Question Booklet Series

A

BOTANY

CODE :- 03

Time Allowed: Two Hours

Marks: 100

Name: _____ Roll No. _____

Read instructions given below before opening this booklet:

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

1. Use only **BLUE Ball Point** Pen.

2. In case of any defect - Misprint, Missing Question/s Get the booklet changed. No complaint shall be entertained after the examination.

3. Before you mark the answer, read the instruction on the OMR Sheet (Answer Sheet) also before attempting the questions and fill the particulars in the ANSWER SHEET carefully and correctly.

4. There are FOUR options to each question. Darken only one to which you think is the right answer. There will be no Negative Marking.

5. Answer Sheets will be collected after the completion of examination and no candidate shall be allowed to leave the examination hall earlier.

6. The candidates are to ensure that the Answer Sheet is handed over to the room invigilator only.

7. Rough work, if any, can be done on space provided at the end of the Question Booklet itself. No extra sheet will be provided in any circumstances.

8. Write the BOOKLET SERIES in the space provided in the answer sheet, by darkening the corresponding circles.

9. Regarding incorrect questions or answers etc. Candidates kindly see NOTE at the last page of the Booklet.

SEAL

Q 1. Which of the following is not a function of mitochondria

(A) Krebs cycle
(B) Electron transport chain
(C) Oxidative phosphorylation
(D) Glycolysis

Q 2. If one gene influences the phenotypic expression of another gene, it is said to be

(A) Dominant
(B) Epistatic
(C) Super dominant
(D) Recessive

Q 3. The lysosome contains one of the following enzymes, which are

(A) Oxidative enzymes
(B) Enzymes of energy conversion
(C) Enzymes of protein synthesis
(D) Hydrolytic enzymes

Q 4. Initiation codon in eukaryotes is

(A) GAU (B) AGU (C) AUG (D) UAG

Q 5. Deficiency of iron first appears in which of the following plant parts

(A) Young leaves
(B) Old leaves
(C) Young fruits
(D) Old fruits

Q 6. The fungus without mycelium is

(A) *Puccinia*
(B) *Phytophthora*
(C) *Saccharomyces*
(D) *Rhizopus*

Q 7. During aerobic respiration the substrate level phophorylation takes place in

(A) Cytoplasm only
(B) Mitochondria only
(C) Cytoplasm and Golgi complex
(D) Cytoplasm and mitochondria

Q 8. Brown sugar is obtained from

(A) *Papaver somniferum*
(B) *Rauwolfia serpentina*
(C) *Conium maculatum*
(D) *Claviceps purpurea*

Q 9. Psychrophytes are

(A) Plants growing on saline land
(B) Mangroves
(C) Plants growing on sand and gravel
(D) Plants growing on cold soil

Q 10. Which of the following is the FIRST National Park of India established in 1936

(A) Royal Park
(B) Yellow Stone Park
(C) Jim Corbett Park
(D) Kaziranga Park

Q 11. Which of the following are not examples of secondary metabolites

(A) Fats and hemes
(B) Alkaloids
(C) Lignins and tannins
(D) Essential oils, steroids and rubber

Q 12. The matching of codon and anticodon is done by

(A) Base pairing
(B) Covalent bonding
(C) Hydrophobic interaction
(D) Ionic interaction

Q 13. The needle like crystals of calcium oxalate found in the cell of *Pista* are called

(A) Cystoliths (B) Autoliths

(C) Raphides (D) Inulin

Q 14. Causal organism of scab disease of potato belongs to the genus

(A) *Pseudomonas sp.* (B) *Agrobacterium sp.*

(C) *Streptomyces sp.* (D) *Xanthomonas sp.*

Q 15. The sequence of bases in one strand of DNA is AATGGCCCT then the complementary sequence of bases would be

(A) TTACCGGGA (B) AATGGCCCT

(C) AAACCGGGA (D) TTAGGCCCA

Q 16. As per ABC Model, which of the following genes specify the whorl of sepals in a wild type flower

