Q. 1 Tick mark (✓) the appropriate answer from the options given.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Which of the following states is the largest producer of temperate fruits in India?</td>
<td>(a) Punjab (b) Jammu &amp; Kashmir (c) Haryana (d) Assam</td>
</tr>
<tr>
<td>(2) Which of the following temperate fruits is most widely grown in India?</td>
<td>(a) Apricot (b) Walnut (c) Apple (d) Peach</td>
</tr>
<tr>
<td>(3) ___________ is a deciduous vine.</td>
<td>(a) Persimmon (b) Hazel nut (c) Almond (d) Kiwi</td>
</tr>
<tr>
<td>(4) Which of the following group of fruits has specific climatic requirement?</td>
<td>(a) Temperate Fruits (b) Arid Fruits (c) Tropical Fruits (d) None of these</td>
</tr>
<tr>
<td>(5) Apple is a __________ type of fruit.</td>
<td>(a) Climacteric (b) Semi-climacteric (c) Non-climacteric (d) None of these</td>
</tr>
<tr>
<td>(6) Patharnakh is a low chilling variety of __________.</td>
<td>(a) Apple (b) Peach (c) Pear (d) Apricot</td>
</tr>
<tr>
<td>(7) Temperate fruit crops are generally ________ in nature.</td>
<td>(a) Evergreen (b) Deciduous (c) Dioecious (d) None of these</td>
</tr>
<tr>
<td>(8) ___________ is a universal pollen donor in sweet cherry.</td>
<td>(a) Fig (b) Black Heart (c) Selva (d) Vista</td>
</tr>
<tr>
<td>(9) Persimmon belongs to which botanical family?</td>
<td>(a) Rosaceae (b) Ebenaceae (c) Moraceae (d) Rutaceae</td>
</tr>
<tr>
<td>(10) The botanical name of Almond is __________.</td>
<td>(a) Prunus persica (b) Pyrus communis (c) Prunus amygdalus (d) Juglans regia</td>
</tr>
<tr>
<td>(11) Which is the most effective method for breaking seed dormancy in temperate fruits?</td>
<td>(a) Mechanical Scarification treatment (b) Hot water treatment (c) Acid treatment (d) Stratification treatment</td>
</tr>
<tr>
<td>(12) Clonal rootstocks in temperate fruits are multiplied through __________.</td>
<td>(a) Cuttings (b) Mound layering (c) Budding (d) Division (P.T.O.)</td>
</tr>
</tbody>
</table>
(13) Open Centre System of training is practiced in ________ fruit crop.
   (a) Peach  (b) Apple  (c) Pear  (d) Strawberry

(14) Which of the following is a dwarf clonal rootstock in apple?
   (a) MM-111  (b) Colt  (c) M-9  (d) Quince

(15) Persimmon is the national fruit of which country?
   (a) China  (b) Japan  (c) New Zealand  (d) Nepal

(16) ________ is a man made temperate fruit.
   (a) Plum  (b) Hazel nut  (c) Apple  (d) Strawberry

(17) ________ is a type of pome fruit.
   (a) Persimmon  (b) Pear  (c) Almond  (d) Kiwi

(18) Double sigmoid growth curve is observed in ________ fruit crop.
   (a) Kiwi  (b) Apple  (c) Pear  (d) Pecan

(19) Macadamia nut is a native of ________ country.
   (a) India  (b) Australia  (c) China  (d) Brazil

(20) Nectarine is a type of ________.
   (a) Apple  (b) Peach  (c) Pear  (d) Plum

(21) Which temperate fruit crop is known as “Queen of Nuts”? (a) Macadamia  (b) Pecan nut  (c) Walnut nut  (d) Hazelnut

(22) Santa Rosa is grown as a pollinizer for ________ fruit crop.
   (a) Chest nut  (b) Apricot  (c) Plum  (d) Pear

(23) Shakarpah is a popular cultivar of which fruit?
   (a) Almond  (b) Persimmon  (c) Apricot  (d) Plum

(24) Walnut has its origin in ________ country.
   (a) India  (b) USA  (c) China  (d) Iran

(25) Which temperate fruit crop is consumed in green milky stage?
   (a) Peach  (b) Apricot  (c) Almond  (d) Pear

(26) Colt is a clonal rootstock for ________ temperate fruit.
   (a) Pear  (b) Cherry  (c) Apple  (d) Almond

(27) ________ is regarded as the miracle fruit of China.
   (a) Peach  (b) Kiwi  (c) Pear  (d) Strawberry

(28) Strawberry is propagated by ________.
   (a) Whip grafting cuttings  (b) Hardwood  (c) Suckers  (d) Runners

(29) ________ is a scab resistant variety of apple.
   (a) Freedom  (b) Vered  (c) Maya  (d) Red Delicious

(30) Which of the following is an example of drupe fruit?
   (a) Strawberry  (b) Apple  (c) Plum  (d) Macadamia nut

(31) Bitter pit is a physiological disorder in ________ fruit crop.
   (a) Plum  (b) Peach  (c) Apple  (d) Cherry

(32) Macadamia nut belongs to ________ family.
   (a) Sapindaceae  (b) Rosaceae  (c) Proteaceae  (d) Juglandaceae

(33) Fruit cracking is a serious problem in ________ fruit crop.
   (a) Kiwi  (b) Apple  (g) Cherry  (h) Hazel nut

(34) ________ is a richest source of fat.
   (a) Strawberry  (b) Walnut  (c) Apple  (d) Almond

(35) Which of the following is a pistillate cultivar of kiwifruit?
   (a) Hayward  (b) Allison  (c) Tomuri  (d) None of these

(36) Albinism is a physiological disorder in ________ crop.
   (a) Peach  (b) Apple  (c) Persimmon  (d) Strawberry
(37) Hazel nut belongs to ____________ family.
   (a) Rosaceae  (b) Betulaceae  (c) Sterculiaceae  (d) Fagaceae

(38) ______ is a very popular astringent cultivar of Persimmon.
   (a) Fuyu  (b) Drake  (c) Hachiya  (d) Negret

(39) Quince is a clonal rootstock for ________ fruit.
   (a) Walnut  (b) Strawberry  (c) Peach  (d) Pear

(40) Russeting in apple is due to ________ humidity.
   (a) High  (b) Low temp  (c) High temp  (d) Drought

(41) The type of fruit in strawberry is ____________.
   (a) Drupe  (b) Achene  (c) Pome  (d) Berry

(42) Which of the following stone fruits is grown in the plains of India?
   (a) Apple  (b) Pear  (c) Plum  (d) Peach

(43) ________ is a dioecious fruit.
   (a) Apple  (b) Kiwi  (c) Pear  (d) Strawberry

(44) ________ is a low chilling cultivar of apple.
   (a) Red Delicious  (b) Golden Delicious  (c) Anna  (d) Prima

(45) Badamroghan oil is extracted from ________ fruit.
   (a) Almond  (b) Apricot  (c) Peach  (d) Macadamia nut

(46) ________ is the largest producer of Kiwi fruit in the world.
   (a) India  (b) New Zealand  (c) Spain  (d) Nigeria

(47) The botanical name of persimmon is ________.
   (a) Actinidia  (b) Diospyros  (c) Prunus salicina  (d) Malus floribunda

(48) Peach has its origin in ________ country.
   (a) New Zealand  (b) China  (c) Mexico  (d) Iran

(49) Kieffer is a popular variety of ________.
   (a) Strawberry  (b) Pear  (c) Apple  (d) Almond

(50) Winter Banana is a cultivar of ________.
   (a) Banana  (b) Apple  (c) Pear  (d) Apricot

(51) Eureka is an astringent cultivar of ________.
   (a) Peach  (b) Apple  (c) Persimmon  (d) Strawberry

(52) Which of the following is the family of chestnut?
   (a) Rosaceae  (b) Betulaceae  (c) Sterculiaceae  (d) Fagaceae

(53) What is the male to female ratio for kiwi?
   (a) 1:9  (b) 1:5  (c) 1:7  (d) 1:11

(54) ________ training system is followed in strawberry.
   (a) Open Centre  (b) Central leader  (c) Modified leader  (d) Matted row

(55) Self incompatible variety of apricot is ________.
   (a) Perfection  (b) Halman  (c) Chaubatti  (d) Beladi Madhu

(56) Cider, a fermented wine is prepared from ________.
   (a) Peach  (b) Apple  (c) Pear  (d) Almond

(57) The basic chromosome number of pear is ________.
   (a) 27  (b) 17  (c) 7  (d) 34

(58) Self unfruitful variety of peach is ________.
   (a) Sharbati  (b) July Elberta  (c) Shan-e-Punjab  (d) J H Hale (P. T. O.)
(59) The ploidy level of all commercial strawberry cultivars is _______.
   (a) Diploid (b) Octaploid (c) Hexaploid (d) Triploid

(60) Apple scab is caused by _______.
   (a) Bacteria (b) Fungus (c) MLO's (d) Virus

(61) Punjab Gold and Punjab Nectar are varieties of _______ fruit.
   (a) Apple (b) Persimmon (c) Apricot (d) Pear

(62) T-bar system of training is followed in _______.
   (a) Chestnut (b) Plum (c) Kiwi (d) Strawberry

(63) PTB is an important harvesting index in _______ crop.
   (a) Hazel nut (b) Walnut (c) Peach (d) Blueberry

(64) Kakea, Kau and Keaau are popular cultivars of _______ crop.
   (a) Strawberry (b) Macadamia (c) Walnut (d) Pecan nut

(65) Makhdoom and Parbat are varieties of _______ crop.
   (a) Almond (b) Walnut (c) Apricot (d) Pear

(66) Prunus avium is the botanical name of _______.
   (a) Sour cherry (b) Sweet cherry (c) Asiatic pear (d) European Pear

(67) Red Haven is a commercial cultivar of which of the following fruit?
   (a) Peach (b) Plum (c) Apple (d) Hazel nut

(68) Moorpark is a variety of _______.
   (a) Apricot (b) Apple (c) Pear (d) Cherry

(69) Mulching is an important cultural operation in _______ crop.
   (a) Apple (b) Pear (c) Cherry (d) Starwberry

(70) Govind, Roopa and Pratap Selection are varieties of _______.
   (a) Apricot (b) Almond (c) Walnut (d) Pecan nut

(71) Amri is an indigenous variety of _______.
   (a) Pear (b) Apple (c) Almond (d) Walnut

(72) The type of fruit in cherry is _______.
   (a) Drupe (b) Sorosis (c) Pome (d) Berry

(73) Paradox is a rootstock for _______.
   (a) Almond (b) Walnut (c) Peach (d) Plum

(74) Fruit crop suitable for cold desert of cold arid zone is _______.
   (a) Apple (b) Apricot (c) Cherry (d) Pecan

(75) In India Kiwi was first planted at _______.
   (a) Solan, H.P. (b) Lal bagh, Bangalore (c) Mashobra, Shimla (d) FRI Dehradun

(76) Pollination through wind occurs in _______.
   (a) Walnut (b) Apricot (c) Apple (d) Pear

(77) Hazelnut is also known as _______.
   (a) Filbert (b) Cobnut (c) Both of these (d) None of these

(78) Most of the temperate fruit crops are _______.
   (a) Self pollinated (b) Cross pollinated (c) Often cross pollinated (d) None of the above

(79) Baggughosh is inter-specific hybrid variety of _______.
   (a) Apple (b) Peach (c) Plum (d) Pear

(80) Which of the following is not a pome fruit?
   (a) Apple (b) Pear (c) Quince (d) Peach

**********

4
AGRICULTURAL UNIVERSITIES OF GUJARAT
1. Anand Agril. University, Anand
2. Junagadh Agril. University, Junagadh
3. Navsari Agril. University, Navsari
4. S.D. Agril. University, S.K. Nagar

Third Semester End Examination of B.Sc. (Hons.) Horticulture (Regular) Dec. 2015

PAPER -B (DESCRIPTIVE)

Course No. FRT 3.4
Title of the course: Temperate Fruits (1 + 1)
Date: 14/12/2015
Time: 14:30 To 17:00 Hrs.
Day: Monday
Marks: 40

Q. I (A) Give the production technology of strawberry in reference to
(a) Soil and Climate (d) Nutrient Management
(a) Variety (e) Yield and Harvesting
(b) Propagation

(B) Define/Explain the following terms (Any five)
(i) Temperate Fruits (v) Drupe
(ii) Plant Growth Regulators (vi) Pollinizer
(iii) Spur (vii) Chilling hours
(iv) Sod culture

Q. II (A) Write short notes on (Any two)
(a) Classification of temperate fruits based on fruit morphology
(b) Causes and management of fruit drop in apple
(c) Training in peach
(d) Harvesting and yield in walnut

(B) Differentiate between (Any two)
(a) Training Vs Pruning
(b) Scarification Vs Stratification
(c) Tropical Vs Temperate Fruits

Q. III (A) Explain the following (Any two)
(a) Raising of seedling rootstock in apple
(b) Pollination in cherry
(c) Maturity indices of peach
(d) Bitter pit in apple

(P.T.O.)
(B) Give appropriate reasons for the following (Any five)
(a) Apple is not commercially grown in Gujarat
(b) Nitrogen is applied in two split applications.
(c) Pollinizers are not required in apricot
(d) Grading is beneficial to growers
(e) Stratification is needed for raising of seedling rootstocks in temperate fruits
(f) Fruit thinning is needed in pear.

