Discipline : Plant Genetic Resources

Discipline Code : 16

Please Note:

(i) This question paper contains 12 pages. Please check whether all the pages are printed in this set. Report discrepancy, if any, immediately to the invigilator.

(ii) There shall be NEGATIVE marking for WRONG answers in the Multiple Choice type questions (No. 1 to 30) which carry one mark each. For every wrong answer 0.25 mark will be deducted.

PART – I (General Agriculture)

Multiple choice questions (No. 1 to 30). Choose the correct answer (a, b, c or d) and enter your choice in the circle (by shading with a pencil) on the OMR answer sheet as per the instructions given on the answer sheet.

1. Which of the following crops have been approved for commercial cultivation in India?
   a) Bt cotton and Bt brinjal
   b) Bt cotton and Golden Rice
   c) Bt maize and Bt cotton
   d) Bt cotton only

2. This year (2010-11) the expected food grain production in India is
   a) 212 million tonnes
   b) 220 million tonnes
   c) 235 million tonnes
   d) 250 million tonnes

3. The genome of which of the following crops is still not completely sequenced?
   a) Rice
   b) Soybean
   c) Sorghum
   d) Wheat

4. According to the Approach Paper to the 12th Five Year Plan, the basic objective of the 12th Plan is
   a) Inclusive growth
   b) Sustainable growth
   c) Faster, more inclusive and sustainable growth
   d) Inclusive and sustainable growth

5. To address the problems of sustainable and holistic development of rainfed areas, including appropriate farming and livelihood system approaches, the Government of India has set up the
   a) National Rainfed Area Authority
   b) National Watershed Development Project for Rainfed Areas
   c) National Mission on Rainfed Areas
   d) Command Area Development and Water Management Authority

6. Which of the following sub-schemes are not covered under the Rashtriya Krishi Vikas Yojana?
   a) Extending the Green Revolution to eastern India
   b) Development of 60,000 pulses and oilseeds villages in identified watersheds
   c) National Mission on Saffron
   d) National Mission on Bamboo

7. The minimum support price for the common variety of paddy announced by the Government of India for the year 2010-11 was
   a) ₹ 1030
   b) ₹ 1000
   c) ₹ 980
   d) ₹ 950

8. According to the Human Development Report 2010 of the United Nations, India's rank in terms of the human development index is
   a) 119
   b) 134
   c) 169
   d) 182

https://www.freshersnow.com/previous-year-question-papers/
9. Which of the following does not apply to SRI method of paddy cultivation?
   a) Reduced water application
   b) Reduced plant density
   c) Increased application of chemical fertilizers
   d) Reduced age of seedlings

10. Which organic acid, often used as a preservative, occurs naturally in cranberries, prunes, cinnamon and cloves?
   a) Citric acid
   b) Benzoic acid
   c) Tartaric acid
   d) Lactic acid

11. Cotton belongs to the family
   a) Cruciferae
   b) Anacardiaceae
   c) Malvaceae
   d) Solanaceae

12. Photoperiodism is
   a) Bending of shoot towards source of light
   b) Effect of light/dark durations on physiological processes
   c) Movement of chloroplast in cell in response to light
   d) Effect of light on chlorophyll synthesis

13. Ergot disease is caused by which pathogen on which host?
   a) Claviceps purpurea on rye
   b) Puccinia recondita on wheat
   c) Drechlera sorokiniana on wheat
   d) Albugo candida on mustard

14. Rocks are the chief sources of parent materials over which soils are developed. Granite, an important rock, is classified as
   a) Igneous rock
   b) Metamorphic rock
   c) Sedimentary rock
   d) Hybrid rock

15. Which one of the following is a Kharif crop?
   a) Pearl millet
   b) Lentil
   c) Mustard
   d) Wheat

16. The coefficient of variation (C.V.) is calculated by the formula
   a) \[(\text{Mean}/\text{S.D.}) \times 100\]
   b) \[(\text{S.D.}/\text{Mean}) \times 100\]
   c) \[\text{S.D.}/\text{Mean}\]
   d) \[\text{Mean}/\text{S.D.}\]

