Note: 1) Solve ANY FIVE questions from Section ‘A’
    2) All questions from Section ‘B’ are compulsory
    3) All questions carry equal marks
    4) Draft neat diagram wherever necessary

SECTION “A”

Q.1 : How book of nature is useful to know something about the history of the world? Give example of pebble to support your saying.

Q.2 : Why Schatz think that he might die? How did his father clarify his confusion?

Q.3 : Bring out the qualities of Mahatma Gandhi as observed by Patrick Quinn.

Q.4 : Why did the King of Monaco ask help from Government of France and the King of Italy? How did he get solution to the problem?

Q.5 : How did Jesse Owens succeed in winning a gold medal in Olympic games of 1936?

Q.6 : Why did the Head teacher ask Washington to clean the recitation room? How did Washington take it as an opportunity to get admission in the school?

Q.7 : How did Leacock remind Mr. Todd for his lost dollar? Did he get it back?

SECTION “B”

Q.8 : Answer in one or two sentences

1. What was the judge’s sentence and why?

2. Who said, ‘one hundred and two’, and what did he mean by it?

3. What are the two kinds of thermometers mentioned by the author?

4. What roused Nanuji’s anger and what did he do in his anger?

5. Who is the author of ‘A Days Wait’?

(P.T.O.)
Q.9: Fill in the blanks with the infinitives given in the brackets.
(to attend, to live, to produce, to find, to allow, to bring, to make, to buy, to keep off, to pass, to break open)

1. We boil the water _______ it free of germs.
2. My brother has gone to village _______ a wedding.
3. We eat _______.
4. Ravi went to the post office _______ some stamps.
5. We should improve our agriculture _______ enough food for all the people.
6. The thief tried _______ the lock but failed.
7. With his high qualifications he expects _______ a good job.
8. Mohan has been working very hard. He hopes _______ in the first division.
9. The student forgot _______ his textbook to the class.
10. The conductor refused _______ the passengers dog inside the bus.

Q.10 a) Put each set of words and phrases given below in the right order and make sentences.

1. burning, the curry, smell, she.
2. saw, running to catch the bus, a fat man, I.
3. the birds, heard, singing in the trees, we.
4. the policeman, the child, found, standing in front of sweet-meat shop.
5. felt, shaking, the house, they.

b) Match the words in list (A) with the meanings given in list (B).

<table>
<thead>
<tr>
<th>'A'</th>
<th>'B'</th>
</tr>
</thead>
<tbody>
<tr>
<td>epidemic</td>
<td>a) sea-robber</td>
</tr>
<tr>
<td>pirate</td>
<td>b) advice for use of medicine</td>
</tr>
<tr>
<td>commence</td>
<td>c) conquer</td>
</tr>
<tr>
<td>prescription</td>
<td>d) widespread disease</td>
</tr>
<tr>
<td>going on</td>
<td>e) begin</td>
</tr>
<tr>
<td></td>
<td>f) happenings</td>
</tr>
</tbody>
</table>
Q.1 a) Define soil. Enlist different branches of soil science. Explain in brief the composition of earth crust.
   b) What is weathering? Describe the various agents of physical weathering.

Q.2 a) Define rocks. Classify them on the basis of mode of formation with one example.
   b) What do you mean by soil profile? Explain in brief fundamental soil forming processes.

Q.3 a) Define soil structure. Enlist and explain different types of soil structure.
   b) Define cation exchange capacity? Enlist and explain various factors affecting them.

Q.4 a) Define soil colloids. State the different kinds of soil colloid. Explain why montmorillonite clay swells more than kaolinite.
   b) Enlist different soil orders and give their important characteristics.

   b) Explain in brief the importance of soil moisture. State the different forms of soil moisture and explain any one of them.

Q.6 a) Define soil survey. State various type of soil survey and explain in brief detailed soil survey.
   b) Give the causes of formation of salt affected soils. Describe in brief their reclamation.