Q. IV Answer as directed (Any ten)
(a) Enlist any five low chilling varieties in peach
(b) Enlist any five pollinizing varieties in cherry
(c) Enlist any five clonal rootstocks in apple
(d) Enlist the different planting methods in strawberry
(e) Give the chemical fertilizer dose of almond
(f) Give the pollinating agent for kiwi and walnut
(g) Give the chilling hours in apricot
(h) Enlist the major two groups of persimmon varieties
(i) Enlist clonal rootstocks of almond
(j) Enlist the types of growth curve in fruit crops with examples
(k) Enlist the different group of cherry with examples
(l) Give the importance of horticultural classification

**************
University Seat No: ___________________ Center: ___________________
Registration No.: ___________________ Sign. of Supervisor: ___________________

AGRICULTURAL UNIVERSITIES OF GUJARAT
1. Anand Agricultural University, Anand
2. Junagadh Agricultural University, Junagadh
3. Navsari Agricultural University, Navsari
4. S. D. Agricultural University, S.K. Nagar

Third Semester End Examination of B. Sc. (Hons.) Horti. (Regular) – Dec-2015-Jan 2016

PART A: Objective

Course No.: FRT 3.6  Title of Course: Principles of Genetics & Cytogenetics (2+1)
Date : 16/12/2015  Time : 14.30 to 15.15 hrs.
Day : Wednesday  Marks : 40.00

Marks Obtained: ___________________

Q. 1: Select an appropriate answer and tick mark (v)

1. The theory of acquired characters was proposed by
   (a) Wolff  (b) Weismann  (c) Lamark  (d) De Vries
2. An individual having two copies of the same allele is called
   (a) Homozygous  (b) Allomorph  (c) Heterozygous  (d) Hemizygous
3. Shape of chromosome is determined by the position of
   (a) Centromere  (b) Chromomere  (c) Telomere  (d) All of these
4. Supplementary gene action ratio is
   (a) 9:3:4  (b) 9:6:1  (c) 15:1  (d) 9:7
5. Mendel was worked with
   (a) Pea  (b) Cow pea  (c) Garden pea  (d) Pigeon pea
6. The value of crossover may vary from
   (a) 0-100%  (b) 0-50%  (c) 50-100%  (d) 0-25%
7. If the linkage is present, the parental frequency in F₂ population is
   (a) High  (b) Low  (c) Moderate  (d) NIL
8. Expression of both alleles in F₁ is known as
   (a) Co-dominance  (b) Complete dominance  (c) Incomplete dominance  (d) Over dominance
9. A cross of F₁ with any parents is called as
   (a) Direct cross  (b) Top cross  (c) Test cross  (d) Backcross
10. The genotypic monohybrid ratio is
   (a) 3:1  (b) 1:2:1
   (c) 9:3:3:1 (d) 1:4:6:4:1

11. Meiosis gives
   (a) Two haploid cells  (b) Four diploid cells
   (c) Four haploid cells  (d) Two diploid cells

12. Which individual is called as universal receptor?
   (a) 'A' blood group  (b) 'O' blood group
   (c) 'B' blood group  (d) 'AB' blood group

13. If there are 12 single-chromatid chromosomes in a cell in G2 of the cell cycle, what is the diploid number of chromosomes for the organism?
   (a) 6  (b) 24
   (c) 12  (d) 48

14. Semi-conservative replication model for DNA replication was proposed by
   (a) Benzer  (b) Waldayer
   (c) Mendel  (d) Watson and Crick

15. Normal male have
   (a) One barr body  (b) No barr body
   (c) Two barr body  (d) Three barr body

16. The genetic material found in plants is
   (a) Enzyme  (b) DNA
   (c) Protein  (d) RNA

17. Chemicals similar to DNA bases are called
   (a) Base analogue  (b) Chemical DNA
   (c) EMS  (d) Alkylating mutagen

18. 2n-1-1 condition represents
   (a) Monosomic  (b) Double nullisomic
   (c) Nullisomic  (d) Double monosomic

19. Who is the father of genetics?
   (a) Wolff  (b) Weismann
   (c) Lamark  (d) Mendel

20. Colour blindness is inherited through
   (a) Male  (b) Male and female
   (c) Female  (d) None of the above

21. Crossing over takes place at
   (a) Single strand stage  (b) Three strand stage
   (c) Double strand stage  (d) Four strand stage

22. A group of genes which are present in one chromosome is called as
   (a) Linkage map  (b) Linkage group
   (c) Pleiotropy  (d) Chromosome map

23. Mendel failed to confirm his findings when he worked with
   (a) Cowpea  (b) Drosophila
   (c) Hawk weed  (d) Maize

24. The genes which are present on Y chromosome is known as
   (a) Duplicate gene  (b) Holandric gene
   (c) Recessive gene  (d) Epistatic gene

25. When two genes are linked, the segregation ratio of a test cross progeny deviates significantly from
   (a) 9:3:3:1 ratio  (b) 1:1:1:1 ratio
   (c) 3:1 ratio  (d) 15:1 ratio

26. A centromere located close to one end is called as
   (a) Acrocentric chromosome  (b) Holocentric chromosome
   (c) Tricentric chromosome  (d) Polycentric chromosome
27. Reciprocal differences are observed in
   (a) Mendelian inheritance  (b) Sex linkage
   (c) Cytoplasmic inheritance (d) Nuclear inheritance

28. In *Drosophila*, X/A = 0.50 gives rise to
   (a) Super male  (b) Male
   (c) Super female (d) Female

29. An alternative form of a gene is called as
   (a) Gene  (b) Tissue
   (c) Cell  (d) Allele

30. Zygotic situation “RRTT” is called as
   (a) Homozygous  (b) Homogeneous
   (c) Heterozygous (d) Heterogeneous

31. For plant height character parental genotypes AA = 20 cm and aa = 10 cm and
    hybrid Aa = 20 cm height. The situation is called as
    (a) Co-dominance  (b) Incomplete dominance
    (c) Complete dominance (d) Over dominance

32. The maximum length of chromosome is observed during
    (a) Prophase  (b) Anaphase
    (c) Metaphase  (d) Telophase

33. The most common method of detecting linkage is
    (a) Back cross  (b) Poly cross
    (c) Top cross  (d) Test cross

34. Nucleotide =
    (a) Nucleoside + Phosphate group  (b) Deoxyribose + Nitrogenous base +
       Phosphate
    (c) Ribose + Nitrogenous base + Phosphate
    (d) Both (a) and (b)

35. Cytoplasmic male sterility is governed by
    (a) Mitochondrial gene  (b) Chloroplast gene
    (c) Nuclear gene  (d) Both (a) & (b)

36. Who proposed double-helix model of DNA structure?
    (a) Winge  (b) Dustin
    (c) Watson and Crick  (d) Punnet

37. The monoploid and haploid chromosomes are same in
    (a) True haploid species  (b) True diploid species
    (c) True Triploid species (d) Tetraploid species

38. Okazaki fragments are formed due to synthesis of DNA in direction
    (a) 5' - 3'  (b) 3' - 5'
    (c) Both (a) and (b) (d) None of above

39. In mitotic division, how many divisions required to produce 64 cells?
    (a) Four  (b) Five
    (c) Three  (d) Six

40. This relationship between DNA, RNA and protein is known
    (a) “Okazaki” fragments  (b) Central Dogma
    (c) Replication  (d) None of the above

41. An individual showing both male and female characteristics in the body is
called
    (a) Gynandromorph  (b) Intersex
    (c) Bisexual  (d) Sex reversion

42. The example of multiple allele is
    (a) Wings of *Drosophila*  (b) Skin colour in rabbit
    (c) Blood group in man  (d) All of the above
43. The linkage of dominant allele with that of the recessive allele (Ab or aB) is known as
(a) Repulsion
(b) Crossing over
(c) Coupling
(d) Interference

44. A single gene govern many characters called as
(a) Pleiotropism
(b) Isoallele
(c) Pseudolinele
(d) Multiple allele

45. Sex chromosomes are also called
(a) Allosomes
(b) Autosomes
(c) Ribosomes
(d) None of the above

46. The right handed coiling pattern of shell in snail is called as
(a) Dextral
(b) Sinistral
(c) Both (a) and (b)
(d) Matrix

47. During cell division spindle fibres attach to which of the following?
(a) Telomere
(b) Nucleosome
(c) Chromomere
(d) Centromere

48. Sex linked genes are located only on
(a) X - chromosome
(b) Y - chromosome
(c) Both a & b
(d) None of the above

49. Incomplete dominance was observed in
(a) Four o'clock plant
(b) Pea plant
(c) Wheat plant
(d) Paddy plant

50. Which is the correct sequence in cell cycle?
(a) S-G2-G1-M
(b) G2-S-G1-M
(c) G1-S-G2-M
(d) S-G1-M-G2

51. A Colour blind person cannot differentiate between
(a) Red and yellow colour
(b) Red and Green colour
(c) Red and Blue colour
(d) Green and Blue colour

52. In a DNA molecule, thymine always pairs with
(a) Adenine
(b) Guanine
(c) Cytosine
(d) Urelic

53. Who first reported DNA as genetic material?
(a) Griffith
(b) Hershy and Chase
(c) Avery, MacCleod & McCarty
(d) Benzer

54. Basic chromosome number is represented by
(a) x
(b) n
(c) 2n
(d) 3n

55. How many characters were studied by Mendel?
(a) Five
(b) Six
(c) Seven
(d) Eight

56. Tendency of one crossover to enhance the chance of another crossover in its adjacent region is known as
(a) Interference
(b) Coefficient of coincidence
(c) Linkage
(d) Recombinant frequency

57. How many hydrogen bonds join guanine and cytosine in a DNA molecule?
(a) One
(b) Two
(c) Three
(d) Four

58. Centromere is also known as
(a) Secondary constriction
(b) Primary constriction
(c) Chromomere
(d) All of these

59. Baldness character expresses in woman only when it is in
(a) Dominant homozygous state
(b) Recessive homozygous state
(c) Dominant heterozygous state
(d) hemizygous state
60. Male and female reproductive organs are found in the same flower is known as
   (a) Bisexual flower  (b) Hermaphrodite flower
   (c) Both (a) and (b) (d) Monocious flower

61. Genetic Balance Theory was proposed by
   (a) Bridges  (b) Flemming
   (c) Morgan  (d) Strausburger

62. Which one is the test cross?
   (a) TT X TT  (b) TT X Tt
   (c) Tt X Tt  (d) Tt X tt

63. Loss of a segment of a chromosome from the intermediate portion or between
    telomere and centromere is known as
    (a) Interstitial deletion  (b) Duplication
    (c) Terminal deletion  (d) Translocation

64. The gene having masking effect is called
    (a) Modifier gene  (b) Enhancer gene
    (c) Epistatic gene  (d) Hypostatic gene

65. A sex linked gene is inherited from grand father to grand son through daughter is
    called as
    (a) Sex mosaic  (b) Sex reversal
    (c) Cris cross inheritance  (d) Gynandromorphus

66. A character which is govern by several genes is known as
    (a) Qualitative character  (b) Quantitative character
    (c) Oligogenic character  (d) Major gene character

67. Synapsis occurs in
    (a) Leptotene  (b) Pachytene
    (c) Zygotene  (d) Diakinesis

68. When centromere is involved in the inversion, it is known as
    (a) Paracentric  (b) Duplication
    (c) Pericentric  (d) Translocation

69. DNA synthesis is taking place in
    (a) G1 stage  (b) S stage
    (c) G2 stage  (d) Mitotic stage

70. Genes which show very high rates of mutation as compared to other genes is
    (a) Mutator gene  (b) Muton
    (c) Mutable genes  (d) Mutant

71. DNA is replicated through
    (a) Dispersive method  (b) Conservative method
    (c) Semi conservative method  (d) Non-conservative method

72. If one strand of DNA has base sequence CATTAGCAT, then its mRNA will
    have base sequence
    (a) GTAATCGTA  (b) GTAATTGATE
    (c) TAGATGGTA  (d) GUAUACGUA

73. Artificial pollination between plants having contrasting genes is called as
    (a) Pollination  (b) Crossing
    (c) Fertilization  (d) Emasculation

74. Multiple factor hypothesis was given by
    (a) Nilson-Ehle  (b) Morgan
    (c) Bateson and Punnett  (d) Bateson

75. Phenotype is
    (a) Genotype + Environment  (b) Environment
    (c) Genotype  (d) All of the above
76. Division of chromosome is known as  
   (a) Karyokinesis  (b) Diakinesis  
   (c) Cytokinesis  (d) Both a & b  
77. The chemical EMS responsible for mutation comes under  
   (a) Alkylating agents  (b) Base analogues  
   (c) Acridine Dyes  (d) Others  
78. Quantitative inheritance exhibits  
   (a) Continuous variation  (b) Discontinuous variation  
   (c) Both of above  (d) None of the above  
79. Mitosis occurs in  
   (a) Shoot tip  (b) Leaf axis  
   (c) Root tip  (d) All of the above  
80. The first case of cytoplasmic inheritance was reported by Correns in 1909 in  
   (a) Garden pea  (b) Four o’clock plant  
   (c) Maize  (d) Sorghum
University Seat No: ____________________ Registration No: ____________________