17. Which of the following is commonly referred to as muriate of potash?
   a) Potassium nitrate
   b) Potassium chloride
   c) Potassium sulphate
   d) Potassium silicate

18. Inbred lines that have same genetic constitution but differ only at one locus are called
   a) Multi lines
   b) Monohybrid
   c) Isogenic lines
   d) Pure lines

19. For applying 100 kg of nitrogen, how much urea would one use?
   a) 45 kg
   b) 111 kg
   c) 222 kg
   d) 333 kg

20. The devastating impact of plant disease on human suffering and survival was first realized by epidemic of
   a) Brown spot of rice in Bengal
   b) Late blight of potato in USA
   c) Late blight of potato in Europe
   d) Rust of wheat in India

21. The species of rice (Oryza) other than O. sativa that is cultivated is
   a) O. rufipogon
   b) O. longistaminata
   c) O. glaberrima
   d) O. nivara

22. The enzyme responsible for the fixation of CO₂ in mesophyll cells of C-4 plants is
   a) Malic enzyme
   b) Phosphoenol pyruvate carboxylase
   c) Phosphoenol pyruvate carboxykinase
   d) RuBP carboxylase

23. Which one of the following is a "Vertisol"?
   a) Black cotton soil
   b) Red sandy loam soil
   c) Sandy loam sodic soil
   d) Submontane (Tara) soil

24. What is the most visible physical characteristic of cells in metaphase?
   a) Elongated chromosomes
   b) Nucleus visible but chromosomes not
   c) Fragile double stranded loose chromosomes
   d) Condensed paired chromosomes on the cell plate
25. All weather phenomena like rain, fog and mist occur in
   a) Troposphere
   b) Mesosphere
   c) Ionosphere
   d) Ozonosphere

26. Which of the following elements is common to all proteins and nucleic acids?
   a) Sulphur
   b) Magnesium
   c) Nitrogen
   d) Phosphorous

27. Silt has intermediate characteristics between
   a) Sand and loam
   b) Clay and loam
   c) Loam and gravel
   d) Sand and clay

28. Certified seed is produced from
   a) Nucleus seed
   b) Breeder seed
   c) Foundation seed
   d) Truthful seed

29. Seedless banana is an
   a) Autotriploid
   b) Autotetraploid
   c) Allotriploid
   d) Alloetraploid

30. Which one of the following is used to test the goodness-of-fit of a distribution?
   a) Normal test
   b) t-test
   c) Chi-square test
   d) F-test

**PART – II (Subject Paper)**

Multiple choice questions (No. 31 to 130). Choose the correct answer (a, b, c or d) and enter your choice in the circle (by shading with a pencil) on the OMR answer sheet as per the instructions given on the answer sheet.

31. Which country represent maximum plant species richness?
   a) India
   b) China
   c) Brazil
   d) Australia

32. The Ramsar Convention is an international treaty for the conservation and utilization of
   a) Wetlands
   b) Dry lands
   c) Rain forests
   d) Wild life

33. The Swalbard Global Seed Vault is located at
   a) Sweden
   b) St. Petersburg
   c) Norway
   d) Finland

34. Variation in diversity among plant populations is influenced most by
   a) Breeding systems
   b) Geographic range
   c) Mode of reproduction
   d) Taxonomic status

35. Which of the following characters is recorded in nominal scale?
   a) Harvest index
   b) Days to flower
   c) Flower colour
   d) Susceptibility to pests

36. Genetic heterogeneity is a common phenomenon in
   a) Modern varieties
   b) Clonally propagated crops
   c) Inbreds
   d) Farmer landraces

