MHT CET 2018 Paper III (Biology) May 10 Single Sitting

Question Paper

Conducted by the State Common Entrance Test Cell, Maharashtra

Time Allowed: 90 Minutes | **Paper III - Biology** | **Maximum Marks: 100**

General Instructions

(i) This is a **memory-based version** of the **MHT CET 2018 Paper III (Biology) May 10 Single Sitting**, conducted by the **State Common Entrance Test Cell, Maharashtra**. The questions were recalled by candidates who appeared in the exam.

(ii) This edition includes **94 of 100 questions**: **94 Biology**. Original subject question numbers are retained; Biology questions 61, 70, 73, 77, 85, 98 are unavailable.

(iii) The full **Paper III - Biology** has **100 questions** covering Botany and Zoology, for **100 marks**. The time allowed for this separate Biology paper is **90 minutes**.

(iv) Each multiple choice question offers **four options**, of which **exactly one is correct**.

(v) Each correct answer earns **1 mark**. There is **no negative marking**; unanswered questions carry 0 marks.

1. Cambium is essential for grafting in plants because

(A) Cambia of both stock and scion fuse together
(B) Cambium produces new leaves
(C) Cambium produces new roots
(D) Cambium helps in the production of flowers

2. Which one of the following carbohydrates is a heteropolysaccharide?

(A) Cellulose
(B) Starch
(C) Glycogen
(D) Hyaluronic acid

3. 'Pusa Sadabahar' is resistant to disease.

(A) Leaf curl and chilli mosaic virus
(B) Leaf and stripe rust
(C) Black rot
(D) Curl blight black rot

4. The adsorption of water by hydrophilic compounds like cellulose and pectin in root hair cell wall is called

(A) Diffusion
(B) Imbibition
(C) Guttation
(D) Osmosis

5. In Kreb's cycle, the conversion of oxalosuccinate into α-ketoglutarate involves

(A) Oxidation
(B) Reduction
(C) Hydration
(D) Decarboxylation

6. Double fertilization in angiosperms was first discovered by S.G. Nawaschin in plants.

(A) *Lillium*
(B) Sunflower
(C) Wheat
(D) Mango

7. Oxidative phosphorylation in eukaryotes occurs during ____.

(A) Photosynthesis
(B) Protein synthesis
(C) Lipid synthesis
(D) Respiration

8. Snapdragon is an example of gene interaction.

(A) Co-dominance
(B) Multiple alleles
(C) Incomplete dominance
(D) Polygenic inheritance

9. In one nucleosome, which one of the following histone molecule is NOT double?

(A) H_4
(B) H_3
(C) H_2
(D) H_1

10. Which one of the following is NOT true about Salvia flower?

(A) Flowers are bisexual
(B) Flowers are protandrous
(C) The upper branch of bifurcated connective bears sterile anther lobe and lower branch bears fertile anther lobe
(D) The upper branch of bifurcated connective bears fertile anther lobe and lower branch bears sterile anther lobe

11. Identify the INCORRECT statement regarding Bt Cotton.

(A) Dried spores of Bacillus thuringiensis are sprayed on its vulnerable leaves
(B) It releases toxin that causes swelling in the gut of insect that ingest its leaves
(C) It is a transgenic plant
(D) It can produce toxin due to gene introduced in it by transgenesis

12. In angiosperms, the fusion of male gamete with the secondary nucleus is considered as "Second fertilization" because

(A) It is fusion of two nuclei
(B) Secondary nucleus is a sister nucleus of the egg
(C) It takes place in embryo sac
(D) It takes place after pollination

13. In Mirabilis jalapa, when red and white varieties are crossed, the hybrid obtained will be pink.

(A) 25%
(B) 50%
(C) 75%
(D) 100%

14. During r-DNA technology, which one of the following enzymes is used for cleaving DNA molecule?

(A) Exonuclease
(B) Endonuclease
(C) Restriction endonuclease
(D) Helicase

15. Chipko Movement took place in

(A) Montreal
(B) Jodhpur
(C) Bangalore
(D) Garhwal Himalayas

16. In plants, Richmond-Lang effect is

(A) Delaying the onset of senescence by application of cytokinin
(B) Prevention of abscission of leaves and flowers by auxin application
(C) Increasing commercial value of leafy vegetables by inducing leaf expansion through gibberellin application
(D) Breaking dormancy of seeds and buds through application of ethylene

17. In a person suffering from sickle cell anaemia, the ____ becomes half moon shaped.

(A) RBC
(B) Thrombocyte
(C) Monocyte
(D) Lymphocyte

18. Which one of the following is true about respiration in green plants? Respiration takes place ____.

(A) Only when stomata are open
(B) Only when photosynthesis stops
(C) Only when photosynthesis is in progress
(D) Throughout life

