67

QUESTION PAPER SERIES CODE
A

Registration No. : | | | | | | |

Centre of Exam. : _____

Name of Candidate : _____

Signature of Invigilator

COMBINED ENTRANCE EXAMINATION, 2015

M.Sc. (Agri.)/M.V.Sc. BIOTECHNOLOGY

[Field of Study Code : BAG/MVS/FST]

Time Allowed : 3 hours *Maximum Marks* : 240

INSTRUCTIONS FOR CANDIDATES

Candidates must read carefully the following instructions before attempting the Question Paper :

(i) Write your Name and Registration Number in the space provided for the purpose on the top of this Question Paper and in the Answer Sheet.

(ii) **Please darken the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

(iii) The Question Paper is divided into two Parts : Part—A and Part—B. Both Parts have multiple-choice questions. All answers are to be entered in the Answer Sheet provided with the Question Paper for the purpose.

(iv) Part—A consists of 60 questions and all are compulsory. Answer all the questions in the Answer Sheet provided for the purpose by darkening the correct choice, i.e., (a) or (b) or (c) or (d) with BALLPOINT PEN only against each question in the corresponding circle. Each correct answer carries *1* mark. **There will be negative marking and ½ mark will be deducted for each wrong answer.**

(v) Part—B consists of 100 questions. **Answer any 60 questions** in the Answer Sheet by darkening the correct choice, i.e., (a) or (b) or (c) or (d) with BALLPOINT PEN only against the corresponding circle. Each correct answer carries *3* marks. **There will be negative marking and 1 mark will be deducted for each wrong answer.**

In case any candidate answers more than the required 60 questions, the first 60 questions attempted will be evaluated.

(vi) Answer written by the candidates inside the Question Paper will not be evaluated.

(vii) Calculators and Log Tables may be used.

(viii) Pages at the end have been provided for Rough Work.

(ix) Return the Question Paper and Answer Sheet to the Invigilator at the end of the Entrance Examination. **DO NOT FOLD THE ANSWER SHEET.**

INSTRUCTIONS FOR MARKING ANSWERS

1. Use only Blue/Black Ballpoint Pen (do not use Pencil) to darken the appropriate Circle.
2. Please darken the whole Circle.
3. Darken ONLY ONE CIRCLE for each question as shown in example below :

Wrong	Wrong	Wrong	Wrong	Correct
ⓐ ⓑ ⓒ ⓓ	ⓐ ⓑ ⓒ ⓓ	ⓐ ⓑ ⓒ ⓓ	ⓐ ⓑ ⓒ ⓓ	ⓐ ⓑ ⓒ ⓓ

4. Once marked, no change in the answer is allowed.
5. Please do not make any stray marks on the Answer Sheet.
6. Please do not do any rough work on the Answer Sheet.
7. Mark your answer only in the appropriate space against the number corresponding to the question.
8. **Ensure that you have darkened the appropriate Circle of Question Paper Series Code on the Answer Sheet.**

PART—A

Answer **all** questions

1. Freezing point of H_2O is

(a) 32 °F

(b) 0 °F

(c) 298 K

(d) 77 °F

2. Average atomic mass of an element is

(a) average atomic mass of all the isotopes of the element

(b) average relative abundance of all the isotopes of the element

(c) average of the product of atomic mass and relative abundance of the respective isotopes

(d) difficult to calculate

3. In the Millikan's oil-drop experiment, which of the following forces is acting on the oil drop?

(a) Gravitational force

(b) Electrostatic force due to electrical field

(c) Viscous drag force

(d) All of the above

4. Angular momentum of an electron of mass m_e, moving in a circular path of radius (r) around the nucleus with linear velocity (v) and moment of inertia (I) and angular velocity (ω) is given by

(a) angular momentum = $I\omega$

(b) angular momentum = $m_e vr$

(c) Both (a) and (b)