(A) A only (B) B only (C) A+B (D) A+C

Q 17. Fusion of mature somatic cells which directly function as gametangia is called

(A) Autogamy (B) Hologamy

(C) Heterogamy (D) Conjugation

Q 18. If a gene controls several phenotypic characters, the phenomenon is called

(A) Pleiotropy (B) Epistasis

(C) Incomplete dominance (D) Co-dominance

Q 19. The ratio of carbon dioxide evolved and oxygen utilized in a biological process is

(A) Photosynthetic Quotient (B) Respiratory Quotient

(C) Temperature Quotient (D) R_f value of gas

Q 20. The seeds which can tolerate reduction in moisture and temperature are called

(A) Dormant seeds (B) Vernalized seeds

(C) Orthodox seeds (D) Recalcitrant seeds

Q 21. The number of carbons in sesquiterpene is

(A) 10 carbons (B) 15 carbons

(C) 20 carbons (D) 5 carbons

Q 22. Hydrogen bond is formed between which of the constituents of DNA

(A) Sugar and nitrogenous base (B) Sugar and phosphate

(C) Complementary bases (D) Phosphate and nitrogenous base

Q 23. Water blooms are generally caused due to

(A) Bacteria (B) *Hydrilla*

(C) Mosses (D) Blue green algae

Q 24. Kranz type of anatomy is shown by

(A) C_3 plants (B) C_4 plants

(C) CAM plants (D) CAM and C_4 plants

Q 25. From which of the following algae, agar-agar is obtained

(A) *Nostoc* (B) *Chlamydomonas*

(C) Gelidium (D) *Ulothrix*

Q 26. Loose smut of wheat is caused by

(A) *Albugo candida* (B) *Tilletia tritici*

(C) Ustilago tritici (D) *Puccinia graminis tritici*

Q 27. What do we call the maintenance of internal conditions of an organism within a certain boundary range

(A) Evolution (B) Metabolism

(C) Adaptation (D) Homeostasis

Q 28. Which of the following is produced during water stress and causes stomatal closure

(A) Cytokinin (B) ABA

(C) Auxins (D) Gibberellins

Q 29. Oxygen liberated during photosynthesis comes from

(A) Water (B) CO_2

(C) Chlorophyll (D) Phosphoglyceric acid

Q 30. The first product for photorespiration is

(A) Malic acid (B) IAA

(C) Glycolate (D) Serine

Q 31. Pollen transfer from anther to stigma of different species is termed

(A) Xenogamy (B) Allogamy

(C) Autogamy (D) Geitonogamy

Q 32. Triticale is a cross between

(A) Wheat and rye (B) Wheat and barley

(C) Barley and rye (D) Wheat and oat

Q 33. If diploid chromosome number of flowering plant is 12, then 6 chromosomes will be present in

(A) Cotyledonary cells (B) Endosperm cells

(C) Synergids (D) Leaf cells

Q 34. The outer wall of pollen grain is made up of

(A) Cellulose (B) Pectocellulose

(C) Lignin (D) Sporopollenin

Q 35. In the genetic dictionary, there are 64 codons because

(A) 64 amino acids are to be coded

(B) Genetic code is triplet

(C) There are 44 nonsense codons and 20 sense codons

(D) 64 types of tRNA are present

Q 36. In symbiotic nitrogen fixation, leghaemoglobin present in the nodule helps to fix nitrogen in the presence of enzyme

(A) Nitrate synthase
(B) Glutathione synthase
(C) Glutathione synthetase
(D) Nitrogenase

Q 37. One of the endangered species of Indian medicinal plants is

(A) *Ocimum*
(B) *Nepenthes*
(C) *Garlic*
(D) *Podophyllum*

Q 38. The correct formula for chlorophyll a is

(A) $C_{55}\ H_{77}\ O_6\ N_4\ Mg$
(B) $C_{55}\ H_{70}\ O_5\ N_4\ Mg$
(C) $C_{55}\ H_{72}\ O_5\ N_4\ Mg$
(D) $C_{55}\ H_{70}\ O_6\ N_4\ Mg$