19. In eukaryotes, the anticodon of tRNA that pairs with the start codon of mRNA during translation is

(A) UAA
(B) UCA
(C) UAC
(D) UUU

20. Biopatent is granted for biological entities by authority of a country.

(A) Government
(B) Educational institute
(C) Scientist
(D) Business

21. The exine of pollen grain is made up of

(A) Chitin
(B) Cellulose
(C) Sporopollenin
(D) Hemicellulose

22. Continuous upward flow of water stream in tall trees is maintained due to

(A) Guttation and transpiration
(B) Transpiration pull only
(C) Cohesive force between H_2O molecules only
(D) Cohesive force between H_2O molecules and transpiration pull

23. Which of the following is NOT correct regarding plasmids?

(A) They are small, extra chromosomal circular form of DNA
(B) They are naturally found in bacteria only
(C) They are 'replicons' capable of autonomous replication within a suitable host
(D) They carry genes related to survival and reproduction of carrier bacterium under unfavourable conditions

24. Algae used for the discovery of path of carbon in dark reaction were ____.

(A) Spirogyra and Chlorella
(B) Spirulina and Desmodesmus
(C) Chlorella and Scenedesmus
(D) Spirogyra and Spirulina

25. Which one of the following is NOT a plant like protest?

(A) Desmid
(B) Dinoflagellate
(C) Diatom
(D) Slime mould

26. In case of anaerobic respiration, the RQ is

(A) Always less than one
(B) Always more than one
(C) Always infinity
(D) Variable on the basis of substrate

27. Which one of the following is NOT true about self pollination?

(A) A sure method
(B) Most economic
(C) Maintains genetic purity
(D) Favours evolution

28. In biogas plant, the role of acidogenic bacteria is to.

(A) Convert monomers to organic acids
(B) Convert monomers to complex polymers
(C) Transform acetic acid to biogas
(D) Digest fungi in the sludge

29. A part of photosynthetically fixed CO_2 goes back to the atmosphere due to

(A) Cyclic photophosphorylation
(B) Non-cyclic photophosphorylation
(C) Dark reaction
(D) Photorespiration

30. When glucose is the normal energy source in bacterial cell ____ gene transcribes a repressor mRNA.

(A) z
(B) y
(C) a
(D) i

31. Which character of angiosperms helped in their dominance on earth?

(A) Formation of seeds
(B) Formation of endosperm
(C) Double fertilization
(D) Presence of xylem vessels

32. Identify the WRONG statement regarding the process in sewage treatment

(A) Primary treatment is a physical process
(B) Secondary treatment is a biological process
(C) The BOD of effluent increases after secondary treatment
(D) The tanks used for tertiary treatment are anaerobic sludge digesters

33. A type of seed germination in which epicotyl region of embryo elongates rapidly to pull plumule out of the soil surface is called ____ germination

(A) Hypogeal
(B) Epigeal
(C) Viviparous
(D) Invitro

34. In a dihybrid cross with contrasting characters, the number of different genotypes obtained in F_2 generation are

(A) 16
(B) 9
(C) 6
(D) 4

35. Which one of the following is NOT caused by global warming?

(A) Melting of glacier
(B) Change in rainfall pattern
(C) Increase in sea level
(D) Increase in crop production

36. During cyclic photophosphorylation, formation of ATP occurs between which of the following two compounds?

(A) FRS $\rightarrow$ Ferredoxin
(B) Cytochrome $b_6 \rightarrow$ Cytochrome f
(C) Cytochrome f $\rightarrow$ Plastocyanin
(D) Plastocyanin $\rightarrow$ Ionised Chl - a

37. The development of male gametes in the pollen grains in angiosperms involves ____.

(A) Only one mitotic division
(B) Two mitotic divisions
(C) Both mitotic and meiotic divisions
(D) Only one meiotic division

38. In the system of classification, which one of the following is NOT a category?

(A) Kingdom
(B) Series
(C) Angiospermae
(D) Genus

39. Mendel obtained pure lines by selfing yellow round seeds as female parent and green wrinkled as male parent for ____ generations.

(A) 2
(B) 3
(C) 4
(D) 5

40. The enzyme Taq polymerase used in PCR technique is obtained from

(A) *Salmonella typhimurium*
(B) *Thermus acquaticus*
(C) *Rhizobium phaseoli*
(D) *Bacillus thuringiensis*

41. Which one of the following is NOT true about vegetative propagation

(A) Easy and cheaper method
(B) Rapid propagation
(C) Production of genetically similar plants
(D) Production of genetically dissimilar plants

42. Which one of the following characteristic is NOT shown by a virus?

(A) They are acellular
(B) They can be crystallised
(C) Active outside the hosts body
(D) Have genetic material