AGRICULTURAL UNIVERSITIES OF GUJARAT

1. Anand Agricultural University, Anand
2. Junagadh Agricultural University, Junagadh
3. Navsari Agricultural University, Navsari
4. S. D. Agricultural University, S.K. Nagar

Third Semester End Examination of B. Sc. (Hons.) Horti. (Regular) – Dec-2015-Jan 2016

PART B : Subjective

<table>
<thead>
<tr>
<th>Course No.: FRT 3.6</th>
<th>Title of Course: Principles of Genetics &amp; Cytogenetics (2+1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 16/12/2015</td>
<td>Time : 15.15 to 17.00 hrs.</td>
</tr>
<tr>
<td>Day : Wednesday</td>
<td>Marks : 40.00</td>
</tr>
</tbody>
</table>

Q.1 (A) Define/Explain of the followings (Any TEN) (5.0)

1. Genetics
2. Cell
3. Cytokinesis
4. Crossing over
5. Holokinetich chromosome
6. Homozygous
7. Sex mosaic
8. Reciprocal cross
9. Character
10. Deletion
11. Mutation
12. Locus

(B) Enlist the Laws of Inheritance given by Mendel and explain any one of them with suitable example. (5.0)

Q.2 (A) Differentiate between the followings (Any FIVE) (5.0)

1. Mitosis
2. Meiosis
3. Heterochromatin
4. Euchromation
5. Linkage
6. Crossing over
6. Autosomes
7. Allosomes
6. Cytoplasmic DNA
7. Nuclear DNA
6. Sex linked characters
7. Sex limited characters

(B) Write short notes (Any TWO) (5.0)

1. Chromosome morphology
2. Multiple factor hypothesis
3. Semi-conservative replication of DNA
4. Polyploidy

Q.3 Do as directed (Any FIVE) (10.0)

1. Enlist the exceptions to Mendal’s Law.
2. Give the classification of chromosomes as per position of centromere.
3. Draw the diagram of Metaphase I and Anaphase II with 2n=6.
4. Enlist the characters studied by Mendel.
5. Give different types of gene interaction with its ratio.
6. Give the classical examples of multiple allelism.
7. Draw the “U” triangle of Brassica.
8. Draw a diagram of double helical structure of DNA.

Q.4 (A) Prove that DNA as a genetic material with suitable example. (6.0)

(B) Write the gametes of the following genotypes. (4.0)

1. AaBbCc
2. AAbbCc
3. AaBbCC
4. aaBbCC

***********************
Q.1 Tick mark (✓) most appropriate option from the following.

Q.1. Vegetables neutralize _____ formed during the digestion of meat and other fatty foods.
   a) bases    b) acids    c) salts    d) none of these

Q.2. Pusa Mukta and Pusa Ageti are popular cultivars of _____ crop.
   a) Cauliflower  b) Chinese cabbage  c) Beet root  d) Cabbage

Q.3. KnolKhol is also known as
   a) Khol rabi  b) Savoy cabbage  c) Cauliflower  d) Red cabbage

Q.4. The name Brussels’ sprouts gets from the name of Brussels city in _____.
   a) Italy  b) Europe  c) Australia  d) Belgium

Q.5. Brown-rot or red-rot disorder in cauliflower is caused due to _____ deficiency.
   a) Boron  b) Molybdenum  c) Zinc  d) Iron

Q.6. Which type of broccoli is most nutritive?
   a) Purple coloured  b) White coloured  c) Green coloured  d) None of the above

Q.7. Lettuce is grown for its edible _____ which can be cooked or eaten raw in salads.
   a) Leaves  b) Heads  c) Both A & B  d) None of these

Q.8. Which of the following imparts protection against sun stroke?
   a) Tomato  b) Watermelon  c) Onion  d) Cucumber

Q.9. Delayed harvesting in radish may cause
   a) Forking  b) Deformed roots  c) Pithiness  d) All of these

Q.10. Much hoeing is not advisable in carrot as the smell of the leaves attracts
    a) Wire worm  b) Eel worm  c) Carrot fly  d) Aphids
Q.11. Thinning is an important cultural operation in ________.
   a) Radish
   b) Beet root
   c) Carrot
   d) Pea

Q.12. The maturity of pea is tested mechanically with a ________.
   a) Anemometer
   b) Tendometer
   c) Refractometer
   d) Tensiometer

Q.13. Asparagus is grown for its soft, tender shoots, known as "_______".
   a) rhizomes
   b) petioles

Q.14. Crimson Cherry is a variety of
   a) Rhabarb
   b) Brussel sprouts
   c) Asparagus
   d) Sprouting Broccoli

Q.15. IIHR headquarter is located at
   a) Kasargod
   b) Calicut
   c) Kottayan
   d) Bangaluru

Q.16. The edible portion of cabbage which gives economic yield is called ________.
   a) Leaf
   b) Head
   c) Stem
   d) Root

Q.17. Which of the following is not a cole crop
   a) Kale
   b) Cabbage
   c) Sprouting Broccoli
   d) Turnip

Q.18. When a few thin leaves protrude from cauliflower curds, it is known as
   a) Blanching
   b) Browning
   c) Whiptail
   d) Leafiness

Q.19. Edible part of Knol Khol is known as
   a) Curd
   b) Head
   c) Knob
   d) Leaves

Q.20. The edible portion of Brussels' sprouts is ________.
   a) Leaves
   b) Roots
   c) Buds
   d) None of these

Q.21. Chinese cabbage is grown for its edible ________ which can be cooked or eaten as raw in salads.
   a) Stem
   b) Seeds
   c) Roots
   d) Leaves

Q.22. Spinach belongs to the family
   a) Cruciferae
   b) Chenopodiaceae
   c) Compositae
   d) Convolvulaceae

Q.23. ________ is a physiological disorder of lettuce in which margins of inner leaves show burning, particularly in mature heads.
   a) Blindness
   b) Hollow stem
   c) Whiptail
   d) Tip burn

Q.24. The principal ingredient in allicin is ________ gives true garlic odour.
   a) Dimethyl disulphide
   b) Diallyl disulphide
   c) Isothiocyanate
   d) None of thes
Q.25. Purple blotch is an important disease of
   a) Palak   c) Garlic
   b) Onion   d) Lettuce
Q.26. Rat-tail radish is grown for its
   a) Long thin pod   c) Tender roots
   b) Shoots   d) None of these
Q.27. The colour of the outer skin of onion bulbs is due to ________.
   a) Quercetin   c) Myrcetin
   b) Allicin   d) Malvalin
Q.28. Carrot belongs to which family?
   a) Apiaceae   c) Leguminosae
   b) Chenopodiaceae   d) Alliaceae
Q.29. Botanical name of turnip is
   a) Raphanus sativus L.   c) Beta vulgaris L.
   b) Allium sativum L.   d) Brassica rapa L.
Q.30. Beet root contains high percentage of ________.
   a) Fat   c) Protein
   b) Sugar   d) None of these
Q.31. Garlic is a multiple bulb comprising of small bulblets known as
   a) Bulb   c) Clove
   b) Tuber   d) Rhizome
Q.32. Generally, red onions are ________ pungent than white onions.
   a) More
   b) Lees   d) All of these
Q.33. Pungency in radish increases with
   a) Delayed sowing   c) Maturity
   b) Early sowing   d) Long dry conditions
Q.34. Type of inflorescence in carrot is
   a) Spike   c) Umbel
   b) Panicle   d) Catkin
Q.35. Brown rot/Black rot in turnip is due to the deficiency of
   a) Boron   c) Nitrogen
   b) Calcium   d) Copper
Q.36. Multigerm seed is found in case of
   a) Onion   c) Tomato
   b) Carrot   d) Beet root
Q.37. Which of the following vegetables is the richest source of protein
   a) Pea   c) Pointed gourd
   b) Fenugreek   d) Cucumber
Q.38. *Vicia faba* is the botanical name of
   a) Broad bean   c) Pea
   b) Guar   d) Winged bean
Q.39. Which practice is done in asparagus for getting white spears.
   a) blanching   c) staking
   b) pinching   d) thining
Q.40. Most serious disease of vegetable seedlings at nursery stage
   a Root rot  c Wilt
   b Damping off  d none of these

Q.41. Cabbage head is a modification of
   a Stem  c Leaves
   b Root  d Flower

Q.42. The edible part of cauliflower is known as
   a Head  c Curd
   b Leaf  d Knob

Q.43. The edible part of broccoli is
   a Curd  c Flower bud
   b Flower stalk  d Leaves

Q.44. Which of the following is known as palak
   a Amaranth  c Basella
   b Indian spinach  d Methi

Q.45. _______ is a non bulb forming crop and its stems and green leaves are used as salad.
   a Lettuce  c Garlic
   b Onion  d Leek

Q.46. _______ is the harvest index of onion.
   a Bolting  c Cracking of soil
   b Neck fall  d All the above

Q.47. Garlic belongs to which species
   a A. cepa  c A. porrum
   b A. sativum  d None of the above

Q.48. Japanese White is a variety of
   a Radish  c Turnip
   b Carrot  d None of these

Q.49. Forking in carrot is due to
   a Undecomposed manure  c Lack of moisture
   b Excessive nitrogen  d Delayed sowing

Q.50. Appearance of alternating light and dark red concentric circles in beetroot is called.
   a Curding  c Tuberization
   b Heading  d Zoning

Q.51. Edible potted variety of pea -
   a JP-19  c Oregan Sugar
   b Sylvia  d All of these

Q.52. _______ operation in broad beans encourages the formation of pods.
   a Blanching  c Pinching
   b Staking  d none of these

Q.53. The botanical name of globe artichoke is _______.
   a Vigna unguiculata (L.) Walp  c Cynara scolymus L.
   b Rheum rhabarbarum L.  d Asparagus officinalis Linn.

Q.54. The edible part of rhubarb is known as_______.
   a Leaves  c Flowers
   b Petioles  d Pods
Q.55. Which one of the following soil types is best for vegetable cultivation?
   a) Sandy  b) Clay  c) Sandy loam  d) Clay loam

Q.56. Premature seeding or bolting in cabbage is a very serious physiological disorder due to too
   _______ during growing period.
   a) Cold weather  b) Rainy weather  c) Hot weather  d) None of these

Q.57. India ranks _______ in vegetable production in the world.
   a) First  b) Second  c) Third  d) Fourth

Q.58. All cole crops are reportedly derived from
   a) Cole wort  b) Cabbage  c) Kale  d) Cauliflower

Q.59. Cauliflower is a _______ crop.
   a) Cross-pollinated  b) Self-pollinated  c) Often cross-pollinated  d) All of these

Q.60. For a well-balanced diet of humans, about _______ g vegetable is needed.
   a) 300 g  b) 400 g  c) 500 g  d) 600 g

Q.61. Pusa Early Synthetic is a popular cultivar of _______ crop.
   a) Cauliflower  b) Chinese cabbage  c) Beet root  d) Cabbage

Q.62. The physiological disorder in cauliflower occurs due to the deficiency of Mo is known as
   _______.
   a) Blindness  b) Hollow stem  c) Whiptail  d) Leafyness or bract

Q.63. Riciness is physiological disorder associated with
   a) Cabbage  b) Cauliflower  c) Broccoli  d) Chinese cabbage

Q.64. Diamond back moth is a serious pest in which of the following crop?
   a) Tomato  b) Onion  c) Chili  d) Cauliflower

Q.65. The main cause of leafiness in cauliflower is _______ temperature.
   a) Low  b) Moderate  c) High  d) All of these

Q.66. Seed rate of onion is _______.
   a) 8-10 kg/ha  b) 20-25 kg/ha  c) 2-5 kg/ha  d) 5-7 kg/ha

Q.67. Which of the following is a biennial vegetable?
   a) Tomato  b) Brinjal  c) Onion  d) Okra

Q.68. An appetizing drink is prepared from carrot roots is known as ‘_______’.
   a) Squash  b) Appetizer  c) Kanji  d) All of these
Q.69. Splitting of root in carrot is physiological disorder is usually caused by a fluctuating supply of
   a) nitrogen  c) Zinc
   b) water     d) FYM
Q.70. Beet root belongs to the family
   a) Brassicaceae  c) Asteraceae
   b) Chenopodiaceae d) Convolvulaceae
Q.71. Asparagus belongs to family
   a) Liliaceae  c) Brassicaceae
   b) Asteraceae  d) None of these
Q.72. Globe artichoke belongs to family
   a) Liliaceae  c) Brassicaceae
   b) Asteraceae  d) None of these
Q.73. Rhubarb is a species of plant in the family
   a) Fabaceae  c) Asteraceae
   b) Liliaceae  d) Polygonaceae
Q.74. Asparagus is a plant.
   a) Monocious  c) Hermaphrodite
   b) Dioecious  d) None of these
Q.75. The Indian Institute of Vegetable Research is located at
   a) A. Ranchi  c) Varanasi
   b) B. Delhi    d) Bengaluru
Q.76. Tip burn in lettuce is due to
   a) Higher temperature  c) Delayed harvest
   b) Calcium deficiency  d) All the above
Q.77. Pusa Kesar is an improved cultivar of vegetable crop.
   a) Beet root   c) Radish
   b) Carrot     d) None of these
Q.78. Poor colour development in beetroot is due to
   a) High temperature  c) High humidity
   b) Low temperature d) All of the above
Q.79. Black rot is a most common disease of
   a) Broccoli  c) Tomato
   b) Cabbage    d) Potato
Q.80. Nasik Red is a popular cultivar of crop.
   a) Cauliflower  c) Beet root
   b) Onion       d) Cabbage