Q.7 Write short note on.
   a) Composition of soil solution
   b) Residual sodium carbonate
   c) Jennys equation
   d) Primary mineral

(PTO)
SECTION “B”

Q.8 Define the following
   vi) Soil solution vii) Dispersion viii) Soil pH ix) Particle density  x) Regolith

Q.9 Answer to the point.
   1. Give the basic composition of humus.
   2. State the contribution of V.V. Dokuchaiev in development of soil science
   3. State any two minerals present in basalt.
   4. Name the three variables that combine to give soil colour.
   5. State the source of negative charge on clay lattice.
   6. Name the four dominant basic cation in soil
   7. State chemical composition of lime
   8. Give one example of transparent minerals.
   9. Give one example of vegetable crop tolerant to boron concentration
   10. Give one example of silicate clay minerals

Q.10 Select appropriate word and complete the sentence
   1. Climate is active / passive soil forming factor
   2. E. W. Hilgard / Justus Von Liebig stated the “law of minimum”.
   3. Humus collides are crystalline/ non crystalline in nature
   4. A rise in temperature decreases / increases the microbial population in soil.
   5. Montmorillonite is 1:1 / 2:1 type of clay mineral
   6. Residual sodium carbonate is less than 2.5 meq/ lit is suitable/ not suitable for irrigation.
   7. Acid soils are generally found in high/low rainfall area
   8. Degree of acidity increases/ decreases as the pH decreases below 7.0.
   9. Soil series / soil order is the highest category in comprehensive system of soil classification.
   10. Soil air is generally lower/ higher in CO₂ than atmospheric air
MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD  
SEMESTER END EXAMINATION, M.A.U., PARBHANI  
B.Sc. (Agri)

Semester : 1 (Old)  
Course No : AGRO-111  
Credits : 3 (2+1)  
Day & Date : Thursday  
Academic year : 2009-2010  
Title : Principles of Agronomy  
Total Marks : 80  
Time : 9.00 to 12.00  
31.12.2009

Note : 1) Solve ANY FIVE questions from Section “A”  
2) All questions from Section ‘B’ are compulsory  
3) All questions carry equal marks  
4) Draft neat diagram wherever necessary

SECTION “A”

Q. 1. a) Define agronomy. Explain the role of agronomist in agriculture.  
     b) Give the Classification of crop plants on the basis of their use with examples.

Q. 2. a) Define tillage .Enlist various objectives of tillage .  
     b) Describe in brief factors affecting tillage.

Q. 3. a) Explain methods of fertilizer application.  
     b) Classify manures and fertilizers with examples.

     b) Explain in brief weed control methods.

Q. 5. a) What do you mean by inter cropping ? Write its advantages.  
     b) What do you mean by cropping system? Describe in brief concept of cropping system.

Q. 6. a) Enlist various methods of sowing and suggest the most suitable sowing method for cotton crop.  
     b) State characteristics of good seed and explain the objectives of seed treatments.

Q. 7. Write Short notes ( Any two )  
       1) Soil Structure  2) Vermicompost  
       3) Green Manuring  4) Biofertilizer

P.T.O.
SECTION “B”

Q.8. Answer the following:

1. Which are the micro nutrients required for the crop?
2. In which form the paddy crop absorbs nitrogen?
3. Name one complex fertilizer.
4. What do you mean by ratooning?
5. Which is a family of sunflower crop?
6. Mexican wheat varieties are sown shallow.
7. In which PH range most of the crop grow better.
8. Name the parasitic weed associated with tobacco
9. Which is a oilseed as well as smothering crop?
10. Which type of herbicide kills all targeted weeds.

Q.9. Define following

1. Puddling
2. Relay cropping
3. Top dressing
4. Herbicide
5. Transplanting
6. Restorative crop
7. Fall ploughing
8. Manure
9. Seed Dormancy
10. Crop rotation.

Q.10. Correct the following statements if necessary.