(d) None of the above

5. Al_2O_3 is a/an

(a) acidic oxide

(b) basic oxide

(c) amphoteric oxide

(d) neutral oxide

6. Chalcogens belong to

(a) *s*-block element

(b) *p*-block element

(c) *d*-block element

(d) *f*-block element

7. Silicon and germanium are called as

(a) metals

(b) non-metals

(c) metalloids

(d) oxidizing agents

8. Ionization enthalpy is the energy required to remove an electron from

(a) an isolated gaseous atom in its ground state

(b) an isolated gaseous atom in its excited state

(c) its liquid state

(d) its solid state

9. For a compound to be stable, the condition according to molecular-orbital theory is

(a) $N_b > N_a$

(b) $N_b = N_a$

(c) $N_b < N_a$

(d) None of the above

10. Free expansion of a gas in vacuum is

(a) $p_{ex} = 0$

(b) $p_{ex} > 0$

(c) $p_{ex} < 0$

(d) Never happens

11. Heat capacity of a substance can be found using

(a) calorimeter

(b) colourimeter

(c) pH meter

(d) thermometer

12. Oxidation is defined as

(a) addition of O_2 or electronegative element to a substance

(b) removal of H_2 or electropositive element from a substance

(c) loss of electron

(d) All of the above

13. Thin-layer chromatography works on the principle of

(a) capillary rise

(b) gravitational force

(c) difference in solubility and degree of absorption

(d) Both (a) and (c)

14. $C_6H_8O_4$ can show

(a) geometric isomerism

(b) enantiomerism

(c) conformational isomerism

(d) None of the above

15. Kjeldahl's method is a

(a) quantitative analysis method for nitrogen

(b) qualitative analysis method for nitrogen

(c) proximate method for analysis of coal

(d) None of the above

16. A traditional wall clock with hour and minute hands and without any digits is observed for the first time mistakenly in a mirror and the time is noted. After 2 hours 40 minutes it is observed directly and the same time is again noted. The original time was

(a) 4 hours 15 minutes

(b) 3 hours 20 minutes

(c) 5 hours 10 minutes

(d) 2 hours 5 minutes

17. Two hospitals *A* and *B* with maternity wards are checked for the percentage of boys and girls born in the last one year. *A* reports 52% boys and *B* reports 58% boys. A simple explanation for the above is

(a) a large number of children were born in hospital *A*

(b) a large number of children were born in hospital *B*

(c) this is part of random variation and conclusion cannot be drawn about hospital size

(d) the number of children born in both hospitals is exactly equal

18. A trader buys goods and increases its selling price by 50%. He then offers a 20% discount and makes a profit of ₹ 500. The initial cost of the goods was

(a) ₹ 2,000

(b) ₹ 2,500

(c) ₹ 1,666

(d) ₹ 3,000

19. 1 ml STE (Sucrose-Tris–EDTA) buffer is to be made from stock solutions of 40% sucrose, 1 M Tris and 0·5 M EDTA. If the STE buffer composition is 10% sucrose, 50 mM Tris and 10 mM EDTA, then the water required to be added after mixing these stock solutions is

(a) 620 µL

(b) 680 µL

(c) 720 µL

(d) 740 µL

20. A mass m_1 is suspended from a light spring. An additional mass of m_2 is added to m_1 whereupon the spring is stretched by an additional length of x_1. The time period of the oscillation of the spring will be given by

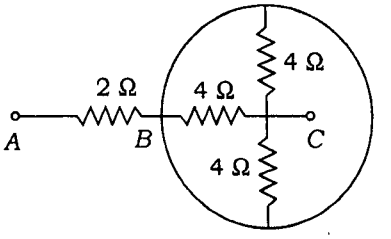
(a) $T = \frac{\pi}{2}((m_1 + m_2)/m_2 g x_1)^{1/2}$

(b) $T = 2\pi(m_2 g / x_1(m_1 + m_2))^{1/2}$

(c) $T = 2\pi(x_1(m_1 + m_2)/m_2 g)^{1/2}$

(d) $T = 2\pi(m_1 g / x_1(m_1 + m_2))^{1/2}$

21. If the circular ring is made of uniform wire of negligible resistance as shown in the figure below, the resistance between the two points A and C is



(a) 14 Ω

(b) 4·33 Ω

(c) 3·33 Ω

(d) 12·33 Ω

22. A potential barrier of 0·3 V exists across a p-n junction. If the depletion region is 1 μm wide, what will be the value of the electric field in this region?