43. The co-enzyme which acts as hydrogen acceptor during light reaction is ____.

(A) PQ
(B) FAD
(C) CO-Q
(D) NADP

44. The sequential events that occur during protein synthesis are ____.

(A) Protein → Translation → Transcription → DNA
(B) DNA → Transcription → Translation → Protein
(C) Translation → Transcription → DNA → Protein
(D) DNA → Protein → Translation → Transcription

45. The net gain of ATP molecules during aerobic breakdown of one glucose molecule is ____.

(A) 40
(B) 38
(C) 36
(D) 30

46. The 'eyes' of potato are located at the ____.

(A) Root apex
(B) Leaf apex
(C) Nodes
(D) Inter-nodes

47. Ozone layer in the stratosphere is for plants and animals.

(A) Good
(B) Harmful
(C) Providing protection from UV rays
(D) Releasing more oxygen

48. Steroids are characterised by ____ in their structure.

(A) Carbon atom arranged in four inter-locking rings
(B) Magnesium atom arranged in the centre of tetrapyrole
(C) Two, six - carbon rings
(D) Skeletal heterocyclic ring of hydrocarbons

49. Chl-a and Chl-b shown maximum absorption in ____ regions of visible light

(A) Blue, violet and red
(B) Red, indigo and green
(C) Yellow, blue and red
(D) Blue, violet and green

50. Explant used for the production of disease free plants is ____.

(A) Vascular tissue
(B) Apical meristem
(C) Intrafascicular cambium
(D) Cork cambium

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52. Match the Column I and II and select the appropriate option with the given code.
Column - I | Column - II
(P) Coronary sinus | (i) Mitral valve
(Q) Base of systemic aorta | (ii) Eustachian valve
(R) Left atrioventricular valve | (iii) Semilunar valves
(S) Opening of inferior vena cava | (iv) Thebesian valve

(A) P - iv, Q - iii, R - i, S - ii
(B) P - iii, Q - iv, R - ii, S - i
(C) P - ii, Q - i, R - iv, S - iii
(D) P - i, Q - ii, R - iii, S - iv

53. Density of population increases when ____.

(A) Mortality and emigration increases
(B) Natality and emigration increases
(C) Mortality increases and immigration decreases
(D) Natality increases and emigration increases

54. Total number of linkage groups in honeybee is

(A) 16
(B) 23
(C) 32
(D) 46

55. Hormone erythropoietin is produced by ____.

(A) Heart
(B) Kidney
(C) Ovary
(D) Pancreas

56. Co-enzymes of Electron Transport Chain in mitochondria are ____.

(A) Cytochromes, dehydrogenases, flavoproteins
(B) Cytochromes, catalases, peroxidases
(C) Hyaluronidases, dehydrogenases, hydrolases
(D) Flavoproteins, anhydrases, phosphatases

57. In the second trimester of pregnancy, there is decline in the level of ____.

(A) ACTH
(B) ICSH
(C) HCG
(D) MSH

58. Heavily built, short prehistoric man having cranial capacity of about 1450 C.C is ____.

(A) *Homo sapiens fossilis*
(B) *Homo erectus*
(C) *Homo heidelbergensis*
(D) *Homo neanderthalensis*

59. Ventrolateral walls of cerebrum are called ____.

(A) Crura cerebrii
(B) Corpora lutea
(C) Corpora quadrigemina
(D) Corpora striata

60. Carbon monoxide combines with haemoglobin to form ____.

(A) Carbaminohaemoglobin
(B) Carbonic acid
(C) Carboxyhaemoglobin
(D) Cytochrome oxidase

62. The termination of process of oogenesis is indicated by formation of ____.

(A) Secondary oocyte
(B) First polar body
(C) Second polar body
(D) Perivitelline space

63. Dr. Lalji Singh obtained radioactive DNA probe from Y chromosome of ____.

(A) Female drosophila
(B) Female banded krait
(C) Male drosophila
(D) Male banded krait

64. Which one of the following is NOT the in-situ conservation of biodiversity?

(A) Zoological parks
(B) Wildlife sanctuaries
(C) National parks
(D) Biosphere reserves

65. Which of the following is a unicellular gland?

(A) Goblet cell
(B) Kupffer's cell
(C) Pedicel
(D) Neuroglial cell

66. In ovary, estrogen is secreted by ____.

(A) Follicular cells
(B) Corona radiata cells
(C) Sertoli cells
(D) Primary oocyte

67. Select the CORRECT statement.

(A) Sex-linked traits appear more frequently in females
(B) Colour blindness is caused due to proper formation of colour sensitive cells
(C) Human females have double dose of X chromosome
(D) Drone bees produce sperms by meiosis

68. Heart attack is also called ____.

(A) Arteriosclerosis
(B) Angina pectoris
(C) Bradycardia
(D) Myocardial infarction