1. Sugarcane is classified as a biennial crop.
2. SSP contains 16 percent nitrogen
3. *Cynodon dactylon* is a perennial weed.
4. Cotton is an example of deep rooted crop.
5. The botanical name of Bajra is Sorghum bicolor.
6. Tillage operations increase the bulk density of the soil.
7. Uniform inter row & intra row spacing is maintained by drilling method.
8. The capacity of soil to supply the nutrients to the crop is termed as soil fertility.
9. Phosphorus fertilizers are applied in split doses to the crop.
10. Herbicides used for control of weeds after sowing but before emergence of the crop is termed as post emergence application.
### SECTION “A”

Q.1 Define Meteorology and describe the scope of Meteorology in general.

Q.2 What is atmosphere? Describe compositional layering of atmosphere with diagram.

Q.3 Describe in brief factors affecting soil temperature.

Q.4 What is precipitation? Describe different forms of precipitation.

Q.5 What do you mean by Cloud? Enlist WMO cloud classification and explain basic types of clouds.

Q.6 What is drought? Explain various types of drought.

Q.7 Enlist Agroclimatic zones of Maharashtra. Give details of Western Maharashtra Scarcity Zone.

### SECTION “B”

Q.8 Define the following terms.
1) Condensation  2) Isotherm  3) Leeward  4) Albedo  5) Equinox

Q.9 Fill in the blanks.
1) Ultraviolet radiations are absorbed by -------------- gas.
2) The isothermal layer called --------------- separates Stratosphere and Mesosphere.
3) DALR of air parcel is ---- °C/km.
4) Density of air -------------------------- with increase in height.
5) The horizontal flow of air is called as ------------------.

Q.10 Match the pairs.

<table>
<thead>
<tr>
<th>‘A’</th>
<th>‘B’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Thermograph</td>
<td>a) Atmospheric Pressure</td>
</tr>
<tr>
<td>2) Barograph</td>
<td>b) Temperature</td>
</tr>
<tr>
<td>3) Octa scale</td>
<td>c) Wind velocity</td>
</tr>
<tr>
<td>4) Beaufort scale</td>
<td>d) Wind direction</td>
</tr>
<tr>
<td>5) Wind vane</td>
<td>e) Cloud cover</td>
</tr>
</tbody>
</table>

*****
SECTION “A”

Q.1 Give reasons for Mendel’s Success and enlist the characteristics of garden pea as the experimental material.

Q.2 Enlist different stages of Meiosis and describe the sub stages of Prophase –I with suitable diagram.

Q.3 State the laws of inheritance and explain law of segregation.

Q.4 Explain the types of linkage and state the factors influencing crossing over.

Q.5 What is cytoplasmic inheritance? Explain plastid inheritance in plants.

Q.6 Enlist various theories for sex determination and explain chromosomal theory of sex determination.

Q.7 Write short notes (Any Two)
   i) Significance of Mitosis  ii) Colorblindness in humans iii) Allopolyploidy

SECTION “B”

Q.8 Define the following terms.

Q.9 State true or False
   1. Monohybrid genotypic ratio is 9:3:3:1
   2. Morgan studied linkages in drosophila.
   3. Chromosomes lie freely suspended in cytoplasm.
   4. Test cross is always backcross.
   5. Linkage holds parental characters together.

Q.10 Fill in the blanks.
   1. Agents used to induce mutations are called as
   2. _______ _______ characters are dominance dependent on sex of individual.
   3. Individuals with three sets of chromosomes are called as _________ _______
   4. Several manifestations of single gene difference is called as _________
   5. _______ _______ described cell for the first time.
SECTION "A"

Q.1) a) Prove that the product of roots of quadratic equation \( ax^2 + bx + c = 0, a \neq 0 \) is \( \frac{c}{a} \).
   
b) Form the quadratic equation whose roots are 2 & -3.