Q 39. Which of the following vitamins is water soluble

(A) Vitamin A
(B) Vitamin E
(C) Vitamin D
(D) Vitamin C

Q 40. Anther culture provides a method for production of

(A) Polyploids
(B) Homozygous line
(C) Heterozygous line
(D) Apomictic line

Q 41. Which of the following is non-essential amino acid

(A) Lysine
(B) Leucine
(C) Isoleucine
(D) Glutamine

Q 42. A fungicide which is taken up and translocated within plant, so as to become fungitoxic is called as

(A) Contact fungicide
(B) Systemic fungicide
(C) Broad spectrum fungicide
(D) Narrow spectrum fungicide

Q 43. Phosphorous and nitrogen ions generally get depeleted in soil because they usually occur as

(A) Neutral ions
(B) Negatively charged ions
(C) Positively charged ions
(D) Both positively and negatively charged but disproportionate mixture

Q 44. Aerenchyma formation in wet land species especially in rice is induced by

(A) Auxin and Ethylene
(B) ABA
(C) Cytokinin
(D) Ethylene

Q 45. Phycocyanin is a

(A) Blue pigment
(B) Yellow pigment
(C) Green pigment
(D) Red pigment

Q 46. The technique by which virus detection can be made in a plant is

(A) ELISA
(B) Microscopy
(C) Electrophoresis
(D) Spectroscopy

Q 47. Domestic quarantine is enforced against which disease of potato

(A) Wart
(B) Scab
(C) Early blight
(D) Late blight

Q 48. Vitamin D_3 is also known as

(A) Tocopherol
(B) Cholecalciferol
(C) Retinal
(D) Ergocalciferol

Q 49. Hot spots are region of high

(A) Rarity
(B) Endemism
(C) Critically endangered population
(D) Diversity

Q 50. Percentage of water left in the soil when a plant begins to wilt is called

(A) Field capacity
(B) Wilting coefficient
(C) Water holding capacity
(D) Total soil moisture stress

Q 51. Cytochrome oxidase contains

(A) Copper
(B) Magnesium
(C) Iron
(D) Mercury

Q 52. During inversion

(A) Temperature increases with altitude
(B) Temperature decreases with altitude
(B) Temperature remains constant
(D) No change in temperature

Q 53. Boron in green plants assists in

(A) Activation of enzymes
(B) Acting as enzyme co-factor
(C) Photosynthesis
(D) Sugar transport

Q 54. The proteinaceous part of maize endosperm is

(A) Apophysis
(B) Scutellum
(C) Aleurone layer
(D) Testa

Q 55. Which of the following devices is suitable for the removal of gaseous pollutants

(A) Cyclone separator
(B) Electrostatic precipitator
(C) Fabric filter
(D) Wet scrubber

Q 56. The hormone pair required for callus to differentiate is

(A) Auxin and cytokinin
(B) Auxin and ethylene
(C) Auxin and ABA
(D) Cytokinin and gibberellins

Q 57. The example of water soluble plant pigment(s) is

(A) Chlorophyll a
(B) Chlorophyll b
(C) Anthocyanin
(D) Chlorophyll a and chlorophyll b

Q 58. Gas leaked in Bhopal tragedy was

(A) Methyl isocyanate
(B) Potassium isothiocyanate
(C) Ethyl isocyanate
(D) Sodium isothiocyanate

Q 59. In making of saffron spice, which of the following parts of plant is used

(A) Leaf (B) Petal (C) Stamen (D) Stigma

Q 60. When two ecosystems overlap each other, this will be called

(A) Habitat (B) Niche (C) Ecotone (D Ecotype

Q 61. The blast of rice is caused by

(A) *Xanthomonas transluscens*
(B) *Neovosia horrid*
(C) *Xanthomonas oryzae*
(D) *Pyricularia oryzae*

Q 62. Lever mechanism or turn pipe mechanism for pollination is a characteristic feature of