***************
Q. 1 Discuss the scientific cultivation practices of CAULIFLOWER OR CARROT with respect to following heads  
1. Soil and climatic requirement  
2. Important varieties  
3. Seed rate and method of sowing  
4. Manures and fertilizers application  
5. Important cultural operations  
6. Harvesting and yield  
7. Physiological disorders and their management  
8. Enlist the major insect, pest and diseases  

Q. 2 Explain the following (Any Five)  
1. Scope of vegetable growing  
2. Seed production methods in onion  
3. Thinning, weeding and earthing up in radish  
4. Blanching in leek  
5. Methods of planting in garlic  
6. Soil and climatic requirement of beet root  

Q. 3 Write short note (Any Five)  
1. Constraints of vegetable production  
2. Heart or crown rot disorder in beet root  
3. Pithiness in radish  
4. Bolting in cabbage  
5. Curing and storage of onion  
6. Storage of garlic  

Q. 4 A Give the scientific reasons (Any Six)  
1. Stalking is an essential operation in pea/ broad bean  
2. Thinning is an essential operation in beet root  
3. Underground vegetable crops require light soil  
4. Nitrogen fertilizer should be applied in split in leafy vegetable crops  
5. Isolation distance should be maintain in seed production of vegetable crops  
6. Earthing up is an essential operation in beet root  
7. Bulb to seed method of seed production in onion produce quality seed  

B Do as directed (Any four)  
1. Give name of two reference books with author  
2. Enlist the important pests and diseases of onion  
3. Seed treatment in pea  
4. Give the difference between Indian spinach and spinach  
5. Harvesting of asparagus
AGRICULTURAL UNIVERSITIES OF GUJARAT

1. Anand Agricultural University, Anand 3. Junagadh Agricultural University, Junagadh
2. Navsari Agricultural University, Navsari 4. S. D. Agricultural University, S. K. Nagar

Third SEMESTER END EXAMINATION (REGULAR) - 2015
B.Sc. (Hons.) HORTICULTURE
COURSE NO. - FLR 3.2 TITLE: COMMERCIAL FLORICULTURE (2+1)

PAPER-A (OBJECTIVE)

Date: 18/12/2015 Time: 14:30 To 15.15 Hrs.
Day: Friday Marks: 40

Q. 1 Choose the appropriate option and write in the bracket given in front of the question.

1. Floribunda is the cross between ............
   a  HT x Dwarf polyantha       b  HT x Grandiflora
   c  Hybrid perpetual x Tea roses d  Polyantha x China roses

2. Dalma and Cabana are the varieties of .................
   a  Bird of Paradise       b  Heliconia
   c  Anthurium           d  Gerbera

3. Which of the following is the single type tuberose variety ?
   a  Prajwal       b  Vaibhav
   c  Swarna Rekha       d  All

4. Carnation is a ............ plant.
   a  Short day       b  Long day
   c  Day neutral       d  None

5. Narcissus is also known as ............
   a  Daffodil       b  Nargis
   c  Lilium           d  both a and b

6. Pusa Narangi Gainda is a variety of
   a  Marigold       b  China aster
   c  Tuberose           d  Chrysanthemum

7. Veni and Gajra can be prepared with ............ flowers
   a  Gladiolus       b  Anthurium
   c  Marigold           d  Jasmine (P.T.O.)
8. Most important floriculture export promoting agency in India is _____________.
   a) APEDA  b) ICAR  c) IARI  d) IIHR

9. ________ is leading loose flower producing state in India.
   a) Punjab  b) Tamil Nadu  c) West Bengal  d) Gujarat

10. Who among the following is a famous rose scientist?
    a) Dr. G. S. Randhawa  b) Dr. K. L. Chadha  c) Dr. B. P. Pal  d) None of these

11. *Jasminum* belongs to ________ family.
    a) Iridaceae  b) Asteraceae  c) Oleaceae  d) Liliaceae

12. The orchids grown on trees or shrubs are known as
    a) Lithophytes  b) Terrestrial  c) Epiphytes  d) Saproxylophytes

13. The gamma induced mutant cultivar of rose is
    a) Abhisarika  b) La France  c) Dr.B.P.Pal  d) Happiness

14. Pyrethrum is extracted from which Chrysanthemum species?
    a) *maximum*  b) *indicum*  c) *cinerarifolium*  d) *sinense*

15. Rose hip is a good source of ________
    a) Vit-C  b) Vit-D  c) Vit-A  d) Vit-E

16. Commercial propagation method for hybrid tea rose is ________
    a) Layering  b) T-budding  c) Cutting  d) Grafting

17. Fusarium wilt is an important disease of ________
    a) Gladiolus  b) Rose  c) China Aster  d) Tuberose

18. Gerbera is also known as ________
    a) African daisy  b) Transvaal daisy  c) Barberton Daisy  d) All of these

19. Which of the following is suitable desiccant for flower drying?
    a) Silica gel  b) Boric acid  c) Sand  d) All of these

20. The fastest method for drying of ornaments is ________
    a) Microwave oven drying  b) Sun drying  c) Hot air oven drying  d) Freeze drying

21. The largest international flower market is located at ________
    a) Balgium  b) New York  c) Almseer  d) New Delhi

22. Which of the following is the tropical orchid?
    a) *Vanilla*  b) *Dendrobium*  c) *Cattleya*  d) *Oncidium*
23. Tuberose belongs to family
   a. Oleaceae c. Amaryllidaceae
   b. Asteraceae d. Iridaceae
24. ______ ranks first among all the ornamental bulbous plants.
   a. Tulip c. Lilium
   b. Dahlia d. Tuberose
25. Which country is largest exporter of cut greens?
   a. India c. Italy
   b. The Netherlands d. France
26. Bird of Paradise belongs to the family__________.
   a. Musaceae c. Amaryllidaceae
   b. Oleaceae d. Heliconiaceae
27. Genus Gerbera was coined in the honour of German naturalist__________.
   a. Traugott Gerber c. Carls Gerber
   b. Alfred Gerber d. William Traugott
28. Pinching is practiced in one of the following crop.
   a. Gladiolus c. Chrysanthemum
   b. Tuberose d. Tulip
29. The origin of Bird of paradise is__________.
   a. South Africa c. India
   b. Brazil d. U.S.A.
30. Which of the following is largest family of flowering plants?
   a. Roseaceae c. Iridaceae
   b. Orchidaceae d. Oleaceae
31. Which is an oldest fragrant flower cultivated by men?
   a. Jasmine c. Tuberose
   b. Spider lily d. Rose
32. The family of China aster is__________.
   a. Malvacceae c. Oleaceae
   b. Amaryllidaceae d. Asteraceae
33. The full form of 8- HQS is__________.
   a. 8- Hydroxy quinoline citrate c. 8- Hydroxy quinoline sulphate
   b. 8- Hydroxy quinoline salt d. 8- Hydroxy quinoline sulphur
34. ‘Cracker Jack’ is a variety of__________.
   a. Jasmine c. China Aster
   b. Marigold d. Rose
35. Orchids grown on rocks are known as__________.
   a. Lithophytes c. Terrestrial
   b. Epiphytes d. Saprophytes
36. The head quarter of NHB is located at__________.
   a. Gurgaon c. Delhi
   b. Ahmedabad d. Mumbai
37. ‘American Beauty’ is a variety of__________.
   a. Gladiolus c. China aster
   b. Marigold d. Rose

(P.T.O.)
38. Sleepiness is associated with flowers of _________.
   a. Gladiolus  
   b. Carnation  
   c. Rose  
   d. Tulip

39. Which of the following is commonly known as sword lily?
   a. Gladiolus  
   b. Daffodil  
   c. Tuberose  
   d. Iris

40. ________ can be used to decorate the office or home from months to years.
   a. Cut flowers  
   b. Cut foliage  
   c. Dry flowers  
   d. All of above

41. Gladiolus is propagated by ___________.
   a. Corm  
   b. Rhizome  
   c. Bulb  
   d. Tuber

42. Which of the following is not used for making garlands?
   a. Marigold  
   b. Gladiolus  
   c. Crossandra  
   d. Chrysanthemum

43. The common name of canna is ___________.
   a. Indian shot  
   b. Indian glory  
   c. Indian star  
   d. Pride of India

44. Swollen stems used for storage of food and water produced by sympodial orchids are called _________.
   a. Bulbs  
   b. Pseudo bulbs  
   c. Keiks  
   d. None of these

45. Which is believed to be the first cultivar of hybrid Tea rose?
   a. Eiffel Tower  
   b. La France  
   c. Christian Dior  
   d. Gladiator

46. The centre of origin of tuberose is ___________.
   a. Mexico  
   b. China  
   c. South Africa  
   d. Italy

47. ____________ is also known as ‘Queen of East’.
   a. Chrysanthemum  
   b. Tulip  
   c. Rose  
   d. Carnation

48. Which of the following is considered as loose flower?
   a. Carnation  
   b. Jasmine  
   c. Tuberose  
   d. Gladiolus

49. ‘White Sim’ is a variety of ____________
   a. Gerbera  
   b. Tuberose  
   c. Carnation  
   d. Rose

50. Family of Jasmine is ____________
   a. Iridaceae  
   b. Oleaceae  
   c. Asteraceae  
   d. Caryophyllaceae

51. Dahlia is an example of ____________
   a. Shrub  
   b. Climber  
   c. Annual  
   d. Bulbous ornamental

52. Strelitzia spp. is botanical name of ____________.
   a. Tiger lily  
   b. Bird of paradise  
   c. Orchid  
   d. Heliconia
53. Calyx splitting is associated with flowers of _________________.
   a) Gladiolus  
   b) Carnation  
   c) Rose  
   d) Tulip  

54. *Lilium* spp. belongs to __________ family.
   a) Liliaceae  
   b) Iridaceae  
   c) Amaryllidaceae  
   d) Araceae  

55. Which type of chrysanthemum looks globular?
   a) Spider  
   b) Pompon  
   c) Anemone  
   d) Decorative  

56. A double flowered mutant cultivar of tuberose developed by N.B.R.I., Lucknow.
   a) Rajat Rekha  
   b) Suvarna Rekha  
   c) Vaibhav  
   d) Shringar  

57. ‘Keikis’ is a propagation structure found in __________.
   a) Canna  
   b) Orchid  
   c) Tulip  
   d) Carnation  

58. Which of the following species of *Jasminum* having yellow coloured flowers?
   a) *Jasminum grandiflorum*  
   b) *Jasminum curculatum*  
   c) *Jasminum sambac*  
   d) *Jasminum humile*  

59. Rose is national flower of __________.
   a) England  
   b) America  
   c) France  
   d) India  

60. Tuberose is commercially propagated by __________.
   a) Corm  
   b) Rhizome  
   c) Bulb  
   d) Seed  

61. Pruning time for *Jasminum sambac* is __________.
   a) Last week of January  
   b) Last week of December  
   c) Last week of November  
   d) None of above  

62. Basic chromosome number of Jasmine is __________.
   a) 13  
   b) 7  
   c) 26  
   d) 4  

63. Which country is producing the best quality of jasmine perfume?
   a) Bulgaria  
   b) Morocco  
   c) France  
   d) Spain  

64. Nishigandha/ Rajnigandha is a local name of __________.
   a) Tuberose  
   b) Chameli  
   c) Rose  
   d) Marigold  

65. Bending is important operation in greenhouse cultivation of __________.
   a) Rose  
   b) Chrysanthemum  
   c) Gerbera  
   d) Carnation  

66. Essential oil can be extracted from which of the following flower?
   a) Orchid  
   b) Tuberose  
   c) Chrysanthemum  
   d) Dahlia  

67. Endosperm is missing in seed of __________.
   a) Orchid  
   b) Anthurium  
   c) Heliconia  
   d) Rose  

(P.T.O.)
68. NRC for Orchid is located at…..
   a  Bangalore  c  Simla
   b  Sikkim  d  Assam

69. Epiphytic orchids grown on ………
   a  Rocks  c  Tree
   b  Water  d  Ground

70. The bulb of tuberose contains alkaloid ……… which cause vomiting.
   a  Lycorine  c  Vanillin
   b  Anthocyanin  d  None of these

71. Which of the following is the natural dry flower?
   a  Helichrysum  c  China aster
   b  Carnation  d  Amaranths

72. The pigment present in marigold is ……….
   a  Xanthophylls  c  Pelargonidins
   b  Carotenoids  d  Both a & b

73. Which of following is the location for first digital flower auction centre in country?
   a  Bangalore  c  Mumbai
   b  Calcutta  d  Delhi