Q.2) a) Solve

\[
\begin{vmatrix}
2x - 1 & x + 5 \\
6x - 3 & 4x + 7
\end{vmatrix} = 0
\]

b) Prove that \( \log_a (m/n) = \log_a m - \log_a n \)

Q.3) a) Find the value of \( \log_5 625 \)
   
b) Find the sum of the first 60 terms of an arithmetic progression whose first term is 23 and 60th terms is 87.

Q.4) a) Find the sum of the first 10 terms of the sequence 1, 2, 4, 8, ...........
   
b) Find the distance between two points whose co-ordinates are (4, 5) & (13, 8).
Q.5) a) Find the equation of circle whose center is at origin & radius is $3\sqrt{2}$.

b) Find the centre and radius of the circle $x^2+y^2+6x-4y+4=0$

Q.6) a) Evaluate

i) \[ \lim_{x \to 2} \frac{(x^2 - 2x - 3)(x+5)}{x-2} \]

ii) \[ \lim_{x \to 3} \frac{x^2 - 1}{x^2 - 4} \]

b) Evaluate the following integrals

i) \[ \int_{0}^{3} (2x + 3) \, dx \]

ii) \[ \int_{2}^{3} \frac{1}{x} \, dx \]

Q.7) a) Differentiate the following with respect to $x$

i) \[ y = (x^3 + 3)(x^2 + 2) \]

ii) \[ y = x^3 \tan x \]

b) Integrate the following function with respect to $x$

i) \[ \frac{x + 1}{x} \]

ii) \[ 3x^2 + 2x + 4 \]
Q.10) Define the following terms

1. Derivative of a function.
2. Logarithm
3. Quadratic equation
4. Arithmetic progression
5. Integral of a function
6. Geometric progression
7. Limit of a function
8. Circle
9. Integration
10. Exponential function
MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD
SEMESTER END EXAMINATION, M.A.U., PARBHANI
B.Sc. (Agri)

Semester: 1 (Old)  Academic year: 2009-2010
Course No: STAT-111  Title: Elementary Statistics
Credits: 2 (1+1)  Total Marks: 40
Day & Date: Monday  Time: 9.00 to 11.00

Note: 1) Solve ANY FIVE questions from Section ‘A’
2) All questions from Section ‘B’ are compulsory
3) All questions carry equal marks
4) Draft neat diagram wherever necessary

SECTION ‘A’

Q. 1) Define and describe in brief the standard deviation in connection with its merits and demerits.
Q. 2) Define “Statistics” and explain its scope in detail.
Q. 3) State method of studying dispersion. Write properties of a good measure of dispersion.
Q. 4) Define normal distribution. State the characteristics of normal distribution.
Q. 5) Write the properties of correlation coefficient and regression coefficient.
Q. 6) What is $\chi^2$ test? Write down the applications and limitations of the same.
Q. 7) Write short notes on any two:
   i) Ogive curve
   ii) Classification of data
   iii) Level of significance

SECTION ‘B’

Q. 8) Write the formulae with specification used.
   i) Range  ii) Regression coefficient of Y on X  iii) Standard deviation
   iv) Median  v) Geometric mean for ungrouped data.
Q. 9) Fill in the blanks.
   i) The geometric mean of 2, 4, 2 & 0 is ------
   ii) Equality of variance is tested by ------ test.
   iii) Mean & variance are equal in ----- distribution.
   iv) The probability of universal set is always ------
   v) ------ is not affected by extreme observation.
Q. 10) State true or false.
   i) Regression coefficient indicates the slope of the line regression.
   ii) The peak in a distribution is called median.
   iii) t- test is used for testing equality of variance.
   iv) The correlation coefficient is not symmetric.
   v) Arithmetic mean is always the best measure of central tendency.
MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD
SEMESTER END EXAMINATION, M.A.U., PARBHANI
B.Sc. (Agri)

Semester : 1 (Old)
Course No : EXTN-111

Academic year : 2009-2010
Title : Fundamentals of Extension Education and Rural Development

Credits : 3 (2+1)
Day & Date : Tuesday
Total Marks : 80
Time : 9.00 to 12.00
5.1.2010

Note : 1) Solve ANY FIVE questions from Section ‘A’
2) All questions from Section ‘B’ are compulsory
3) All questions carry equal marks
4) Draw neat diagram wherever necessary

SECTION ‘A’

Q.1 Define the term Extension Education and explain its scope and importance for Rural Development.