(a) $0{\cdot}3 \times 10^6$ V/m

(b) $0{\cdot}1 \times 10^5$ V/m

(c) $3{\cdot}0 \times 10^4$ V/m

(d) $0{\cdot}3 \times 10^5$ V/m

23. A glass concave lens is placed in a liquid in which it behaves like a convergent lens. If the refractive indices of glass and liquid with respect to air are $a^{\mu}g$ and $a^{\mu}l$ respectively then

(a) $a^{\mu}g = 5a^{\mu}l$

(b) $a^{\mu}g < a^{\mu}l$

(c) $a^{\mu}g = 2a^{\mu}l$

(d) $a^{\mu}g = a^{\mu}l$

24. The height above the earth's surface at which the value of acceleration due to gravity reduces to half of its value of earth's surface (assume the earth to be a sphere of radius 6400 km) is

(a) 3200 km

(b) 3000·6 km

(c) 2569·6 km

(d) 2649·6 km

25. Two lenses of power −10D and +5D are in contact with each other. The focal length of the combination is

(a) −5 cm

(b) −10 cm

(c) −15 cm

(d) −20 cm

26. A 600 pF capacitor is charged by 100 V battery. How much electrostatic energy is stored in the capacitor?

(a) 3×10^{-8} J

(b) 3×10^{-12} J

(c) 3×10^{-6} J

(d) 3×10^{-9} J

27. In a meter bridge, the neutral point was found at a distance of 60 cm from end A when the resistor $R = 30$ ohms. The resistance S is

(a) 40 units

(b) 60 units

(c) 20 units

(d) 50 units

28. If the wire is stretched 0·1% longer, its resistance will

(a) increase by 0·1%

(b) decrease by 0·2%

(c) increase by 0·2%

(d) decrease by 0·1%

29. A converging lens (f = 12·0 cm) is held 8·0 cm in front of a newspaper. If the sizes of the printed letters are 2 mm, the size of its magnified image is

(a) 4 mm

(b) 6 mm

(c) 2 mm

(d) 8 mm

30. When n number of alpha-particles are emitted from N atom of the radioactive element, the half-life is defined as

(a) n / N s

(b) 0·693 n / N s

(c) 0·693 N / n s

(d) N / n s

31. After the emission of an alpha particle, $_{92}U^{238}$ is converted to

(a) $_{92}U^{238}$

(b) $_{92}U^{235}$

(c) $_{90}Th^{234}$

(d) $_{93}Np^{237}$

32. The period of a geostationary satellite at a height of $4R$ from the earth's surface is given by

(a) 3600 s

(b) 21600 s

(c) 86400 s

(d) 144000 s

33. How many electrons has to be removed from electrically neutral silver plate to give it a charge of +3·2 C [charge of single electron = $1{\cdot}6 \times 10^{-19}$ C]?

(a) $1{\cdot}5 \times 10^{19}$

(b) $2{\cdot}0 \times 10^{19}$

(c) $2{\cdot}0 \times 10^{-19}$

(d) $3{\cdot}0 \times 10^{19}$

34. If $n = 14 \times 22 \times 39$, which of the following is ***not*** an integer?

(a) $n/21$

(b) $n/24$

(c) $n/26$

(d) $n/42$

35. If A equals 16 percent of 30 and B equals 15 percent of 31, then which of the following statements is true?

(a) A is greater than B

(b) B is greater than A

(c) Both of them are equal

(d) The relationship between A and B cannot be determined from the information given

36. In class I in a school, 30 percent of the students are boys. In class II that is half the size of the first, 40 percent of the students are boys. What percent of both classes are boys?