37. Kiwi fruit originated in
   a) New Zealand
   b) Indonesia
   c) Myanmar
   d) China

38. Cassava (*Manihot esculenta*) is a native to
   a) Indian
   b) Africa
   c) Papua New Guinea
   d) South America

39. ‘Conservation Agriculture’ forms a component of
   a) Sustainable agriculture
   b) Extensive agriculture
   c) Intensive agriculture
   d) Organic farming

40. The headquarters of UPOV is located at
   a) Sweden
   b) France
   c) Germany
   d) Geneva (Switzerland)

41. RFLP can be categorized as
   a) PCR-based marker
   b) Hybridization based marker
   c) Molecular marker based on PCR followed by hybridization
   d) Sequencing of DNA chip based markers
42. Which of the following indicators is not suitable for sustainable management of PGR ex situ?
   a) No. of accessions in genebanks
   b) Country distribution of genebanks
   c) Collection health, accession viability
   d) No. and frequency of landraces and area planted to them

43. Small population size during regeneration drifts out
   a) Rare alleles
   b) Less adaptive alleles
   c) Better adapted alleles
   d) Common alleles

44. Regeneration maintains the genetic identity of germplasm accessions by
   a) Producing seeds from few selected plants
   b) Random bulking of seeds from large no. of plants
   c) Taking care of breeding systems and accordingly controlled pollination
   d) Taking selfed seeds irrespective of breeding systems

45. Which of the following life traits is usually irrelevant for crops and is least associated with genetic differences?
   a) Mode of reproduction
   b) Breeding system
   c) Seed dispersal mechanism
   d) Geographic range

46. Which of the following answers is wrong in the statement "Characters recorded in germplasm characterization are"
   a) Qualitative
   b) Environmentally stable
   c) Mono- to oligogenic
   d) Not so easily manipulative

47. The 'HOPE' breeding system was developed for broadening genetic variation in order to obtain parental inbred lines for production of commercial hybrids in
   a) Wheat
   b) Potato
   c) Maize
   d) Sugarcane

48. Which devastating disease resulted in efforts for large-scale base broadening of the crops?
   a) Northern corn leaf blight
   b) Southern corn leaf blight
   c) Grassy stunt virus
   d) Late blight of potato

49. Which of the following statements is false?
   a) On average, 50% of a plant species' loci are polymorphic and the mean genetic diversity is 15%.
   b) Within an average population, 34% of the loci are polymorphic and the mean genetic diversity is 11%.
   c) Genetic variation at polymorphic loci is partitioned such that most (78%) of the diversity is found within populations, while smaller fraction (22%) accounts for population differentiation.
   d) Within an average population, 10% of the loci are polymorphic and the mean genetic diversity is 50%.

50. Global distribution of species richness
   a) Increases with decreasing latitude
   b) Decreases with decreasing latitude
   c) Increases with increasing altitude
   d) Decreases with seasonality in precipitation

51. In which of the following pairs, the priority for in situ conservation and ecogeographic surveys are mismatched?
   a) Groundnut – Latin America
   b) Oil palm – Africa, Latin America
   c) Rubber – Amazonia
   d) Coffee – Europe

52. SINGER database is related to germplasm collections of
   a) USDA
   b) CGIAR
   c) AVRDC
   d) EU

53. Which of the following is not true in the context of molecular characterization (marker diversity) of germplasm accessions?
   a) Information on ancestry or breeding history of population
   b) Indicators of recency of bottlenecks in population size
   c) Prevalence of outcrossing/level of gene flow
   d) Variation in environmental adaptation

54. Which of the following strategies is the best one for selecting core entries from a group?
   a) Constant strategy
   b) Proportional strategy
   c) Logarithmic strategy
   d) Diversity dependent strategy

55. For which founder crops, Fertile Crescent is not rich in wild progenitors?
   a) Emmer wheat
   b) Barley
   c) Lentil
   d) Rice

https://www.freshersnow.com/previous-year-question-papers/
56. The seminal article “Search for new genes” was written by which Indian author?
   a) M.S. Swaminathan
   b) B.P. Pal
   c) V.L. Chopra
   d) None of the above