(A) *Antirrhinum*
(B) *Ocimum*
(C) *Salvia*
(D) *Fucus*

Q 63. The seed germination is epigeal in

(A) Rice
(B) Green gram
(C) Wheat
(D) *Helianthus*

Q 64. The condition in which the stem of seedlings is attacked near the soil surface is called

(A) Damping off
(B) Wilt
(C) Rot
(D) Blight

Q 65. Which of the following organism was not used in genetic engineering programme leading to development of golden rice

(A) *Escherichia coli*
(B) *Erwinia uredovora*
(C) *Agrobacterium tumefaciens*
(D) *Narcissus pseudonarcissus*

Q 66. The best way to obtain bacteria and virus free plants through tissue culture

(A) Meristem culture
(B) Seed germination after gamma-irradiation
(C) Micropropagation
(D) Seed germination under aseptic conditions

Q 67. Heterosis means

(A) Pollen sterility
(B) Pollen-pistil incompatibility
(C) Hybrid vigour
(D) Hybrid compatibility

Q 68. Mowing grass lawn facilities better maintenance because

(A) Wounding stimulates regeneration
(B) Removal of apical dominance and stimulation of intercalary meristem
(C) Removal of apical dominance
(D) Removal of apical dominance and promotion of lateral meristem

Q 69. Name the root parasite with the biggest flower

(A) *Rafflesia*
(B) *Santalum*
(C) *Orobanche*
(D) *Dendrophthoe*

Q 70. Okazaki fragments consist of

(A) DNA only
(B) RNA only
(C) DNA+RNA
(D) DNA+Primer

Q 71. Cell sap is

(A) Living content of the cell
(B) Non-living content of the protoplasm
(C) Non-living content of the vacuole
(D) Living content of the cytoplasm

Q 72. The main difference between chlorophyll a and b is that

(A) Chl a is linear and Chl b is branched
(B) Chl a is more oxidized form
(C) Chl a has methyl group whereas Chl b has aldehyde group
(D) Chl a has aldehyde group whereas Chl b has methyl group

Q 73. Which of the following is macroni wheat

(A) *Triticum aestivum*
(B) *Triticum dicoccum*
(C) *Triticum monococcum*
(D) *Triticum durum*

Q 74. The mustard oil is pungent to eye due to presence of sinigrin which is a

(A) Glucoside
(B) Triterpene
(C) Alkaloid
(D) Phenol

Q 75. The diagrammatic representation of karyotype of a species is called

(A) Idiogram
(B) Cladogram
(C) Ecogram
(D) Chromogram

Q 76. Opium is obtained from which part of *Papaver somniferum*

(A) Young leaves
(B) Mature leaves
(C) Ripe fruits
(D) Unripe fruits

Q 77. In which of the following part of India evergreen forests are found

(A) Assam
(B) Rajasthan
(C) Orissa
(D) Uttar Pradesh

Q 78. Which medicinal plant has high antibiotic and antibacterial properties

(A) Šarpagandha
(B) Neem
(C) Kachnar
(D) Babool

Q 79. Plant community which has grown naturally without human aid and has been left undisturbed by humans for long time is termed as:

(A) Tundra vegetation
(B) Virgin vegetation
(C) Taiga vegetation
(D) Desert vegetation

Q 80. Which of the following is an aquatic pteridophyte

(A) *Azolla*
(B) *Lycopodium*
(C) *Ophioglossum*
(D) *Equisetum*

Q 81. Tyloses are

(A) Deposits of sclerenchyma
(B) Plugs of tracheids
(C) Deposits of sieve plates
(D) Deposits of companion cells

Q 82. The inorganic ion which can act as second messenger is

(A) Zn^{2+} (B) Ca^{2+} (C) Mg^{2+} (D) Mn^{2+}

Q 83. The coir is obtained from which part of Coconut fruit

(A) Epicarp
(B) Seed coat
(C) Mesocarp
(D) Endocarp

Q 84. Life cycle of bryophytes is

(A) Haplontic
(B) Diplontic
(C) Diplohaplontic
(D) Diplobiontic

Q 85. In cabbage, edible part is

(A) Floral bud
(B) Apical bud
(C) Axillary bud
(D) Foliar bud

Q 86. Oil of Citronella is obtained from

(A) *Cymbopogon nardus*
(B) *Cananga odorata*
(C) *Pelargonium graveolens*
(D) *Rosmarinus officinalis*