(a) 33·3% approximately

(b) 66·6% approximately

(c) 50%

(d) 25%

37. How many odd integers are between 10/3 and 62/3?

(a) 8

(b) 9

(c) 10

(d) 12

38. If $d = (c - b) / (a - b)$, then b is

(a) $(c - ad) / (1 - d)$

(b) $(c + ad) / (1 - d)$

(c) $(c - ad) / (1 + d)$

(d) $(c + ad) / (1 + d)$

39. If $x > 0$, then $(4^x)(8^x)$ is.

(a) 2^{5x}

(b) 2^{8x}

(c) 2^{6x}

(d) 2^{4x}

40. Which of the following measurements has the fewest significant figures?

(a) 0·00001 cm

(b) 12·6 meters

(c) 101 kg

(d) 11·534 seconds

41. Which of the following elements of the tissues are stained by safranin?

(a) Starch elements

(b) Lignified elements

(c) Basts

(d) Protein elements

42. A moss differs from a fern in having

(a) swimming antherozoids

(b) a dependent sporophyte

(c) an independent gametophyte

(d) alternation of generations

43. Betel nut is an example of

(a) berry

(b) drupe

(c) nut

(d) sorosis

44. Which of the following matches is correct?

(a) Oxylophytes-plants growing on acidic soil

(b) Psychrophytes-plants growing on saline soil

(c) Halophytes-plants growing on waste soils

(d) Chersophytes-plants growing on cold soil

45. Morphologically and physiologically specialized layers of endosperm of cereals constitute

(a) tapetum

(b) perisperm

(c) aleurone layer

(d) chalazosperm

46. Turner's syndrome in humans is caused by

(a) autosomal aneuploidy

(b) sex-chromosome aneuploidy

(c) polyploidy

(d) point mutation

47. The respiratory centre in mammals lies in

(a) cerebrum

(b) cerebellum

(c) medulla oblongata

(d) vagus nerve

48. The mechanism through which uric acid excretion occurs in a nephron is

(a) osmosis

(b) diffusion

(c) ultrafiltration

(d) secretion

49. What is the position of heart in chordates?

(a) Dorsal

(b) Lateral

(c) Ventral

(d) Dorsiventral

50. The Bidder's canal is found in

(a) kidney of frog

(b) testis of frog

(c) kidney of mammals

(d) ovary of mammals

51. Mammalian embryo is directly surrounded by

(a) amniotic cavity

(b) allantoic cavity

(c) primary digestive cavity

(d) yolk sac cavity

52. Which one of the following parts, if injured, does the memory weaken?

(a) Medulla

(b) Cerebellum

(c) Cerebrum

(d) Hypothalamus

53. Oxidation of succinate to fumarate in the Krebs cycle is due to

(a) addition of oxygen to it

(b) removal of hydrogen from it

(c) loss of electrons from it

(d) None of the above

54. Which is the best definition of germ theory?

(a) Air is necessary for living organisms

(b) Living cells can only arise from preexisting cells

(c) Microbial cells can be generated from non-living cell

(d) A vital force is necessary for life

55. Which of the following is the name of a mutation that changes the reading frame of an RNA molecule?

(a) Frameshift mutation

(b) Mis-sense mutation

(c) Non-sense mutation

(d) Change-frame mutation

56. Which of the following is the primary purpose of the process called cellular respiration?

(a) To produce ATP

(b) To produce reduced molecules of NAD

(c) To break glucose down

(d) To ferment alcohol

57. Which one of the following organelles contains DNA?

(a) Mitochondria and chloroplasts

(b) Mitochondria and peroxisomes

(c) Chloroplasts and glyoxysomes

(d) Mitochondria and lysosomes

58. The free energy per mole of any substance is called

(a) pressure potential

(b) matric potential

(c) chemical potential

(d) turgor pressure

59. The similarity between fish and tadpole of frog is the presence of

(a) fin rays

(b) lateral line organs

(c) scales

(d) All of the above

60. The vitamin which promotes wound healing is

(a) vitamin B

(b) vitamin C

(c) vitamin A

(d) vitamin D

PART—B

Answer *any* **sixty** questions

61. In genetically engineered male sterility systems, the enzyme that inhibits pollen formation and prevents unnecessary pollination is

(a) RNase

(b) DNase

(c) Barnase

(d) Kinase

62. The chemical that is used to chelate the Mg^{2+} ions that activates the DNase enzyme is

(a) SDS

(b) CTAB

(c) EDTA

(d) NaCl

63. The targeted suppression of gene expression is achieved by

(a) T-DNA insertion

(b) EMS

(c) RNAi

(d) gamma rays

64. Which one of the following is a mapping method for identifying markers linked to trait of our interest in a natural population?