57. India is not a signatory to which of the following treaty/convention?
   a) International Convention for the Protection of New Varieties of Plants (UPOV)
   b) Patent Cooperator Treaty (PCT)
   c) Budapest Treaty
   d) Berne Convention

58. Indian Gene Centre holds diversity in which oil seed crops?
   a) Groundnut and sunflower
   b) Rapeseed-mustard and sesame
   c) Safflower and sunflower
   d) Safflower and groundnut

59. A species is categorized as endemic because it is
   a) Exotic and established
   b) Kept in captivity for breeding
   c) Exclusively found in a particular zone
   d) Extinct due to calamity

60. As per original concept, what percentage of national collections of a crop species is represented in core collection?
   a) 20%
   b) 10%
   c) 5%
   d) 1%

61. Perilla in North-east India is used as
   a) Fruit
   b) Cereal
   c) Oilseed
   d) Fiber

62. Which of the following is not included in characterization traits?
   a) Seed pattern
   b) Flower colour
   c) Isoenzyme pattern
   d) Protein content

63. Global Environment Facility (GEF) was established in
   a) 1990
   b) 1991
   c) 1995
   d) 2001

64. Asian Vigna species do not include
   a) Mungbean
   b) Urd bean
   c) Cowpea
   d) Rice bean

65. The import of seed and planting material is regulated by
   a) Material Transfer Agreement
   b) The Seed Act
   c) Plant Food and Seed Order
   d) Global Plan of Action

66. Which of the following is not a cryoprotectant?
   a) Dimethyl sulphoxide
   b) Proline
   c) Glycerol
   d) Polyethylene glycol

67. Callus is the
   a) Undifferentiated and unorganised tissue
   b) Least differentiated and unorganised tissue
   c) Differentiated and unorganised tissue
   d) Undifferentiated and organised tissue

68. Agar, a commonly used gelling agent is obtained from
   a) Blue green algae
   b) Green algae
   c) Red algae
   d) Brown algae

69. Encapsulation-dehydration technique involves encapsulation of explant in
   a) Potassium alginate beads
   b) Sodium alginate beads
   c) Ammonium alginate beads
   d) Calcium alginate beads

70. ‘Tofu’ derived from the fermentation of seed protein with Rhizopus oryzae, is a product of
   a) Lablab bean
   b) Bambara bean
   c) Soybean
   d) Cluster bean

71. Safflower seeds are source of
   a) Vegetable fat
   b) Drying oil
   c) Semi-drying oil
   d) Non-drying oil

72. Which of the following crop is not an underutilized crop in India?
   a) Rice bean
   b) Amaranth
   c) Buckwheat
   d) Mustard

73. Northern blotting technique is used for
   a) RNA analysis
   b) DNA analysis
   c) Protein analysis
   d) Polysaccharide analysis
74. A major use of embryo culture is in
a) Induction of somaclonal variation
b) Overcoming hybridization barrier
c) Production of alkaloids
d) Clonal propagation

75. It will not be any advantage to produce seedless fruits in
a) Mango
b) Watermelon
c) Pomegranate
d) Oranges

76. Cloves are obtained from
a) Erupted styles
b) Inflorescence
c) True fruit
d) Unopened flower buds

77. The organization which has published 'Red Data Book' is
a) International Union for Conservation of Nature and Natural Resources
b) National Environmental Engineering Research Institute
c) National Wildlife Action Plan

78. Regulations governing movement of diseased plant material in the country are called
a) Crop protection
b) Plant regulation
c) Plant quarantine
d) Rotation

79. An orthodox seed is one which can
a) Tolerate dehydration and low temperature
b) Tolerate low temperature but not dehydration
c) Tolerate dehydration but not low temperature
d) Does not tolerate either