74. Ikebana is ………. art of flower arrangement.
   a  Russian  c  Japanese
   b  Chinese  d  Indian

75. Dry flower contributes ……… to Indian floriculture industry.
   a  70%  c  50%
   b  80%  d  60%

76. Who was the master planner of Chandigarh?
   a  John Krafnter  c  Le Corbusier
   b  Perry Lethlean  d  Non of above

77. The area under floriculture in country is ………
   a  2.53 lakh ha  c  2.43 lakh ha
   b  2.93 lakh ha  d  2.83 lakh ha

78. Dahlia is the national flower of ………
   a  Japan  c  India
   b  Mexico  d  China

79. Which of following is the real eye catcher flower’s crop?
   a  Bird-of-paradise  c  Gerbera
   b  Rose  d  Tuberose

80. Phule Ganesh White is the variety of ………
   a  Bird-of-paradise  c  Gerbera
   b  China aster  d  Tuberose

**********
AGRICULTURAL UNIVERSITIES OF GUJARAT

1. Anand Agricultural University, Anand  
2. Navsari Agricultural University, Navsari  
3. Junagadh Agricultural University, Junagadh  
4. S. D. Agricultural University, S. K. Nagar

Third SEMESTER END EXAMINATION (REGULAR) - 2015
B.Sc. (Hons.) HORTICULTURE

COURSE NO. - FLR 3.2
TITLE: COMMERCIAL FLORICULTURE (2+1)

PART - B (SUBJECTIVE)

| Q.1 (A) What is green house? Give brief classification of green house structures and discuss the criteria of site selection for green house. | (5) |
| Q.1 (B) Provide the scientific cultivation practices for china aster OR gladiolus crop with respect to following heads. | (5) |
| 1. Soil and Climate |
| 2. Varieties/species |
| 3. Propagation method |
| 4. Manure and Fertilizer |
| 5. Harvesting and Yield |

| Q.2 (A) Write short notes (Any three) | (6) |
| Q.2 (B) Give appropriate reasons (Any four) | (4) |
| 1. Pinching in carnation |
| 2. Potpourri |
| 3. INM in marigold |
| 4. Classification of roses |
| 1. Pruning is an essential practice in commercial cultivation of rose. |
| 2. Harvesting at proper stage is very important for cut flowers. |
| 3. Marigold cultivation is preferred by most of the farmers. |
| 4. Pulsing treatment is necessary for preserving cut flowers. |
| 5. The cut ends of cut flowers after harvesting should immediately be kept in water. |

(P.T.O.)
Q.3 (A) Define or explain the following (Any four)
1. Commercial floriculture
2. Pinching
3. Grading
4. Gulkand
5. Wintering

(B) Differentiate the following (Any four)
1. Pruning V/s. Training
2. Sympodial orchids V/s. Monopodial orchids
3. African marigold V/s. French marigold
4. Hybrid Tea rose V/s. Floribunda rose
5. Standard V/s Spray carnation

Q.4 Answer in brief (Any ten)
1. Enlist physiological disorders of rose with its remedies.
2. Mention optimum harvesting stage for gerbera and bird of paradise.
3. Give full forms of GATT, IARI, NABARD and NBRI.
4. Enlist any four varieties of tuberose.
5. Mention causes for calyx splitting along with control measures.
7. Enlist the physiological disorders of orchids.
8. Write the importance and uses of gerbera.
9. Mention five important characteristics of dried ornamentals.
10. Enlist any four varieties of chrysanthemum.
11. Enlist the three species of Jasminum which are used for commercial cultivation in India.

***********
### PART-A (OBJECTIVE)

<table>
<thead>
<tr>
<th>Que. No.</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-20</td>
</tr>
</tbody>
</table>

**Q.1.** Tick mark (✓) most appropriate answer from the following multiple choice. (40)

1. Viroid was discovered by.....
   - a) Stanley
   - b) T. O. Diner
   - c) Iwanoski
   - d) Antony van Leeuwenhoek

2. Who is considered as “Father of Mycology”?
   - a) P. A. Micheli
   - b) Anton de Bary
   - c) E. J. Butler
   - d) Millardet

3. The time interval between inoculation and appearance of disease symptom is called as.....
   - a) Incubation period
   - b) Disease period
   - c) Control period
   - d) None of the above

4. Which one of the disease management methods is considered as the cheapest, easiest, safest and most effective?
   - a) Biocontrol
   - b) Chemical control
   - c) Resistant varieties
   - d) Cultural control

5. Exclusion of plant disease by legislation is known as.....
   - a) Plant quarantine
   - b) Disease resistance
   - c) Cultural control
   - d) Biological control

6. The initial invasion of a host by a pathogen is known as.....
   - a) Penetration
   - b) Infection
   - c) Virulent
   - d) Transmission

   - a) Potato
   - b) Rice
   - c) Maize
   - d) Wheat

8. Father of Plant Pathology of India is.....
   - a) E. J. Butler
   - b) R. S. Singh
   - c) P. A. Micheli
   - d) M. K. Patel

9. The dispersal of pathogens by wind is called as.....
   - a) Anemochory
   - b) Hydrochory
   - c) Zoochory
   - d) None of the above

10. More nitrogen application makes the host more.....
    - a) Resistant
    - b) Susceptible
    - c) Both (a) and (b)
    - d) None of the above
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
<th>Correct Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Bacteria enter in plants through...</td>
<td>a Wounds</td>
<td>d All of the above</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Lenticels</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c Stomata</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d All of the above</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Which of the following is a bacterial biocontrol agent?</td>
<td>a <em>Trichoderma viride</em></td>
<td>c <em>Trichoderma harzianum</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b <em>Bacillus subtilis</em></td>
<td>d All the above</td>
</tr>
<tr>
<td>13</td>
<td>Which of the following is an organ of food absorption in fungi?</td>
<td>a Haustoria</td>
<td>c Both (a) and (b)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Appressoria</td>
<td>d None of the above</td>
</tr>
<tr>
<td>14</td>
<td>Bordeaux mixture is a...</td>
<td>a Sulphur fungicide</td>
<td>c Organomercural fungicide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Copper fungicide</td>
<td>d None of the above</td>
</tr>
<tr>
<td>15</td>
<td>Which of the following is as a fungal biocontrol agent?</td>
<td>a <em>P. fluorescens</em></td>
<td>c <em>Trichoderma harzianum</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b <em>Bacillus subtilis</em></td>
<td>d All the above</td>
</tr>
<tr>
<td>16</td>
<td>Cuscuta (Amarvel) is a...</td>
<td>a Total stem parasite</td>
<td>c Partial stem parasite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Total root parasite</td>
<td>d Partial root parasite</td>
</tr>
<tr>
<td>17</td>
<td>Which of the following fungicide is effective if applied prior to establishment of fungal infection?</td>
<td>a Protectant fungicide</td>
<td>c Systemic fungicide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Eradicant fungicide</td>
<td>d All of them</td>
</tr>
<tr>
<td>18</td>
<td>Pathogen require more than one host for complete its one life cycle is called...</td>
<td>a Fungi</td>
<td>c Virus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Bacteria</td>
<td>d None of the above</td>
</tr>
<tr>
<td>19</td>
<td>Conidia and sporangia are spores produced by...</td>
<td>a Fungi</td>
<td>c Virus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Bacteria</td>
<td>d None of the above</td>
</tr>
<tr>
<td>20</td>
<td>Sexual stage is also known as...</td>
<td>a Anamorph</td>
<td>c Sexomorph</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Teleomorph</td>
<td>d Benamorph</td>
</tr>
<tr>
<td>21</td>
<td>Vertical and horizontal resistance first described by...</td>
<td>a J.E. Vanderplank</td>
<td>c H.H. Flor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b K.M. Smith</td>
<td>d E.J. Butler</td>
</tr>
<tr>
<td>22</td>
<td>Bacteria are...</td>
<td>a Prokaryotic</td>
<td>c Eukaryotic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Animal</td>
<td>d Plant</td>
</tr>
<tr>
<td>23</td>
<td>Who is credited with the discovery of bacteria?</td>
<td>a Roger Bacon</td>
<td>c Zacharia and Jansen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b E.J. Butler</td>
<td>d Antony van Leeuwenhoek</td>
</tr>
<tr>
<td>24</td>
<td>Specialized research on bacteriology was initiated at Poona in India by...</td>
<td>a E.J. Butler</td>
<td>c P. A. Micheli</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b R. S. Singh</td>
<td>d M.K. Patel and co-workers</td>
</tr>
<tr>
<td>25</td>
<td>Who laid the foundation of the Indian Phytopathological society?</td>
<td>a B.B. Mundkur</td>
<td>c R. S. Singh</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b S. Sundaraman</td>
<td>d M.K. Patel and co-workers</td>
</tr>
<tr>
<td>26</td>
<td>Detailed disease cycle of cereal rust in India was studied by...</td>
<td>a M.J. Thirumalacher</td>
<td>c G. Rangaswami</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b K.C. Mehta</td>
<td>d None of the above</td>
</tr>
<tr>
<td>No.</td>
<td>Question</td>
<td>Options</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Black heart of potato is due to....</td>
<td>a. Poor oxygen relation in storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Iron deficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Excess oxygen relation in storage</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>The first popular classical fungicide was....</td>
<td>a. Burgundy mixture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Cheshunt compound</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Bordeaux mixture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Mancozeb</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>The first antibiotic was....</td>
<td>a. Penicillin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Tetracycline</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Streptomycin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. None of the above</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Bordeaux mixture was discovered by....</td>
<td>a. J.B. Prevost</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. M. Tillet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. P. M. A. Millardet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Anton de Bary</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>The Father of virology is....</td>
<td>a. Marshall ward</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. R. H. Biffen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. H. N. Hassen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. M. W. Beijerink</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Which of following viruses are transmitted by Olpidium brassicae?</td>
<td>a. Big vein virus of lettuce</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Tobacco stunt virus</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Tobacco necrosis virus</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. All of the above</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>The events occurred in the development of diseases is known as...</td>
<td>a. Plant quarantine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Pathogenicity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Disease resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Pathogenesis</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Component of the Bordeaux mixture is...</td>
<td>a. Copper sulphate + hydrated lime</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Copper carbonate + hydrated lime</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Copper sulphate + sodium chloride</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Copper oxychloride + lime</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Death of plant parts, as stem or branches from tip backward is known as...</td>
<td>a. Necrosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Dead heart</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Die-back</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Blight</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Fire blight of apple and pear caused by a bacterium was first time reported by....</td>
<td>a. Stanley</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. T. J. Burril</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. E. F. Smith</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. E. J. Butler</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>......is yellowing due to the lack of light?</td>
<td>a. Etiolation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Chlorosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Chromosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Albinism</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Fungi are...</td>
<td>a. Eukaryotic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Animal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Prokaryotic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Plant</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>The disease occurring throughout the continent/subcontinent resulting mass mortality is...</td>
<td>a. Sporadic disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Endemic disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Epidemic disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Pandemic disease</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Algal Genus which usually parasitize plant is.....</td>
<td>a. Triticum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Phytomonos</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Cephalosporos</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Tilletia</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>The flowering plant parasite which lack chlorophyll and are totally dependent on the host for</td>
<td>a. Holoparasite</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nutrition and thus act as obligate parasite is called as...</td>
<td>b. Hemiparasite</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Hyperparasite</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Heterobiotroph</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>42</td>
<td>Appressorium is the organ for...</td>
<td>a</td>
<td>Absorption of food</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Attachment of the pathogen</td>
<td>d</td>
</tr>
<tr>
<td>43</td>
<td>Soil Solarization is used for management of...</td>
<td>a</td>
<td>Seed borne pathogens</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Air borne pathogens</td>
<td>d</td>
</tr>
<tr>
<td>44</td>
<td>Mesohiotic caused by....</td>
<td>a</td>
<td>Fungi</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Virus</td>
<td>d</td>
</tr>
<tr>
<td>45</td>
<td>Which factors are responsible for diseases triangles....</td>
<td>a</td>
<td>Susceptible Host</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Favourable Environment</td>
<td>d</td>
</tr>
<tr>
<td>46</td>
<td>The whiteflies, leaf hoppers and aphids are the main insect vectors of....</td>
<td>a</td>
<td>Fungi</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Virus</td>
<td>d</td>
</tr>
<tr>
<td>47</td>
<td>Who is called as a “Linnaeus of Mycology”?</td>
<td>a</td>
<td>E. J. Butler</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Anton de Bary</td>
<td>d</td>
</tr>
<tr>
<td>48</td>
<td>A sum total of symptoms produced by the disease is called as.....</td>
<td>a</td>
<td>Symptoms</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Hypertrophy</td>
<td>d</td>
</tr>
<tr>
<td>49</td>
<td>The chemical used as counter stain in Gram staining is....</td>
<td>a</td>
<td>Alcohol</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Safranin</td>
<td>d</td>
</tr>
<tr>
<td>50</td>
<td>‘<em>Nova Plantarum Genera</em>’ was published by...</td>
<td>a</td>
<td>P. A. Micheli</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Anton de Bary</td>
<td>d</td>
</tr>
<tr>
<td>51</td>
<td>Sporangia formed on specialized hyphal branches called as</td>
<td>a</td>
<td>Sporangiphore</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Sporangiola</td>
<td>d</td>
</tr>
<tr>
<td>52</td>
<td>Flagella surrounded all over the body of bacteria called as...</td>
<td>a</td>
<td>Monotrichus</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Atrichus</td>
<td>d</td>
</tr>
<tr>
<td>53</td>
<td>The term ‘Mosaic’ was coined by ....</td>
<td>a</td>
<td>M. W. Beijerinck</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>D. I. Ivanowski</td>
<td>d</td>
</tr>
<tr>
<td>54</td>
<td>Who got noble prize for pure crystalline form of TMV....</td>
<td>a</td>
<td>W.M.Stanley</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Bawden</td>
<td>d</td>
</tr>
<tr>
<td>55</td>
<td>Who first time discovered simple microscope?</td>
<td>a</td>
<td>Anton de Bary</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Anton von Leeuwenhoek</td>
<td>d</td>
</tr>
<tr>
<td>56</td>
<td>Who is regarded as the “Father of Medical Bacteriology”?</td>
<td>a</td>
<td>E.F. Smith</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>Anton de Bary</td>
<td>d</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td>Question</td>
<td>A1</td>
<td>A2</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>58</td>
<td>Diseases of Cultivated Crops, Their Causes and Their Control was written by ....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>59</td>
<td>Established the 'germ theory of the disease' in case of anthrax in relation to man and animals by....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>60</td>
<td>Modern techniques for growing microorganisms in pure culture was introduced and developed by....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>61</td>
<td>In 1892, The causal agent of tobacco mosaic disease could pass through bacteria proof filters was proved by....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>62</td>
<td>In 1939, Who viewed first time Tobacco mosaic virus particles under electron microscope...</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>63</td>
<td>The first Indian scientist, who collected and identified the fungi in India was ....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>64</td>
<td>A classic text book, 'Fungi and Diseases in Plants' in 1918 was written by....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>65</td>
<td>The eukaryotes microorganisms which are having with true nucleus is....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>66</td>
<td>Black tip of mango is due to....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>67</td>
<td>Khaira disease of rice is due to....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>68</td>
<td>Whiptail of cauliflower is due to....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>69</td>
<td>Bitter pit of apple is due to....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>70</td>
<td>Viroid are....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>71</td>
<td>Death of tissues is known as....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>72</td>
<td>Parasitic rust fungus that can complete its lifecycle on same host called as....</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>Number</td>
<td>Question</td>
<td>Options</td>
<td>Correct Answer</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>73</td>
<td>Lichen is association between….</td>
<td>a Algae and fungi</td>
<td>c Bacteria and actinomycetes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Fungi and bacteria</td>
<td>d Algae and bacteria</td>
</tr>
<tr>
<td>74</td>
<td>The ability of host plant to resist the growth or establishment of pathogen is called as…</td>
<td>a Resistance</td>
<td>c Disease escape</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Disease endurance</td>
<td>d None of above</td>
</tr>
<tr>
<td>75</td>
<td>Resistance which govern by single gene called as….</td>
<td>a Monogenic</td>
<td>c Polygenic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Oligogenic</td>
<td>d None of above</td>
</tr>
<tr>
<td>76</td>
<td>Domestic quarantine exist in India for disease….</td>
<td>a Potato scab</td>
<td>c Potato wart</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Potato virus</td>
<td>d Potato late blight</td>
</tr>
<tr>
<td>77</td>
<td>The spore produce by fragmentation is called as….</td>
<td>a Arthrospore</td>
<td>c Blastospore</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Zoospore</td>
<td>d Oospore</td>
</tr>
<tr>
<td>78</td>
<td>In India, Destructive Insect Pest Act was passed in ………… year.</td>
<td>a 1914</td>
<td>c 1952</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b 1910</td>
<td>d 1925</td>
</tr>
<tr>
<td>79</td>
<td>Conidia is….</td>
<td>a Sexual spores</td>
<td>c Asexual spores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Resting spores</td>
<td>d Dormant spores</td>
</tr>
<tr>
<td>80</td>
<td>The process of production of spore is called as….</td>
<td>a Fission</td>
<td>c Fragmentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b Sporulation</td>
<td>d None of above</td>
</tr>
</tbody>
</table>
PART-B (SUBJECTIVE)