(a) Linkage mapping

(b) Association mapping

(c) Transcriptome mapping

(d) Genome mapping

65. Which one of the following markers is based on mRNA?

(a) RFLP

(b) SNP

(c) SSR

(d) EST

66. Two genes are said to be assorting independently when

(a) they are present on two chromosomes

(b) they are present on the same chromosome

(c) parental and recombinant gametes are formed in equal proportion

(d) parental and recombinant gametes are formed in unequal proportion

67. A degenerate primer is generally designed from a/an

(a) DNA sequence

(b) amino acid sequence

(c) RNA sequence

(d) cDNA sequence

68. The chloroplast genome is

(a) circular

(b) linear

(c) circular and linear molecules coexist

(d) episome

69. The restriction endonucleases cannot restrict host DNA because of

(a) methylation of nucleotides in the genome

(b) methylation of nucleotides at the recognition sites

(c) demethylation of nucleotides in the genome

(d) demethylation of nucleotides at the recognition sites

70. What needs to be added in the embryo culture medium to minimize the problem of precocious germination?

(a) Activated charcoal

(b) High sucrose

(c) High agar

(d) Silver nitrate

71. The vir proteins which make two-component regulatory system important for transcriptional activation of other vir genes are

(a) vir B and vir H

(b) vir A and vir G

(c) vir C and vir D

(d) vir E and vir F

72. Which of the following is ***not*** involved in the processing of mRNA precursors in eukaryotic cells?

(a) Capping of the 5′ end

(b) Addition of poly A

(c) Transport of pre-mRNA to the cytoplasm

(d) Excision of introns

73. Which one of the following is the new generation sequencing (NGS) technology?

(a) Roche 454

(b) Affimetrix gene chip

(c) MOLDI-TOF

(d) ABI prism capillary

74. Biofortification refers to breeding for

(a) higher concentration of a micronutrient

(b) high-plant strength

(c) drought tolerance

(d) cold tolerance

75. Small interfering RNAs are involved in

(a) pre-transcriptional gene silencing

(b) transcriptional gene silencing

(c) post-transcriptional gene silencing

(d) post-translational gene silencing

76. Suppose you have been asked to develop restriction map of rice genome. Which of the following approaches will be the most convenient and cost-effective?

(a) Through RFLP analysis

(b) Through AFLP analysis

(c) Through SNP analysis

(d) Through bioinformatics/*in silico* analysis

77. An open reading frame (ORF) is

(a) the sequence of a complete genome

(b) a plasmid vector used in genome sequencing

(c) a possible gene predicted by DNA sequencing

(d) composed of regulatory upstream loci

78. The putative transgenic plants (T_0) regenerated using selective medium contains transgene in

(a) hemizygous condition

(b) homozygous condition

(c) heterozygous condition

(d) homogenous condition

79. A type of PCR used for amplifying unknown region flanking the known region is

(a) RT-PCR

(b) asymmetric PCR

(c) inverse PCR

(d) multiplex PCR

80. Quantum dots are

(a) single-dimensional nanoparticles

(b) two-dimensional nanoparticles

(c) zero-dimensional nanoparticles

(d) three-dimensional nanoparticles

81. The functionality of an aminoacyl-tRNA is determined by

(a) its amino acid

(b) its anticodon

(c) its invariant base regions

(d) the distance between amino acid and anticodon

82. Electrons from excited chlorophyll molecule of photosystem II are accepted first by,

(a) ferredoxin

(b) cytochrome-b

(c) cytochrome-f

(d) quinone

83. Pyrithrin, a popular organic insecticide is a/an

(a) terpenoid

(b) alkaloid

(c) cyanogenic glycoside

(d) saponin

84. Which of the following is ***not*** a powerful technique to study changes in global gene expression in response to extracellular signal?

(a) DNA microarray

(b) Protein microarray

(c) Immuno-PCR

(d) FISH

85. A method ***not*** used for detecting DNA-protein interactions is

(a) gel retardation assay

(b) surface plasmon resonance

(c) yeast two-hybrid system

(d) South-Western blotting

86. DNA polymerase processivity is

(a) a measure of the number of nucleotides joined before the polymerase dissociates