80. Cartagena Protocol relates to
a) Bulk import
b) Import of transgenics
c) Import of germplasm
d) Import of varieties

81. Tolerance limit for a quarantine pest is
a) Zero
b) 5%
c) 10%
d) 10-20%

82. For import of seed/planting material for research purposes, two mandatory requirements are
a) Phytosanitary certificate and undertaking
b) Import permit and undertaking
c) Import permit and phytosanitary certificate
d) Import permit and letter of approval

83. Mitochondrial DNA is inherited from
a) Male parent only
b) Female parent only
c) One half from male and one half from female parent
d) From male and female parent in a random ratio

84. Which of the following crops is not a mandate crop of ICRISAT?
- Chickpea
- Groundnut
- Pigeonpea
- Common bean

85. Potato originated in
a) Blue Mountains
b) Nilgiris
c) Himalayas
d) Andes

86. Hidden infestation in seeds is caused by
a) Mites
b) Thrips
c) Bugs
d) Bruchids

87. For genetic screening DNA profile specific for an individual is generated by a technique known as
a) DNA mutation
b) DNA fingerprinting
c) DNA footprinting
d) DNA restriction

88. Passion fruit is native to
a) Brazil
b) USA
c) Ethiopia
d) Mexico

89. The "Crop & Man" was written by
a) J.G. Hawkes
b) J.R. Harlan
c) R.W. Allard
d) J.T. Williams

90. Khejri (Prosopis cineraria) is an important plant of
a) Rajasthan
b) Uttarakhand
c) North-eastern Region
d) Western Ghatas

91. Which of the following genebank is the oldest one?
a) VIR, Russia
b) NSSL, USA
c) IPK, Germany
d) Nordic, Sweden
92. Where is the Millennium seed genebank is located?
   a) USA
   b) UK
   c) China
   d) Australia

93. Exchange of genes among the populations through seeds and pollens is known as
   a) Founder effect
   b) Genetic drift
   c) Gene flow
   d) Genetic bottleneck

94. Internal Transcribed Spacer (ITS) region is
   a) Coding region
   b) Non-coding region
   c) Used at intra-specific and inter-specific level
   d) Both b) and c) are correct

95. Colchicine obtained from which part of the plant?
   a) Root
   b) Shoot apex
   c) Seeds and bulbs
   d) Leaf

96. A group within a species having unique physical characteristics genetically adopted to particular environment conditions is refer as
   a) Ecospecies
   b) Ecotype
   c) Coenospecies
   d) Biotype

97. Microsatellite or SSR marker is
   a) Dominant
   b) Co-dominant
   c) Recessive
   d) Both a) and b) of the above

98. Which is natural system of classification?
   a) Linnaeus
   b) Bessey’s
   c) Bentham and Hooker’s
   d) Engler and Prantl’s

99. A distinct monocot characters shown by monocot families is
   a) Hypogynous flower
   b) Actinomorphic flower
   c) Trimerous flower
   d) Bisexual flower

100. The molecular scissors used to cut DNA into specific genes of interest are called
    a) Exonucleases
    b) Restriction endonucleases
    c) Ligases
    d) Polymerases

101. A red or orange dye used in dyeing silks is obtained from the pulp that surrounds the seeds of
    a) Semecarpus anacardium
    b) Emblica officinalis
    c) Bixa orellana
    d) Aegle marmelos

102. Which of the following pairs is correctly matched?
    a) Pista - Sciophyte
    b) Lemma - Xerophyte
    c) Rhizophora - Halophyte
    d) Casuarina - Hydrophyte

103. Somaclonal variation can be advantageous because
    a) There are chromosomal abnormalities
    b) Monosomics are produced
    c) Enrichment of genetic diversity occurs
    d) It gives high genetic uniformity

104. Headquarter of World Agroforestry Center is located at
    a) Lima, Peru
    b) Cali, Colombia
    c) Otonou, Benin
    d) Nairobi, Kenya