Q.1 Differentiate following (Any Three)  
1. Gram positive bacteria vs. Gram negative bacteria  
2. Hypertrophy vs. Hyperplasia  
3. Vertical resistance vs. Horizontal resistance  
4. Simple interest vs. Compound interest disease  
5. Persistent virus vs. Non-persistent virus

Q.2 Define/Explain following (Any Five)  
1. Fungicide  
2. Disease  
3. Obligate parasite  
4. Pathogenicity  
5. Symptoms  
6. Inoculation  
7. Biological control

Q.3 Short notes (Any Five)  
1. Contribution of E. J. Butler in plant pathology  
2. Characteristics of kingdom fungi  
3. Koch’s postulate  
4. Flagella arrangement on bacterial cell  
5. Methods of application of fungicides  
6. Disease pyramid  
7. Advantages of integrated disease management

Q.4 Define plant pathology and write down the objectives of plant pathology.  

Q.5. Write the general principles of plant disease management and explain any one in detail

Q.6. Write the classification of plant disease on the basis of causes  

OR

Write the methods of dispersal of plant pathogens

Q.7. Describe the symptoms of rust, necrosis and wilt disease of plant with example  

OR

Virus transmission through nematode and fungi

XXXXXXXXXXXXX
AGRICULTURAL UNIVERSITIES OF GUJARAT

1. Anand Agricultural University, Anand 2. Junagadh Agricultural University, Junagadh
3. Navsari Agricultural University, Navsari 4. S.D. Agricultural University, Sardarkrushinagar

Third (New) Semester (Regular) Theory B.Sc. (Hons.) Horticulture End Examination-2015

Course Title: Fundamentals of Entomology
Course Number: PPT 3.2
Date: 21-12-2015, Monday

<table>
<thead>
<tr>
<th>Questions</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-20</td>
<td></td>
</tr>
<tr>
<td>21-40</td>
<td></td>
</tr>
<tr>
<td>41-60</td>
<td></td>
</tr>
<tr>
<td>61-80</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

PART A: OBJECTIVE

Q.1 Tick mark (✓) the appropriate answer from the followings.

1. Which of the following enzyme is not associated with the digestion of food
   - (a) Amylase
   - (b) Glucocidase

2. Shedding or casting of remnants of old cuticle, the process called as
   - (a) Apolysis
   - (b) Expansion

3. The pupa of butterfly called as
   - (a) Chrysalis
   - (b) Coarctate

4. Branch of science which deals with the study of mites is called as
   - (a) Entomology
   - (b) Acarology

5. Internal anatomy of insect deals with
   - (a) Classification of insects
   - (b) Functions of internal organs

6. are boring stem
   - (a) Mango stem borer
   - (b) Leaf miner

7. spread mealy bugs and scale insects
   - (a) Mango stem borer
   - (b) Red ant

8. The order of termite is
   - (a) Hemiptera
   - (b) Isoptera

9. In which type of pupa the appendages are free and loosely folded against body?
   - (a) Obstect
   - (b) Decticus
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Correct Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Rasping and sucking type of mouth parts are found in</td>
<td>(a) Thrips</td>
<td>(c) Honey bees</td>
</tr>
<tr>
<td></td>
<td>(b) Adult house fly</td>
<td>(d) Butterfly and moth</td>
</tr>
<tr>
<td>11. Prawn, crab and lobsters belongs to class</td>
<td>(a) Onychophora</td>
<td>(c) Arachnida</td>
</tr>
<tr>
<td></td>
<td>(b) Crustacea</td>
<td>(d) Hexapoda</td>
</tr>
<tr>
<td>12. insect mix excreta in the food</td>
<td>(a) Cockroach</td>
<td>(c) House fly</td>
</tr>
<tr>
<td></td>
<td>(b) Cricket</td>
<td>(d) Mosquito</td>
</tr>
<tr>
<td>13. Acidic excretion is made by</td>
<td>(a) Honey bees and wasps</td>
<td>(c) Blister beetle</td>
</tr>
<tr>
<td></td>
<td>(b) Caterpillar of saddle back moth</td>
<td>(d) Grass hopper</td>
</tr>
<tr>
<td>14. are the sucking cell sap from leaves</td>
<td>(a) Mango stem borer</td>
<td>(c) Grasshoppers, beetles and caterpillars</td>
</tr>
<tr>
<td></td>
<td>(b) Leaf miner</td>
<td>(d) Aphid, jassid and whitefly</td>
</tr>
<tr>
<td>15. Sponging type of mouth parts are found in</td>
<td>(a) Thrips</td>
<td>(c) Honey bees</td>
</tr>
<tr>
<td></td>
<td>(b) Adult house fly</td>
<td>(d) Butterfly and moth</td>
</tr>
<tr>
<td>16. Siphoning type of mouth parts are found in</td>
<td>(a) Thrips</td>
<td>(c) Honey bees</td>
</tr>
<tr>
<td></td>
<td>(b) Adult house fly</td>
<td>(d) Butterfly and moth</td>
</tr>
<tr>
<td>17. Mandible is</td>
<td>(a) Upper lip</td>
<td>(c) First pair of jaws</td>
</tr>
<tr>
<td></td>
<td>(b) Lower lip</td>
<td>(d) Second pair of jaws</td>
</tr>
<tr>
<td>18. In insect digestive system valve found between foregut and midgut</td>
<td>(a) Proventriculus</td>
<td>(c) Cardial or Oesophageal</td>
</tr>
<tr>
<td></td>
<td>(b) Pyloric</td>
<td>(d) None of the above</td>
</tr>
<tr>
<td>19. In insect digestive system valve found between midgut and hindgut.</td>
<td>(a) Proventriculus</td>
<td>(c) Cardial or Oesophageal</td>
</tr>
<tr>
<td></td>
<td>(b) Pyloric</td>
<td>(d) None of the above</td>
</tr>
<tr>
<td>20. Labium is</td>
<td>(a) Upper lip</td>
<td>(c) First pair of jaws</td>
</tr>
<tr>
<td></td>
<td>(b) Lower lip</td>
<td>(d) Second pair of jaws</td>
</tr>
<tr>
<td>21. Degenerate type of mouth parts are found in</td>
<td>(a) Naiads of dragonfly</td>
<td>(c) Nymphs of hemiptera</td>
</tr>
<tr>
<td></td>
<td>(b) Maggots of diptera</td>
<td>(d) None of the above</td>
</tr>
<tr>
<td>22. Scape and pedicel are basal segments of</td>
<td>(a) Leg</td>
<td>(c) Cranium</td>
</tr>
<tr>
<td></td>
<td>(b) Antenna</td>
<td>(d) Wing</td>
</tr>
<tr>
<td>23. Compound eyes consists of</td>
<td>(a) Ommatidia</td>
<td>(c) Prognathous</td>
</tr>
<tr>
<td></td>
<td>(b) Ocelli</td>
<td>(d) Pharynx</td>
</tr>
<tr>
<td>24. is the hardened head capsule</td>
<td>(a) Tergite</td>
<td>(c) Cranium</td>
</tr>
<tr>
<td></td>
<td>(b) Labrum</td>
<td>(d) Labium</td>
</tr>
<tr>
<td>25. Endopterygote insects have type of metamorphosis</td>
<td>(a) Complete</td>
<td>(c) Irregular</td>
</tr>
<tr>
<td></td>
<td>(b) Incomplete</td>
<td>(d) Regular</td>
</tr>
</tbody>
</table>
26. Exopterygote insects have ______ type of metamorphosis
   (a) Complete         (c) Irregular
   (b) Incomplete       (d) Regular

27. ______ have 5 pairs of prolegs which are present on 3, 4, 5, 6, and 10th segment of the abdomen, over and above 3 pairs of thoracic legs.
   (a) Caterpillar      (c) Semilooper
   (b) Looper           (d) None of above

28. In insect body, thorax consist of
   (a) Prothorax        (c) Mesothorax
   (b) Metathorax        (d) All the above

29. Sclerite of dorsal region of thorax is called as
   (a) Tergum           (c) Pleuron
   (b) Sternum           (d) None of the above

30. Plague is transmitted by
   (a) Fleas            (c) House fly
   (b) Mosquito         (d) Tse tse fly

31. Honey, wax and propolis is produced by
   (a) Silk worm        (c) Lac insects
   (b) Honey bees       (d) None of the above

32. Shellac is produced by
   (a) Silk worm        (c) Lac insects
   (b) Honey bees       (d) None of the above

33. The order of beetles and weevils is
   (a) Hemiptera        (c) Diptera
   (b) Isoptera          (d) Coleoptera

34. ______ are biting and chewing the plant parts
   (a) Grasshoppers, beetles and caterpillars (c) Sugarcane borer
   (b) Aphids, jassids and whitefly           (d) Red ant

35. The parts of insect leg generally are
   (a) Coxa              (c) Femur, tibia and tarsus
   (b) Trochanter        (d) All the above

36. Pupal stage is found in
   (a) No metamorphosis  (c) Complete metamorphosis
   (b) Hypermetamorphosis (d) Incomplete metamorphosis

37. ______ are primitively wingless
   (a) Aphids            (c) Silver fish and Spring tails
   (b) Thrips            (d) Mallophaga and siphunculata

38. Fore wings are much hardened to form a horny sheath is known as Elytra found in
   (a) Beetles in coleoptera (c) Grasshopper, cockroach and mantid
   (b) House fly           (d) Bugs