(b) determined by the ability of the enzyme to also have nuclease activity

(c) a measure of thermal stability of the enzyme

(d) a measure of turnover number of the enzyme

87. The major contribution to the stability of Watson-Crick structure of DNA in aqueous solution comes from

(a) hydrogen bonds between Watson-Crick base pairs

(b) stacking interaction of bases

(c) counterion condensation on phosphates

(d) entropic contribution

88. Zinc finger proteins and helix-turn-helix proteins are

(a) the types of DNA-binding proteins

(b) involved in the control of translation

(c) the components of ribosomes

(d) the parts of hemoglobin in blood cells

89. Which one of the following is the rate-limiting enzyme in the HMP shunt pathway?

(a) Glc-6-P-dehydrogenase

(b) Frc-6-P-dehydrogenase

(c) Phosphopentose isomerase

(d) Phosphopentose epimerase

90. The denaturation of a protein occurs due to the disruption of its

(a) primary structure

(b) secondary structure

(c) tertiary structure

(d) quaternary structure

91. If we separate the cell organelles of a living cell, which of the following parts should be alive?

(a) Ribosome

(b) Chloroplast

(c) Endoplasmic reticulum

(d) Cell wall

92. When a cell in G_1 phase of cell cycle is fused with a cell in G_2 phase, which one of the following would occur?

(a) Both G_1 and G_2 nuclei enter the S phase

(b) G_1 phase nucleus enters the S phase; G_2 phase nucleus stays in G_2

(c) G_2 phase nucleus enters the S phase; G_1 phase nucleus stays in G_1

(d) No effect on both nuclei

93. Which of the following is ***not*** a function of Golgi bodies?

(a) Vesicular transport of proteins

(b) Detoxification of drugs

(c) Sorting of components of membrane

(d) Targeting of lysosomal enzymes

94. Aggregates of abiotically produced molecules surrounded by a membrane or membrane-like structure is called

(a) coacervates

(b) protobionts

(c) microspheres

(d) miscelles

95. 'Kresek phase' symptom is found in

(a) BLB of rice

(b) citrus canker

(c) black arm of cotton

(d) common scab of potato

96. The first case of insecticide resistance in India in stored grain pests was that of

(a) *Tribolium castaneum*

(b) *Caryedon serratus*

(c) *Rhyzopertha dominica*

(d) *Trogoderma granarium*

97. The intervention in the communication system of nematodes offers several possibilities of biocontrol. Which of the following plays a very important role in the host recognition?

(a) Protein

(b) Lipid

(c) Carbohydrate moiety

(d) Mineral

98. In which of the following methods of irrigation are the rotating nozzles used?

(a) Moat

(b) Drip system

(c) Chain pump

(d) Sprinkle system

99. A short-duration crop in between two main crops is termed as

(a) cash crop

(b) catch crop

(c) companion crop

(d) ephemeral

100. A symbiotic association in which one individual derives benefit and the other is neither helped nor harmed is referred to as

(a) commensalism

(b) communalism

(c) mutualism

(d) parasitism

101. Speciation without geographic isolation is called as

(a) asympatric speciation

(b) non-sympatric speciation

(c) sympatric speciation

(d) dissympatric speciation

102. 1000 p.p.m. SO_2 is obtained by dissolving

(a) 1·0 gram of sodium meta-bisulphate/litre of water

(b) 1·5 grams of sodium meta-bisulphate/litre of water

(c) 4·5 grams of sodium meta-bisulphate/litre of water

(d) 6·6 grams of sodium meta-bisulphate/litre of water

103. The most appropriate sign(s) of spoilage for fruits and vegetables after harvesting, if not protected properly, is/are

(a) souring and deterioration

(b) softening and rotting

(c) darkening and sour odour

(d) slimy coating on the surface

104. Which of the following is incorrect with respect to modification of Mendelian dihybrid ratio?

(a) Complementary gene interaction 9 : 7

(b) Recessive epistasis 9 : 3 : 4

(c) Dominant epistasis 12 : 3 : 1

(d) Additive gene interaction 15 : 1

105. Which one of the following traits was ***not*** studied by Mendel?

(a) Flower position

(b) Flower colour

(c) Seed colour

(d) Seed size

106. Homologous genes within the same species having similar but non-identical functions are known as

(a) orthologues

(b) paralogues

(c) isozymes

(d) biochemical variants

107. Which of the following abnormal base pairings might be found in 'wobble' codon-anticodon binding?

(a) Adenosine-uracil

(b) Guanine-uracil

(c) Cytosine-inosine

(d) Guanine-thymine

108. Which one of the following is ***not*** true about hybrid cultivars?

(a) Hybrid vigour

(b) Homogeneous

(c) Homozygous

(d) Heterozygous

109. Synapsis between homologous chromosomes occurs during

(a) leptotene

(b) zygotene

(c) pachytene

(d) diplotene

110. If a plant with four homologous pairs of chromosomes, AA, BB, CC, and DD, is self-fertilized, which of the following chromosome combinations would you expect to find in its offspring?