69. Molecular evolution and origin of life occurred in ____ Era.

(A) Archeozoic
(B) Cenozoic
(C) Palaeozoic
(D) Proterozoic

71. Given below are cell organelles and their functions. Select the INCORRECT match.

(A) Lysosome - Phagocytosis
(B) Centriole - Spindle formation
(C) Sphaerosomes - Storage and synthesis of fats
(D) Leucoplast - Photosynthesis

72. An extra sex chromosome is present in ____.

(A) Turner's syndrome
(B) Thalassemia
(C) Klinefelter's syndrome
(D) Down's syndrome

74. Parasympathetic ganglia are located ____.

(A) In cortex of cerebrum
(B) In medulla of cerebellum
(C) On the side of visceral organs
(D) On either side of vertebral column

75. One of the following groups of enzymes forms contents of succus entericus

(A) Maltase, Enterokinase, Trypsin
(B) Trypsin, Pepsin, Lactase
(C) Nuclease, Amylase, Chymotrypsin
(D) Sucrase, Maltase, Dipeptidase

76. Adam's apple is also called ____.

(A) Vestibule
(B) Pharynx
(C) Osteon
(D) Larynx

78. Which of the following processes is initiated by FSH?

(A) Degeneration of endometrium
(B) Growth of Graafian follicle
(C) Maturation of spermatozoa
(D) Secretion progesterone

79. The immunity developed by a child after attack of measles is ____ immunity.

(A) Natural acquired active
(B) Artificial acquired active
(C) Natural acquired passive
(D) Artificial acquired passive

80. As an example of adaptive radiation, Darwin observed a variety of Finches in ____.

(A) South Africa
(B) Madagascar
(C) Galapagos Islands
(D) East Indies

81. Following are various symptoms of Marasmus EXCEPT ____.

(A) Oedema of lower legs and face
(B) Dry, wrinkled skin
(C) Extreme leanness
(D) Atrophy of digestive glands

82. Which of the following is NOT a connecting link?

(A) Archaeopteryx
(B) Dryopithecus
(C) Ichthyostegia
(D) Seymouria

83. Oogonia arise form the endoderm of the ____.

(A) Allantois
(B) Chorion
(C) Trophoblast
(D) Yolk-sac

84. Lacteals absorb ____.

(A) Amino acids
(B) Fatty acids and glycerol
(C) Glucose and fructose
(D) Amylose and maltose

86. Majority of kidney stones consist crystals of ____.

(A) Calcium oxalate, sodium bicarbonate
(B) Calcium oxalate, calcium phosphate
(C) Calcium phosphate, sodium chloride
(D) Calcium carbonate, copper sulphate

87. Each testicular lobule contains ____ convoluted seminiferous tubules.

(A) 1 to 4
(B) 5 to 7
(C) 8 to 10
(D) 11 to 14

88. Select the INCORRECT statement with reference to DNA fingerprinting. It is ____.

(A) PCR based technique
(B) Based on fingerprints of individual
(C) Used in forensic medicine technique
(D) Used to test paternity

89. Lac is used in the manufacture of following products EXCEPT ____.

(A) Toys
(B) Polish
(C) Isinglass
(D) Ink

90. Which of the following group of animals is guanotelic?

(A) Labeo, Turtle, Camel
(B) Lizard, Snake, Scorpion
(C) Penguin, Spider, Scorpion
(D) Spider, Scorpion, Snake

91. Which of the following is an avascular tissue?

(A) Connective
(B) Epithelial
(C) Muscular
(D) Nervous

92. Protein α - 1 - antitrypsin is used to treat ____.

(A) Alzheimer's disease
(B) Cancer
(C) Emphysema
(D) Rheumatoid Arthritis

93. In the menstrual cycle, the level of progesterone reaches its maximum in the ____.

(A) Secretory phase
(B) Proliferative phase
(C) Ovulatory phase
(D) Menstrual phase

94. Mice are most successfully produced transgenic animals due to following:

(A) Hypo ovulation in estrous cycle
(B) Difficulty in reimplantation
(C) Production of 2-3 young ones
(D) Short generation time

95. Pneumatic bones and left sided ovary is characteristic feature of ____ adaptation.

(A) Arboreal
(B) Aerial
(C) Cursorial
(D) Fossorial

96. Regeneration as a method of asexual reproduction is observed in .

(A) Ascaris
(B) Planaria
(C) Prawn
(D) Salmonella

97. Branching tree like processes of white matter extending into grey cortex of cerebellum is called ____.

(A) Arbor vitae
(B) Gyri
(C) Crura cerebrii
(D) Thalami

99. All of the following are marine Fish EXCEPT ____.

(A) Cirrhina
(B) Herpedon
(C) Sardinella
(D) Rastrelliger

100. Heroin is extracted from the latex of plant ____.

(A) Atropa belladona
(B) Claviceps purpurea
(C) Erythroxylum coca
(D) Papaver somniferum

- End of Question Paper -