39. Proximal area of forewings horny while small distal portion is membranous known as hemelytra found in
   (a) Beetles in coleoptera (c) Grasshopper, cockroach and mantid
   (b) House fly           (d) Bugs

40. In Ants, bees and wasp, 1st abdominal segment is fused with the metathorax is called
   (a) Propodeum         (c) Pronotum
   (b) Pterothorax        (d) None of the above
41. Female genitalia are found in
   (a) Eighth and ninth abdominal segments  (c) Ninth and tenth abdominal segments
   (b) Ninth abdominal segments           (d) None of the above

42. Male copulatory organ in insect is called as
   (a) Aedeagus                      (c) Ovipositor
   (b) Cerci                         (d) None of the above

43. Cylindrical, ‘C’ shaped larva of beetle is known as
   (a) Caterpillar                   (c) Grub
   (b) Maggot                       (d) None of above

44. Larva of house fly is leg less and known as
   (a) Caterpillar                   (c) Grub
   (b) Maggot                       (d) None of above

45. Nymphal stage is found in
   (a) No metamorphosis              (c) Complete metamorphosis
   (b) Hypermetamorphosis            (d) Incomplete metamorphosis

46. The order of fruit fly is
   (a) Diptera                       (c) Protura
   (b) Isoptera                      (d) Coleoptera

47. Aphids belong to family
   (a) Termitidae                    (c) Aphididae
   (b) Jassidae                      (d) Aleyrodidae

48. The order of plant bug is
   (a) Hemiptera                     (c) Diptera
   (b) Isoptera                      (d) Coleoptera

49. The order of moths and butterfly is
   (a) Lepidoptera                   (c) Neuroptera
   (b) Hymenoptera                  (d) Orthoptera

50. Time interval between two successive moltings is known as
   (a) Stadium                      (c) Ecdysis
   (b) Instar                      (d) Apolysis

51. The order of ant lion and chrysopa is
   (a) Lepidoptera                  (c) Neuroptera
   (b) Hymenoptera                  (d) Orthoptera

52. The order of grasshopper is
   (a) Lepidoptera                  (c) Neuroptera
   (b) Hymenoptera                  (d) Orthoptera

53. Wings are thin, transparent with many veins known as membranous found in
   (a) Grasshopper                  (c) Termite, dragonfly and antlion
   (b) Beetles                      (d) Thrips and tur plume moth

54. Meso and meta thoracic segments are collectively known as
   (a) Pterothorax                  (c) Pronotum
   (b) Notum                        (d) None of the above

55. Wings are fringed and wing margins are hairy known as fringed or feather like found in
   (a) Grasshopper                  (c) Termite, dragonfly and antlion
   (b) Beetles                      (d) Thrips and tur plume moth

56. The wing coupling in honey bee is termed as
   (a) Halter                        (c) Folds
   (b) Hamuli                       (d) Elytra
<table>
<thead>
<tr>
<th>57.</th>
<th>The order of dragonfly is</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Odonata</td>
<td>(c) Dermaptera</td>
</tr>
<tr>
<td>(b) Dictyoptera</td>
<td>(d) Psocoptera</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>58.</th>
<th>The order of cockroach and mantid is</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Odonata</td>
<td>(c) Dermaptera</td>
</tr>
<tr>
<td>(b) Dictyoptera</td>
<td>(d) Psocoptera</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>59.</th>
<th>Class Insecta is also known as</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Hexapoda</td>
<td>(b) Onychophora</td>
</tr>
<tr>
<td>(c) Crustacea</td>
<td>(d) Arachnida</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>60.</th>
<th>Preying mantid belongs to family</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Phasmatidae</td>
<td>(c) Blattidae</td>
</tr>
<tr>
<td>(b) Phyllidae</td>
<td>(d) Mantidae</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>61.</th>
<th>Termites belong to family</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Termitidae</td>
<td>(c) Aphididae</td>
</tr>
<tr>
<td>(b) Jassidae</td>
<td>(d) Aleurodidae</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>62.</th>
<th>Jassids belong to family</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Termitidae</td>
<td>(c) Aphididae</td>
</tr>
<tr>
<td>(b) Jassidae</td>
<td>(d) Aleurodidae</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>63.</th>
<th>Thrips belongs to family</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Thripidae</td>
<td>(c) Coccinellidae</td>
</tr>
<tr>
<td>(b) Chrysopidae</td>
<td>(d) Cerambycidae</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>64.</th>
<th>Angle between body wall and costal margin is</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Humeral angle</td>
<td>(c) Anal or torus angle</td>
</tr>
<tr>
<td>(b) Apical or outer angle</td>
<td>(d) None of the above</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>65.</th>
<th>Honey bee belongs to family</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Muscidae</td>
<td>(c) Formicidae</td>
</tr>
<tr>
<td>(b) Tenthredinidae</td>
<td>(d) Apidae</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>66.</th>
<th>The order of honey bee and wasp is</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Lepidoptera</td>
<td>(c) Neuroptera</td>
</tr>
<tr>
<td>(b) Hymenoptera</td>
<td>(d) Orthoptera</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>67.</th>
<th>Body of mite is divided into</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Head and tubular trunk</td>
<td>(c) Cephalothorax and abdomen</td>
</tr>
<tr>
<td>(b) Head and thorax</td>
<td>(d) Head, thorax and abdomen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>68.</th>
<th>Antenna is the appendages of segment of insect head</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) First</td>
<td>(c) Third</td>
</tr>
<tr>
<td>(b) Second</td>
<td>(d) Fourth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>69.</th>
<th>The shape and size of the stage between two successive moltings in insect is called</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Instar</td>
<td>(c) Ecdysis</td>
</tr>
<tr>
<td>(b) Stadium</td>
<td>(d) Apolysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>70.</th>
<th>Inverted ‘Y’ shaped suture found on insect head is known as</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Frons</td>
<td>(c) Epicranial suture/ ecdysial cleavage line</td>
</tr>
<tr>
<td>(b) Gena</td>
<td>(d) Clypeus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>71.</th>
<th>Most of the insects excrete 80 to 90 percent of their nitrogen waste in the form of</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Urea</td>
<td>(c) Ammonium nitrate</td>
</tr>
<tr>
<td>(b) Uric acid</td>
<td>(d) Ammonia</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>72.</th>
<th>Insects contain malpighian tubules as organs of</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Excretion</td>
<td>(c) Respiration</td>
</tr>
<tr>
<td>(b) Digestion</td>
<td>(d) Secretion</td>
</tr>
</tbody>
</table>
73. 1<sup>st</sup> segment of the leg articulates with the cup like depression on the thoracic pleuron is ___.
   (a) Coxa  (c) Femur
   (b) Trochanter  (d) Tibia

74. Insect antenna divided into __ regions
   (a) 3  (c) 5
   (b) 4  (d) 6

75. The number of segments which makes the abdomen is ___.
   (a) 8  (c) 12
   (b) 11  (d) 9

76. In aphids cornicles are projected from the dorsum of
   (a) 5<sup>th</sup> abdominal segment  (c) 6<sup>th</sup> abdominal segment
   (b) 7<sup>th</sup> abdominal segment  (d) 8<sup>th</sup> abdominal segment

77. In the formation of cuticle which of the following layer is secreted first
   (a) Exocuticle  (c) Endocuticle
   (b) Wax layer  (d) Cuticular Layer

78. Which of the following organs are involved in excretion
   (a) Malpighian tubules  (c) Integument
   (b) Wall of alimentary canal  (d) All the above

79. Malarial parasite is transmitted by
   (a) Female Anopheles mosquito  (c) Female Culex mosquito
   (b) Male Anopheles mosquito  (d) Male Culex mosquito

80. Which of the following is neopteran predator
   (a) Menochilus  (c) Chrysoperla
   (b) Brunus  (d) Cryptolaemus
AGRICULTURAL UNIVERSITIES OF GUJARAT

1. Anand Agricultural University, Anand.
2. Junagadh Agricultural University, Junagadh
3. Navsari Agricultural University, Navsari
4. S.D. Agricultural University, Sardarkrushinagar

Third (New) Semester (Regular) Theory B.Sc. (Hons.) Horticulture End Examination-2015

Course Title: Fundamentals of Entomology
Course Number: PPT 3.2
Date: 21-12-2015, Monday

Part B: Subjective

Q.1 [A] Define/explain following (Any ten) [05]
1. Entomology
2. Insect
3. Segment
4. Suture
5. Sclerite
6. Styli
7. Stadium
8. Eclosion
9. Sclerotisation
10. Prolegs
11. Instar
12. Pterostigma
13. Cephalothorax

Q.1 [B] Differentiate the following (Any five) [05]
1. Arachnida and Crustacea
2. Chilopoda and Diplopoda
3. Harmful insects and Beneficial insects
4. Semi-looper and Looper
5. Moth and Butterfly
6. Mite and Insect
7. Campodeiform and Scarabaeiform larva

Q.2 [A] Enlist various modifications of insect mouth parts and describe any one with diagram [05]

Q.2 [B] Explain about the reasons for dominance of insects. or [05]
Draw and describe digestive system of insect

Q.3 [A] Discuss about types of head inclinations found in insect with suitable examples with neat and clean diagrams. or Write in detail about insect moulting [05]

Q.3 [B] Draw the diagram of typical insect head (frontal) and label various parts [02]

Q.3 [C] Draw the labeled diagram of insect integument [03]

Q.4 [A] Draw the labeled diagram of typical insect leg and wing. Discuss about modifications of legs found in insects with suitable examples. [05]

Q.4 [B] Answer the following questions (Any five) [05]
1. Enlist different types of insect wing couplings with suitable examples
2. Which functions are performed by antennae of an insect?
3. Write types of insect neuron based on its structure and function.
4. Give systematic position of honey bee
5. Enlist any four orders of apterygota, endopterygota and exopterygota each
6. Enlist the characters of phylum Arthropoda and Class insects
7. Enlist different types of insect pupa with suitable examples

---X---X---X---X---X---
**PART-A : OBJECTIVE**

**Date:** 23/12/2015  
**Time:** 14:30 to 15:15  
**Day:** Wednesday  
**Marks Obtained:**

---

1. Objective of organic agriculture is to produce food of ______ nutritional quality in
   sufficient quantity.
   - [ ] a Higher  
   - [ ] b Lower  
   - [ ] c Limited  
   - [ ] d None of these

2. ______ is the source of higher percentage of nitrogen, phosphorus and potash.
   - [ ] a Concentrated organic manures  
   - [ ] b Compost  
   - [ ] c Bulky organic manure  
   - [ ] d All of these

3. Component of organic farming is/are ______.
   - [ ] a Biofertilizer  
   - [ ] b Crop residues and green manures  
   - [ ] c Compost  
   - [ ] d All of these

4. Sticky traps of ______ colour are very effective in capturing aphids, thrips and whitefly.
   - [ ] a White  
   - [ ] b Red  
   - [ ] c Blue  
   - [ ] d Yellow

5. The integration of crop and livestock production on the farm is called ______.
   - [ ] a Mixed Cropping  
   - [ ] b Cropping pattern  
   - [ ] c Mixed Farming  
   - [ ] d Crop rotation

6. Organic farming is the technique of raising crops through uses of ______.
   - [ ] a Manures  
   - [ ] b Resistant varieties  
   - [ ] c Biofertilizers  
   - [ ] d All of these

7. The Ministry of Commerce launched the National Organic Programme in ______.
   - [ ] a April, 2000  
   - [ ] b April, 1995  
   - [ ] c April, 2005  
   - [ ] d April, 1980

8. Pesticides containing organisms like bacteria, fungi and viruses are known as…
   - [ ] a Microbial pesticides  
   - [ ] b Myco pesticides  
   - [ ] c Biological pesticides  
   - [ ] d All of these

9. The primary source of soil organic matter is ______.
   - [ ] a Plant residue  
   - [ ] b Sewage water  
   - [ ] c Animals  
   - [ ] d Microorganisms

10. ______ increases the activities of soil microbes.
    - [ ] a Organic matter  
    - [ ] b Chemical fertilizers  
    - [ ] c Both a & b  
    - [ ] d None of these
11. Due to decomposition of fresh organic matter in soil, the C:N ratio becomes
   [ ] a Broader or wider
   b No change
   c Narrow
   d None of these

12. The __________ in the organic matter is the source of energy for microbes.
   [ ] a Water
   b Calcium
   c Carbon
   d Potash

13. For plant growth promoting rhizobacteria (PGPR) which is true?
   [ ] i. It seems to promote growth through suppression of plant disease.
   ii. It seems to improve production.
   iii. It seems to work as bio-protectants.
   iv. It seems to work as bio-stimulants.
   a Both i & ii
   b Both i & iii
   c Both iii & iv
   d All of these

14. Regarding bird perches which sentence is not true?
   [ ] i. It attracts birds which helps to keep field free from pest.
   ii. It helps to facilitate insectivorous birds for sitting.
   iii. It repels birds and save crops from birds damage.
   iv. It helps saves crops from insect damage.
   a Only i
   b Only iii
   c Only iv
   d Both ii & iii

15. Which one of the following order is correct for decomposition?
   [ ] a Starch > Hemi cellulose > Lignin
   b Cellulose > Lignin > Hemicellulose
   c Lignin > Starch > Cellulose
   d Cellulose > Cellulose > Starch