(a) AABB

(b) CCDD

(c) AABBCC

(d) AABBCCDD

111. Backcross breeding is generally used for all of the following, *except* transferring

(a) monogenic recessive trait

(b) monogenic dominant trait

(c) polygenic trait

(d) male sterility

112. Which one of the following is true about epigenetic changes?

(a) Changes are caused by deletion and are heritable

(b) Changes are caused by mutation and are heritable

(c) Changes are caused by mutation but are non-heritable

(d) Changes are caused by DNA methylation and are heritable

113. Which of the following is the most likely mechanism for the origin of multigene family?

(a) Endosymbiosis

(b) Gene duplication

(c) Horizontal gene transfer

(d) Convergent evolution of dissimilar genes

114. Heterosis is lost by

(a) vegetative propagation

(b) outbreeding

(c) inbreeding

(d) after two generations

115. DNA may exist in alternate valency state owing to rearrangement referred to as

(a) analogue substitution

(b) tautomeric shift

(c) frameshift mutation

(d) point mutation

116. When a diploid female plant and a tetraploid male plant are crossed, the ploidy of endosperm will be

(a) tetraploid

(b) triploid

(c) diploid

(d) pentaploid

117. Genetic drift is an account of

(a) variations

(b) mutations

(c) increase in population

(d) decrease in population

118. Genetic male sterility is very common in

(a) China aster

(b) Marigold

(c) Gaillardia

(d) Dahlia

119. Trypsin inhibitors are antinutrients present in

(a) legumes

(b) solanaceous vegetables

(c) cucurbits

(d) tubers

120. The rich colour of black carrot is due to

(a) xanthophylls

(b) capsaicin

(c) lycopene

(d) anthocyanins

121. Guar gum is obtained from

(a) peas

(b) cassava

(c) sweet potato

(d) cluster bean

122. Which of the following cells of *Escherichia coli* will be having the maximum frequency for genetic transfer and recombination?

(a) F^+ cells

(b) F^- cells

(c) Hfr cells

(d) F′ cells

123. The bacteria responsible for fixation of nitrogen in soya bean is

(a) *Rhizobium leguminosérum*

(b) *Rhizobium phaseoli*

(c) *Rhizobium glycicum*

(d) *Bradyrhizobium japonicum*

124. The episome that is involved in the conjugation of *E. coli* is

(a) R factor

(b) F factor

(c) sigma factor

(d) rho factor

125. The most important innovation (new idea) in Pasteur's 'swan-neck flask' experiments was

(a) fresh air could directly contact the medium

(b) heating media prevented microbial growth

(c) the experimenter could look for contamination without disturbing the experiment

(d) a glass barrier prevented contamination

126. Extensive sequential nucleotide analysis and analysis of rRNA have divided the living world into three domains referred to as

(a) bacteria, archaea and eucarya

(b) procarya, eucarya and animals

(c) fungi, plants and animals

(d) archaea, eucarya and viruses

127. A bacterial cell wall does all of the following, *except*

(a) it gives shape and rigidity to the cell

(b) it is associated with some symptoms of disease

(c) it protects the cell from phagocytosis

(d) it is the site of action for some antibiotics

128. Which of the following statements is true?

(a) Symbiosis refers to different organisms living together

(b) Members of a symbiotic relationship cannot live without each other

(c) Symbiosis refers to different organisms living together and benefiting from each other

(d) A parasite is not a symbiosis with its host

129. Which of the following is an anoxygenic photosynthetic bacterium?

(a) *Chlorella*

(b) *Nostoc*

(c) *Clostridium*

(d) *Chlorobium*

130. How many ATP molecules could be derived from one NADH molecule?

(a) One

(b) Two

(c) Three

(d) Four

131. Which one of the following can induce the closure of stomata in normal plants?

(a) IAA

(b) ABA

(c) GA

(d) BAP

132. The main difference between active transport and facilitated diffusion is, unlike in facilitated diffusion

(a) in active transport, the molecules move from areas of high to low concentration

(b) in active transport, you need carrier proteins

(c) in active transport, you need ATP to move molecules against a concentration gradient