Q.2 What is Panchayat Raj? Give the powers and functions of Zilla Parishad.

Q.3 Give the classification of Extension teaching methods according to use with an example and discuss about Individual contact teaching method.

Q.4 What is learning? State and explain the principles of learning applicable to Extension.

Q.5 Give the earlier efforts of rural development in India and describe sevagram attempt.

Q.6 Write in detail about T & V system with its salient features.

Q.7 Write down the steps in Extension Teaching.

SECTION ‘B’

Q.8 Fill in the blanks.

1. ............. is an example of individual contact methods.
2. Village guides were appointed in villages under.............attempt.
3. ......is an example of non-projected visual aid.
4. .............is a body of general principles of laws of a field of knowledge.
5. The National Extension Service was started in the year.............
6. .............is an example of audio aid.
7. ............. demonstration is concerned with improvement in skill
8. The middle tier of three tier system of Panchayat Raj is known as ...... ...
9. ............. is a secretary of Grampanchayat.
10. Training and visit system of extension was introduced in Maharashtra State in the year.............
Q.9 a) Match the pairs.

“A”
1. Campaign
2. Agricultural Magazine
3. Sevagram attempt
4. Visual
5. Etawah attempt
6. Grampanchayat
7. Farm and Home visit
8. Over head projector
9. Marthandam attempt
10. Nilokehri attempt

“B”
a. Mahatma Gandhi
b. S.K. Dey
c. Sarpanch
d. Spencer hatch
e. Mass contact method
f. Chalk board
g. Transparencies
h. Individual contact methods.
i. Intensive teaching activity
j. Albert Mayer

Q.10 State true or false.
1. Result demonstration is a way of showing people the value of worth of an improved practice.
2. Title of a news is usually written in present tense.
3. Shri Rabindranath Tagore started the rural development work in Assam state.
4. Individuals do not differ in their learning ability.
5. Exhibition is an individual contact method.
6. The optimum number of flash cards to be prepared for one talk is usually 10-12.
7. Flannel graphs are effectively used for a group of people not exceeding 30 in number.
8. Model is a miniature replica of an object.
10. Use of visual aid retards the process of learning.
MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD
SEMESTER END EXAMINATION, M.A.U., PARBHANI
B.Sc. (Agri)

Semester : 1 (Old)  Academic year : 2009-2010
Course No : HORT-111  Title : Fundamentals of Horticulture
Credits  : 3 (2+1)  Total Marks : 80
Day & Date : Wednesday  Time : 9.00 to 12.00
6.1.2010

Note : 1) Solve ANY FIVE questions from Section ‘A’
2) All questions from Section ‘B’ are compulsory
3) All questions carry equal marks
4) Draw neat diagram wherever necessary

SECTION “A”

Q.1 Define plant propagation. Write merits and demerits of asexual method of propagation.

Q.2 Define plant growth regulator. Write in brief their uses in fruit crops.

Q.3 What do you mean by training? Write the objectives and various methods of training with suitable examples.

Q.4 Enlist different methods of irrigation and describe in detail drip method of irrigation.

Q.5 What do you mean by unfruitfulness? Enlist various factors responsible for unfruitfulness and describe external factors in detail.

Q.6 Describe in brief various systems of planting adaptable in fruit tree culture.