105. Botanical name of Manila tamarind is
    a) Tamarindus indica
    b) Pithecellobium dulce
    c) Salvadora persica
    d) Capparis decidua

106. Centre of origin of Citrus medica is
    a) China
    b) India
    c) Australia
    d) South Africa

107. A multipurpose legume which provides fodder, vegetable and gum
    a) Cicer arietinum
    b) Cajanus cajan
    c) Cyamopsis tetragonolobus
    d) Laye culinaris

108. Botanical name of foxtail millet is
    a) Setaria italica
    b) Paspalum scrobiculatum
    c) Panicum miliaceum
    d) Panicum miliare

109. In tobacco leaves, the rawness and bitter taste of the leaf are eliminated and fine aroma is developed after
    a) Flue curing
    b) Desuckering
    c) Fermentation
    d) Priming
110. Which one of the following is not among the ‘New World Crops’?
   a) Maize
   b) Common bean
   c) Tomato
   d) Wheat

111. In Iitchi fruit, which part is edible?
   a) Aril
   b) Baculum
   c) Caruncle
   d) Epiblast

112. Which one of the following species is used for the extraction of Geranium oil?
   a) Cymbopogon flexuosus
   b) Pelargonium graveolens
   c) Rosa damascena
   d) Schleicheria trijuga

113. Periderm includes
   a) Phellem, phelloderm and cortex
   b) Phellem, cambium and cortex
   c) All the tissues between epidermis and pith
   d) Phellogon, phellem and phelloderm

114. Sunflower is the native crop of
   a) Russia
   b) Brazil
   c) China
   d) USA

115. Indian rosewood tree is a common name of
   a) Acacia
   b) Shorea
   c) Dalbergia
   d) Eucalyptus

116. Which of the following crop has polyphyletic origin?
   a) Maize
   b) Wheat
   c) Okra
   d) Common bean

117. For which of the following crops, Indian Gene Centre is not rich in wild relatives?
   a) Vigna
   b) Cajanus
   c) Arachis
   d) Abelmoschus

118. Highest amount of vitamin C (~100 mg per 100 g) is found in
   a) Sprouted legumes
   b) Indian gooseberry fruit (Emblica officinalis)
   c) Citrus fruits
   d) Seabuckthorn (Hippophae rhamnoides)

119. Amino acids absent in pulses are
   a) Methionine and alanine
   b) Alanine and cystaine
   c) Methionine and cysteine
   d) Lysine and tryptophan

120. The ITPGRFA establishes a multilateral exchange of PGR of
   a) 64 crops
   b) 52 crops
   c) 32 crops
   d) 29 crops

121. Which of the following pairs is not correctly matched?
   a) Colchicine - Bulb
   b) Digitoxin - Leaves
   c) Ephedrin - Entire plant
   d) Cocaine - Roots

122. When you consume coconut meat, coconut milk or popcorn you are eating which part of developing seed?
   a) Endosperm
   b) Pericarp
   c) Mesocarp
   d) Nucellus

123. In protogynous the female organ is receptive
   a) Before the male is mature
   b) After the male is mature
   c) Both mature simultaneously
   d) Male is ready before the female is receptive

124. In Citrus, fruit type is
   a) Pepo
   b) Hesperidium
   c) Drupe
   d) Berry

125. In seed spices fruit is schizocarp where each carpel is botanically called
   a) Pericarp
   b) Mericarp
   c) Mesocarp
   d) Endocarp

126. In agamospermy
   a) Embryo does not arise from embryo sac
   b) Embryo arise from embryo sac
   c) Embryo does not from
   d) Embryo arise from seed coat

127. Family of minute flowering plants
   a) Lemnaceae
   b) Apiales
   c) Umbelliferae
   d) Poaceae
128. Custard apple belongs to family
   a) Apocynaceae
   b) Annonaceae
   c) Anacardiceae
   d) Amaranthaceae