(d) in active transport, only water molecules move

133. Which of the following is ***not*** a function of auxins?

(a) Somatic embryogenesis induction

(b) DNA hypermethylation

(c) Promotion of shoot regeneration

(d) Shoot elongation

134. The system in which cytoplasm and nucleus genes are used in the production of male sterile line is

(a) CGMS

(b) GMS

(c) CMS

(d) apomixis

135. Musty odour and dust in seed storage godown indicates the presence of

(a) Indian meal moth

(b) khapra beetle

(c) mites

(d) pulse beetle

136. The fungal population is comparatively high in a soil having

(a) acidic pH

(b) neutral pH

(c) alkaline pH

(d) acidic to neutral pH

137. General soil productivity index (GSPI) can be calculated by

(a) sum of PRIs of major crops/number of crops

(b) sum of PRIs of major crops × 100/number of crops

(c) number of crops/sum of PRIs of major crops

(d) sum of PRIs of major crops × number of crops

138. The hydrogen requirement of plants is met by

(a) absorption of hydrogen from air

(b) absorption of hydrogen from water

(c) absorption of hydrogen from soil

(d) breakdown of water within the plant

139. Which one of the following database provides the information on sequence of those proteins whose 3D structures are known?

(a) PIR

(b) PDB

(c) SWISSPROT

(d) Gene bank

140. The unit-free measure of dispersion is

(a) SD

(b) QD

(c) range

(d) coefficient of variance

141. Calf starter ration contains

(a) 18%–25% DCP, 70%–75% TDN

(b) 10%–15% DCP, 80% TDN

(c) 30% DCP, 70%–75% TDN

(d) 16%–20% DCP, 60%–70% TDN

142. The coefficient of sperm respiration (ZO_2) is introduced by

(a) Smith

(b) Swan

(c) Robert

(d) Redenz

143. The radiography of spinal cord is referred to as

(a) cystography

(b) sialography

(c) myelography

(d) arthrography

144. How much dry matter is digested by rumen?

(a) 20%–30%

(b) 40%–50%

(c) 60%–65%

(d) 70%–80%

145. Curled-toe paralysis in chicks is due to deficiency of

(a) pyridoxine

(b) riboflavin

(c) pantothenic acid

(d) biotin

146. Botulism is present in grazing areas deficient in

(a) Ca^{+2} and carbohydrates deficiency

(b) phosphorus and protein deficiency

(c) vitamin deficiency

(d) Mg deficiency

147. The best dairy breed of cattle in India is

(a) Haryana

(b) Red Sindhi

(c) Sahiwal

(d) Tharparkar

148. The bacteriological status of milk is judged by

(a) reductase test

(b) MBR test

(c) alizarine test

(d) catalase test

149. The zebra markings in large intestine are typical of

(a) foot-and-mouth disease

(b) rinderpest

(c) tuberculosis

(d) paratuberculosis

150. Piperazine is the drug of choice against

(a) Ascariasis

(b) Hookworms

(c) Strongyle

(d) Lungfluke

151. Cisterna chyli is a reservoir of which of the following?

(a) Lymph

(b) Blood

(c) Bile

(d) Saliva

152. Oxytocin is drug of choice in parturition of which one of the following?

(a) Goat

(b) Mare

(c) Cow

(d) Buffalo

153. Uterine torsion is common in

(a) buffalo

(b) cow

(c) camel

(d) goat

154. Which one of the following is known as Bang disease?

(a) Trichomoniasis

(b) Brucellosis

(c) Leptospirosis

(d) Vibriosis

155. The abnormal accumulation of gas in rumen of cattle is referred to as

(a) indigestion

(b) bloat

(c) ketosis

(d) ruminitis

156. The test used for checking pasteurization efficiency is

(a) catalase test

(b) amylase test

(c) analase test

(d) phosphatase test

157. An example of fermented dairy product is

(a) soft cheese

(b) clotted cream

(c) yoghurt

(d) butter milk

158. The difficulty in delivering calf in cattle is referred to as

(a) dysocia

(b) eutocia

(c) dyspnoea

(d) polypnoea

159. The internal quality of egg can be assessed by

(a) candling

(b) haugh unit

(c) albumen index

(d) yolk index

160. The hormone estrogen is secreted from

(a) ovary

(b) testicle

(c) kidney

(d) fallopian tube

★★★

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