Q.7 Write short notes.
   i) Scope of horticulture in India    ii) Wind breaks

SECTION “B”

Q.8 State true or False.
   1. Pomology is the branch of horticulture which deals with study of vegetables.
   2. Anola is the richest source of vitamin C.
   3. Sphagnum moss has high water holding capacity up to 10-20 times of its weight.
   4. Grafting in two different genus in the same family is not possible.
   5. Preharvest drop of fruits causes financial loss to the growers.
   6. Dioecious species have male and female flower on the same plant at different places.
   7. CCC/NN ratio is the optimum condition for fruitfulness.
   8. Propagation of banana is not possible with tissue culture method.
   9. The optimum pH range for fruit crops is 6-8.
   10. Sweet orange is sub tropical fruit crop.
Q.9 Define the following terms.

Q.10 Match the pairs.

<table>
<thead>
<tr>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apple</td>
<td>a. Khirni</td>
</tr>
<tr>
<td>2. Grape</td>
<td>b. Riboflavin</td>
</tr>
<tr>
<td>3. IBA</td>
<td>c. Growth retardant</td>
</tr>
<tr>
<td>4. Sweet orange</td>
<td>d. Hard wood cutting</td>
</tr>
<tr>
<td>5. Vitamin B2</td>
<td>e. Rangpur lime</td>
</tr>
<tr>
<td>6. Urea</td>
<td>f. Promotes root initiation</td>
</tr>
<tr>
<td>7. CCC</td>
<td>g. Organic fertilizer</td>
</tr>
<tr>
<td>8. Sapota</td>
<td>h. In situ grafting</td>
</tr>
<tr>
<td>9. FYM</td>
<td>i. Inorganic fertilizer</td>
</tr>
<tr>
<td>10. Mango</td>
<td>j. Temperate fruit</td>
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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD
SEMESTER END EXAMINATION, M.A.U., PARBHANI
B.Sc. (Agri)

Semester : 1 (Old)  Academic year : 2009-2010
Course No : MIBO-111  Title : Microbiology
Credits : 2 (1+1)  Total Marks : 40
Day & Date : Thursday  Time : 9.00 to 11.00
7.1.2010

**Note** : 1) Solve ANY FIVE questions from Section ‘A’
2) All questions from Section ‘B’ are compulsory
3) All questions carry equal marks
4) Draw neat diagram wherever necessary

**SECTION “A”**

Q.1 What is growth in bacteria? What are the different growth phases? Explain in short normal growth curve.

Q.2 Enlist basic requirement of nutrition in bacteria. Answer in brief about nutritional types of bacteria.

Q.3 Define enzyme and write its physical and chemical properties.

Q.4 Write in detail the importance of micro organisms in Agriculture and allied field.

Q.5 What is sterilization? Write in brief about sterilization by chemicals.

Q.6 Differentiate between (Any two).
   1. Sterilization and disinfection
   2. Cell wall and cytoplasmic membrane
   3. Phototrophs and Lithotrophs

Q.7 Write short notes (Any Two)
   i) Tyndallization  ii) Algae  iii) Flagellar arrangements in bacteria

**SECTION “B”**

Q.8 Write answers in one sentence.
   1. Who developed compound microscope?
   2. How viruses multiply?
   3. Who proved bacterial nature of ‘anthrax’ disease of cattle?
   4. What is significance of capsule in bacteria?
   5. Who disproved spontaneous generation theory?

Q.9 State true or False
   1. Fungi are prokaryotic in nature.
   2. The bacterial cell grouping, forming a cube of eight cells is known as tetrad.
   3. Yeast is a multicellular fungus.
   4. Spherical bacteria are called as bacillus.
   5. ‘µ’ is the unit of measurement of bacteria.

Q.10 Fill in the blanks.
   1. Chemicals used for sterilization are called as ________ ________ ________ ________ ________ ________
   2. __________ imparts rigidity to cell wall in bacteria.
   3. __________ are the bacteria which grow at a temperature above 35°C.
   4. Bacteria without flagella are called as ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ ________ 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