Q 87. Whip smut of sugarcane is caused by

(A) *Ustilago tritici*
(B) *Ustilago violacea*
(C) *Ustilago nuda*
(D) *Ustilago scitmainea*

Q 88. Monosporic eight nucleated female gametophyte is found in

(A) Adoxa (B) Onion (C) Polygonum (D) Fritillaria

Q 89. Carnivorous plants kill insects because

(A) Insects eat their leaves
(B) Insects eat their fruits
(C) Such plants obtain nitrogen from killed insects
(D) Such plants obtain magnesium from killed insects

Q 90. Maple tree is an example of

(A) Sequential senescence
(B) Synchronous senescence
(C) Shoot senescence
(D) Whole plant senescence

Q 91. Which one of the following is not a raw material for Polymerase Chain Reaction

(A) Primers
(B) Target DNA
(C) Taq polymerase
(D) Restriction endonucleases

Q 92. Select a method of vector-mediated gene transfer

(A) Cosmid mediated gene transfer
(B) Chemical mediated gene transfer
(C) Microinjection to target nucleus
(D) Biolistics

Q 93. For two traits, the phenotypic ratio in haploid organism is

(A) 9:3:3:1 (B) 1:1:1:1 (C) 15:1 (D) 4:4:2:2

Q 94. Cry1 endotoxins obtained from *Bacillus thuringiensis* are effective against

(A) Flies
(B) Boll worms
(C) Mosquitoes
(D) Nematodes

Q 95. Which of the following is a genus of Vesicular arbuscular mycorrhiza fungi

(A) *Pythium*
(B) *Puccinia*
(C) *Uncinula*
(D) *Glomus*

Q 96. Kisan Divas falls on

(A) 22nd April
(B) 5th June
(C) 16th October
(D) 23rd December

Q 97. Which plant is known as 9 o' clock plant

(A) *Balsam*
(B) *Nastursium*
(C) *Portulaca*
(D) *Rosa*

Q 98. A regulatory body working under Ministry of Environment and Forests for the release of transgenic crops is

(A) National Bureau of Plant Genetic Resources
(B) National Institute of Plant Genome Research
(C) Genetic Engineering Approval Committee
(D) National Safety Council

Q 99. Haploid plants can be produced by tissue culture of following part of a healthy plant

(A) Pollen grain
(B) Flower bud
(C) Parts of embryo
(D) Meristem

Q100. Opening of floral buds into flowers, is a type of

(A) Autonomic movement of variation
(B) Paratonic movement of growth
(C) Autonomic movement of growth
(D) Autonomic movement of locomotion.

Note with reference to instructions No. 9 at first page of Question Booklet.

In view of the orders dated 04.09.2012 passed by the Hon'ble Punjab and Haryana High Court in LPA No. 1338 of 2012, the Commission has decided to display the Answer Keys of all the 20 subjects (one compulsory and 19 optional subjects) of HCS (Ex. Br.) & Other Allied Services Preliminary Examination – 2014 on the next day of Exam i.e. on 04.08.2014 on the Commission's website i.e. http://hpsc.gov.in. The candidates who appeared in the aforesaid Pre. Exam are advised to submit their representation regarding incorrect question / answers, if any, upto 06.08.2014 (upto 05.00 PM) personally or through online **(not by post / courier)**. Candidates must write their Name, Roll No. and name of the subject. Representations received after 06.08.2014 (upto 05.00 PM) will not be entertained by the Commission. Representations received within stipulated period will be placed before the Committee of subject Experts and the report submitted by the Committee of Experts will be final. The result will be prepared proportionately after giving the benefit of incorrect question / answers on the basis of the report of the Members of subject Expert Committee.

SEAL

SPACE FOR ROUGH WORK