16. Which among the following match is true?
   [ ] i Organic State
   ii National Institute of OF
   iii Pseudomonas
   iv Barometer of soil
   a i-B, ii-A, iii-D, iv-C
   b i-A, ii-B, iii-C, iv-D
   c i-B, ii-A, iii-C, iv-D
   d i-A, ii-B, iii-D, iv-C

17. Organic Certificate is issued to the produce for __________ year/s.
   [ ] a One
   b Two
   c Three
   d Life time

18. IFOAM was established in the year __________ in France.
   [ ] a 1971
   b 1973
   c 1972
   d 1974

19. Which among the following is associated with the pest and diseases management?
   [ ] a Mixed cropping
   b Crop rotation
   c Mixed farming
   d Inter cropping

20. For organic cycle optimization the __________ of nutrients should be minimized or avoided.
   [ ] a Manufacturing
   b Export
   c Import
   d All of these

21. Green revolution technologies boosted crop production because of __________.
    [ ] a More use of synthetic chemicals
    b High-yielding varieties
    c Exploitation of irrigation potentials
    d All of these

22. Which among following is means to overcome losses during storage & handling of FYM?
    [ ] a Trench method of FYM preparing
    b Use of preservatives
    c Use of Gobar gas compost plant
    d All of these
23. Which is example/s of concentrated organic manures?
   [ ] a. Castor cake  
   [ ] b. Vermicast  
   [ ] c. Rural compost  
   [ ] d. FYM

24. Agency responsible for certification of organic products in Gujarat is ________.
   [ ] a. IFOAM  
   [ ] b. GOPCA  
   [ ] c. INDOCERT  
   [ ] d. APEDA

25. Which organic horticulture produce/s is/are exported from India?
   [ ] a. Banana  
   [ ] b. Wheat  
   [ ] c. Mango  
   [ ] d. Both a & c

26. Humus contains ________.
   [ ] a. Humic acid  
   [ ] b. Fulvic acid  
   [ ] c. Humin  
   [ ] d. All of these

27. For organic farming which nutrient source is allowed?
   [ ] a. Urea  
   [ ] b. FYM  
   [ ] c. DAP  
   [ ] d. SSP

28. Vermicompost improves soil aeration, structure and tilth, thereby ________ soil compaction.
   [ ] a. Inducing  
   [ ] b. Reducing  
   [ ] c. No change  
   [ ] d. None of these

29. A leguminous green manure crop fixes ________ from atmosphere.
   [ ] a. Free Oxygen  
   [ ] b. Free carbon dioxide  
   [ ] c. Free nitrogen  
   [ ] d. Free water

30. Organic manures provide all nutrients that are required by plants but in ________ quantities.
   [ ] a. Limited  
   [ ] b. Unlimited  
   [ ] c. More  
   [ ] d. None of these

31. ________ are considered as complete plant food.
   [ ] a. Straight fertilizers  
   [ ] b. Complex fertilizers  
   [ ] c. Organic manures  
   [ ] d. None of these

32. In sodic soil, ________ as a green manure crop ameliorate the soil physical condition.
   [ ] a. Sunhemp  
   [ ] b. Neem  
   [ ] c. Karanj  
   [ ] d. Dhaincha

33. Organic manures tends to be ________ release of nutrients.
   [ ] a. Slow  
   [ ] b. Fast  
   [ ] c. Quick  
   [ ] d. Fixation of

34. ________ is an important crop for green manuring as in-situ practices.
   [ ] a. Glyricidia  
   [ ] b. Karanj  
   [ ] c. Subabul  
   [ ] d. Sunhemp

35. The process of composting of organic wastes through earthworms is called ________.
   [ ] a. Vermicompost  
   [ ] b. Degradation  
   [ ] c. Decomposition  
   [ ] d. Churning

36. The organic manure FYM has contained ________ % N, ________ % P₂O₅ and ________ % K₂O.
   [ ] a. 0.5 : 0.25 : 0.5  
   [ ] b. 1.5 : 2.0 : 3.5  
   [ ] c. 0.1 : 0.5 : 0.1  
   [ ] d. 4.0 : 2.5 : 1.5

37. For pest control under organic farming which product/s is/are not prohibited?
   [ ] a. Trichoderma viridi  
   [ ] b. Imidacloprid  
   [ ] c. Neem oil  
   [ ] d. Both a & c
38. The optimum C:N ratio in the range of _______ is ideal for maximum decomposition.
   [ ] a) 20:1  c) 40:1  
   b) 100:1  d) 400:1

39. In the bodies of micro-organisms the C:N ratio is _______.
   [ ] a) 4:1  c) 15:1  
   b) 20:1  d) 40:1

40. Compost from litters, weeds, straw, leaves and crop stubbles is called _______.
   [ ] a) Urban compost  c) Rural compost  
   b) NADEP  d) Vermicompost

41. Manure prepared by _______ method is an ideal under anaerobic condition.
   [ ] a) Heap  c) NADEP  
   b) Vermicompost  d) Pit

42. Among the following _______ is used as bio-pesticides.
   [ ] a) Trichoderma  c) Lady bird beetle  
   b) Azotobactor  d) All of these

43. Most commonly used organic manure in India is _______.
   [ ] a) FYM  c) Compost  
   b) Green manuring  d) Oilcakes

44. The most commonly used botanical/s pesticide/s is/are _______.
   [ ] a) Neem  c) Ghrisida  
   b) Sunhemp  d) All of these

45. It is known that organically grown plants are _______ resistant to pests and diseases.
   [ ] a) More  c) Less  
   b) Equally  d) None of these

46. The green manuring crops are turned in the soil at _______ stage.
   [ ] a) Flowering  c) Milking  
   b) Maturity  d) Germination

47. In cotton crop _______ is grown as a trap crop.
   [ ] a) Marigold  c) Mustard  
   b) Sunhemp  d) Cowpea

48. _______ cakes are used as manure.
   [ ] a) Edible  c) Non-edible  
   b) Both a and c  d) None of these

49. Which is permitted for fertilization & soil conditioning in organic farming?
   [ ] a) On-farm compost  c) Off-farm compost  
   b) Sugar factory bio-compost  d) All of these

50. Eisenia fetida and Eudrilus eugenae spp. are used for the preparation of _______.
   [ ] a) Compost  c) FYM  
   b) Vermicompost  d) None of these

51. Which method of bio-fertilizer application is used for tomato seedlings?
   [ ] a) Seed treatment  c) Seedling treatment  
   b) Sets treatment  d) Soil treatment

52. Organic farming emphasis to utilize renewable sources which are _______.
   [ ] a) From foreign  c) Locally available  
   b) Both a and c  d) None of these
53. Foreign exploration to conduct, identify & collect natural enemies which are reared and released in new habitat area known as ________.
   a) Importation  c) Conservation  
   b) Augmentation  d) Quarantine

54. Crop associated weed called *Phalaris minor* is observed in ________ crop.
   a) Bajra  c) Wheat  
   b) Maize  d) Pigeon pea

55. Generally ________ crops are useful for green manuring.
   a) Leguminous  c) Non-leguminous  
   b) Cereals  d) Oil seeds

56. The agricultural revolution began due to the invention of a ________.
   a) Horse-drawn hoe  c) Tissue culture  
   b) Lazer leveler  d) Harvester

57. To prevent contamination by synthetic farm, maintenance of ________ is necessary in OF.
   a) Buffer zone  c) Trap crop  
   b) Mixed farming  d) Green manuring

58. ________ is recommended in rice field for nitrogen enrichment.
   a) VAM  c) Azolla  
   b) Clostridium  d) Rhizobium

59. Castor cake contain ________ alkaloids which are responsible for slow nitrification.
   a) Ricin  c) Saponin  
   b) Nimbudin  d) Gospol

60. ________ is very poor in nitrogen and takes a long time to nitrify.
   a) Groundnut cake  c) Mustard Cake  
   b) Mahua cake  d) Cotton cake

61. NPOP stands for ________
   a) National Programme for organic production  
   b) Nutrient Productivity for Organic Production  
   c) National Programme for Organic Productivity  
   d) National Project for Organic Production

62. The word ‘organic’ farming was first used by ________
   a) Lord Northbourne  c) Fritz Haber  
   b) P. Muller  d) Lady Eve Balfourt

63. Maturity of in situ green manure crops takes ________ from time of sowing to flowering stage.
   a) 6-8 weeks  c) 6-8 months  
   b) 16-18 weeks  d) 16-18 months

64. India losses about ________ % of its crops due to pests and diseases each year.
   a) 10-20  c) 30-40  
   b) 20-30  d) 40-50

65. The dry land soils are ________ in organic matter content.
   a) Low  c) Medium  
   b) High  d) Very high

66. For the control of diamond moth in cabbage ________ is useful as a trap crop.
   a) Cow pea  c) Mustard  
   b) Castor  d) Marigold
67. Nicotine sulphate acts as _____ poison and fumigants for control of pests like aphids.
   |   |   |   |   |
   a. Contact   | c. Stomach | d. All of these
   b. Repellent |   |   |

68. _____ is the most commonly used bacterial pesticide globally.
   |   |   |   |
   a. Bt   | c. Trichoderma | d. All of these
   b. Trichogamma |   |

69. Which one of the following algae is rarely found in soil?
   |   |   |
   a. BGA | c. Grass-green algae | d. Dinotoms
   b. Yellow-green algae |   |

70. Weed law exists only in _____ state in India.
   |   |   |
   a. Karnataka | c. Gujarat | d. Rajasthan
   b. Maharashtra |   |

71. Plant Quarantine (Regulation of Import into India) Order was enacted/issued in______.
   |   |   |
   a. 2010 | c. 1980 | d. 1966
   b. 2003 |   |

72. ______ logo is governed by APEDA, which provides national standards for organic products through a National Accreditation Policy and Programme.
   |   |   |
   a. India Organic | c. ECOCERT | d. Demeter
   b. EU Organic Certification |   |

73. ______ is effective against Heliothis and Spodoptera
   |   |   |
   a. NPV | c. Trichoderma | d. Bacillus subtilis
   b. Trichogamma |   |

74. The Biofertilizer used for cereals is/ are______.
   |   |   |
   a. Rhizobium | c. Azotobacter | d. All of these
   b. Frankia |   |

75. Crop rotation is highly effective against ______ weeds.
   |   |   |
   a. Parasitic | c. Both a & b | d. Noxious
   b. Crop-associated |   |

76. Use of VAM with vermicompost increases the availability of______.
   |   |   |
   a. N | c. P | d. Mg
   b. K |   |

77. The Eucalyptus tree leaf leachates are known to suppress the growth of______.
   |   |   |
   a. Cyprus rotundus | c. Cuscuta | d. Phalaris
   b. Parthenium |   |

78. Applicant or accredited Inspection and Certification Agency’s Programme can appeal accreditation decisions. Appeals must be lodged within ____ of the disputed decision.
   |   |   |
   a. 7 days | c. 30 days
   b. 6 months |   |

79. A lady bird beetle is__________.
   |   |   |
   a. Friendly insect | c. Notorious insect
   b. Both a & c | d. None of a & c

80. Soil solarization controls______.
   |   |   |
   a. Weed seeds | c. Egg and pupa of insects
   b. Fungal spores | d. All of these
AGRICULTURAL UNIVERSITIES OF GUJARAT

1. Anand Agril. University, Anand
2. Junagadh Agril. University, Junagadh
3. Navsari Agril. University, Navsari
4. S. D. Agril. University, Sardarkrushinagar

Third Semester End Examination of B. Sc. (Hons.) Horticulture (Regular) Dec. - 2015
Course No.: NRMH 3.5
Course Title: Organic Farming (1+1)

PART-B : SUBJECTIVE

Date : 23/12/2015
Day : Wednesday
Time : 15:15 to 17:00
Total marks: 40.00

Q. 1
A) Define or explain the following terms (Any five).
   i. Organic farming    ii. Manures    iii. Botanical pesticides

B) Differentiate the following (Any two).
   i. Organic farming Vs Conventional farming.
   ii. Green manuring Vs Vermicomposting
   iii. Bulky organic manures Vs Concentrated organic manures

Q. 2
Explain in details (Any Two).
   i. What is biological control of pests and diseases? Explain mechanical control measures in details.
   ii. Problem and constraints of Organic Farming in India, Discuss.

Q. 3
Write short note (Any five).
   i. Importance of vermicomposting.
   ii. Elements of organic farming.
   iii. Characteristics of concentrated organic manures.
   iv. Organic certification.
   v. Heap method of composting.
   vi. Classification of bio-fertilizers.

Q. 4
A) Give appropriate reason/s for the following.
   i. Green Revolution Technology is responsible for the deterioration of soil physical properties.
   ii. Indian farmers are not enthusiastic to adopt Organic Farming.
   iii. Control of pests through parasites/predators is sometimes not effective.
   iv. Green manure crops are not advisable in rainfed areas.
   v. Sometimes Azotobacter bio-fertilizer application does not respond.

B) Do as directed.
   ii. Enlist physical control measures for organic weed management.
   iii. Principles of composting
   iv. Role of Rhizobium bacteria in organic farming.
   v. Importance of trap crop in organic farming.

*******