics" and discuss its importance in the various fields.
 b) The following is the distribution of body weights of 100 calves at the first lactation:-

Body weight (kg)	30-40	40-50	50-60	60-70	70-80
Number of calves	12	26	34	20	8

Find Mean, Median and Mode of body weight of calves.

Q.3. Attempt any one of the following:-

(1x9=9)

- a) Define correlation. Distinguish between positive, negative and zero correlations with suitable examples. The following are the data of head and body weights of 10 insects (drosophila melanogaster).

Head weight (mg)	20	22	25	27	31	32	35	38	39	40
Body weight (mg)	60	64	72	80	84	86	92	96	97	102

Compute the correlation coefficient between head and body weights.

- b) What do you understand by experimental design? Explain the principles of replication, randomization and local control in experimental design.

B.Sc.(Hons.) AGRICULTURE – 1st SEMESTER EXAMINATIONS; DECEMBER - 2017
(SUB:-INTRODUCTION TO STATISTICAL METHODS; PAPER CODE:-17010111)

TIME: 03:00 Hrs.

Max Marks:80

Instructions:-

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencements of the Exam. No complaint(s) will be entertained thereafter.
3. Attempt six (06) questions in all and question one (01) is compulsory. Students are required to attempt five (05) questions from Part-B. Marks are indicated against each question.
4. Draw the diagram wherever required.

PART-A

Q.1. Attempt all questions:-

(10x2=20)

- a) Construct a frequency table taken 3 as class interval.

13, 16, 15, 17, 23, 19, 15, 14, 17, 12, 15, 20, 15, 21, 19, 11, 18, 16, 19, 19, 21, 17, 22, 13, 15, 14, 16, 17, 9, 12, 10, 18, 20, 22.

- b) Draw a Less than Ogive

Groups	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	4	8	11	15	11	7	4

- c) The range of correlation coefficient is
a) -1 to 0 b) 0 to 1 c) -1 to 1 d) None of the above
- d) For testing of hypothesis about population mean, we use:
a) Z-test b) t-test c) F-test d) Both Z & t-test
- e) Find mean and coefficient of variation from the following data:
50, 48, 58, 63, 70, 38, 40, 42, 35, 37.
- f) The probability of the intersection of two mutually exclusive events is always:
a) infinity b) zero c) one d) none of the above
- g) Write a short note on Latin Square Design (LSD).
- h) A sample of 900 members is found to have a mean of 3.4cm. Can it be reasonably regarded as a simple sample from a large population with mean 3.2cm and standard deviation 2.3cm?
- i) Define Type – I error and Type – II error.
- j) What is frequency polygon?

PART-B

Attempt any five (05) questions of the following. Each question carries equal marks. (5x12=60)

Q.2. What is statistics? Describe its uses and limitations.

Q.3. Following is the data of number of days taken by the two suppliers, A and B, to deliver the ordered goods.

A	11	10	9	10	11	11	10	11	10	10
B	8	10	13	7	10	11	10	7	15	12

P.T.O.

- Find a) Arithmetic mean for both A and B
 b) Mean deviation for both A and B
 c) Which of the two suppliers is consistent in deliver time of the ordered goods?
 Justify your answer.

Q.4. Give the classical and statistical definitions of probability. Two unbiased dice are thrown. Find the probability that:

- a) The sum of the numbers on the dice is 9.
 b) Both the dice show the same numbers.
 c) The first dice shows 4.
 d) The sum of the numbers greater than 10.

Q.5. Write down normal distribution and its properties. Also, write the steps involve in testing of hypothesis.

Q.6. What do you mean by correlation? Explain various types of correlation with examples. The following is the data of head and body weights of 10 insects (drosophila melanagoster).

Head weight (mg)	Body weight (mg)
20	60
22	64
25	72
27	80
31	84
32	86
35	92
38	96
39	97
40	102

Compute the correlation coefficient between head and body weights and test its significance.

- Q.7.** a) Describe the testing procedure for testing the differences of two means for large samples.
 b) The Means of two large samples of 1000 and 2000 members are 67.5 inches and 68.0 inches respectively. Can the samples be regarded as drawn from the same population of standard deviation 2.5 inches? Test at 5% level of significance.
 [Given $z_{0.0025} = 1.96$]

- Q.8.** a) Define terms using in experiment of design. What are the basic principles of design of experiments?
 b) What is Randomized Block Design (RBD)? Explain complete analysis of variance of RBD with unequal number of observations.