129. Catharanthus roseus is source of vinblastine and vincristine alkaloids which are
   a) Anti-malarial
   b) Anti-biotic
   c) Anti-tumour
   d) Anti-allergic

130. In Podophyllum, Podophyllum resin or podophyllin exists in
   a) Leaf and petiole
   b) Roots and rhizomes
   c) Flower and seed
   d) Stem and fruit

Matching type questions (No. 131 to 140); all questions carry equal marks. Choose the correct answer (a, b, c, d or e) for each sub-question (i, ii, iii, iv and v) and enter your choice in the circle (by shading with a pencil) on the OMR answer sheet as per the instructions given on the answer sheet.

131.
   i) Polyembryony   a) Quinine
   ii) Roots          b) Palm oil
   iii) Bark          c) Turmeric
   iv) Rhizome        d) Sweet potato
   v) Mesocarp        e) Orange

132.
   i) Indigenous  a) Barley
   ii) Recalcitrant seed  b) Wheat
   iii) Poor man’s timber  c) Litchi
   iv) Amphidiploid  d) Mango
   v) Oldest cereal e) Bamboo

133.
   i) Ecosystem    a) M.S. Swaminathan
   ii) Indian Vavilov  b) N. Myers
   iii) Hotspots       c) S.L. Bahuguna
   iv) Indian Green Revolution  d) H.B. Singh
   v) Chipko movement e) A. Tansley

134.
   i) Arboratum  a) Total sum of genes of a species
   ii) Herbarium  b) High diversity – High risk
   iii) Hot spot c) Collection of dried plant specimens
   iv) Self-pollination  d) Low diversity
   v) Gene pool e) Botanical garden with trees and shrubs

135.
   i) Genebank  a) In situ conservation
   ii) Biosphere reserve b) Ex situ conservation
   iii) Agrobiodiversity  c) Community conservation
   iv) Sacred groves d) Pest epidemics
   v) Genetic  e) On-farm conservation
   vulnerability

136.
   i) Transmission genetics  a) Cell
   ii) Molecular genetics b) Active collection
   iii) Quantitative/population genetics  c) Base collection
   iv) Long-term storage d) Individual
   v) Short-term storage e) Mendelian
  populations

137.
   i) IPK  a) USA
   ii) Vir  b) Germany
   iii) NCGRP  c) UK
   iv) Nordic  d) Russia
   v) Commonwealth potato collection e) Sweden

138.
   i) Coffee  a) Orchidaceae
   ii) Chocolate  b) Papaveraeae
   iii) Opium  c) Rubiaceae
   iv) Vanilla  d) Sterculiaeae
   v) Jackfruit    e) Moraceae

139.
   i) Fertilization a) Treub
   ii) Triple fusion  b) Camerarius
   iii) Pollination  c) Strasburger
   iv) Chalazogamy d) Nawaschin
   v) Totipotency e) Hoberkindt

140.
   i) Central Tobacco Research  a) Shimla
   Institute
   ii) Central Soil Salinity Research Institute
   iii) Central Potato Research Institute  c) Karnal
   iv) Indian Grassland and Fodder Research Institute  d) Rajamundry
   v) Central Institute of Arid  e) Bikaner
   Horticulture

https://www.freshersnow.com/previous-year-question-papers/
Short questions (No. 141 to 148); each question carries FIVE marks. Write answers, including computation / mathematical calculations if any, in the space provided for each question on the question paper itself.

141. Comment on the process involved in domestication of a crop from wild.

142. Describe the use of herbarium as a tool in plant taxonomic studies.
143. What is the protocol to predict the storage behaviour of unknown/new species?

144. Can *in vitro* methods of conservation replace the necessity of *in vivo* conservation of plant genetic resources? Comment.
145. Define cryopreservation. Highlight the importance of cryopreservation techniques in PGR conservation.

146. What is pest risk analysis? What is its significance in the international exchange/trade of agricultural commodities?