MHT CET 2017 Paper III (Biology) May 11 Single Sitting Question Paper

Conducted by the State Common Entrance Test Cell, Maharashtra

Time Allowed: 90 Minutes **Total Questions: 100** **Maximum Marks: 100**

General Instructions

(i) This **Paper III - Biology** question paper is from **MHT-CET 2017**, conducted by the **State Common Entrance Test Cell, Maharashtra**.

(ii) Answer all **100 multiple choice questions**: **100 Biology**.

(iii) Each question offers **four choices**, with **one correct answer**.

(iv) The time allowed for this paper is **90 minutes**. All questions are compulsory.

(v) Each correct answer earns **1 mark**. There is **no negative marking**.

(vi) Record answers on the OMR answer sheet. Unanswered questions score zero.

1. The highest rate of photosynthesis in green plants is in _____ and _____ region of light spectrum.

(A) yellow and orange (B) green and violet
(C) red and blue (D) violet and blue

2. In some species of family Asteraceae seeds are produced without fertilization. It is called as _____

(A) apomixis (B) amphimixis
(C) parthenocarpy (D) vivipary

3. The pH of nutrient medium in plant tissue culture is adjusted between _____

(A) 3 – 4 (B) 4.1 – 4.8
(C) 5 – 5.8 (D) 6 – 7

4. The simplest of all nutrient cycles operating in an ecosystem is _____ cycle

(A) carbon (B) phosphorous
(C) nitrogen (D) sulphur

5. Identify the microbial source for antibiotic streptomycin.

(A) *Streptomyces griseus* (B) *Streptomyces venezuelae*
(C) *Penicillium chrysogenum* (D) *Staphylococcus aureus*

6. Which one of the following process occurs inside the nucleus during protein synthesis in a eukaryotic cells ?

(A) Processing of hnRNA (B) Activation of amino acids
(C) Translation (D) Formation of polypeptide chain

7. In single Krebs Cycle decarboxylation takes place at _____ steps.

(A) Five (B) Four
(C) Three (D) Two

8. The genetic material of M13 bacteriophage is _____

(A) ds DNA (B) ds RNA
(C) ss RNA (D) ss DNA

9. Motile zoospores are produced by

(A) *Chlamydomonas* (B) *Penicillium*
(C) Bacteria (D) *Amoeba*

10. The suspensor during the development of an angiosperm embryo is formed from _____

(A) basal cell (B) apical cell
(C) embryonal cell (D) generative cell

11. Which one of the following layer of the anther wall helps in its dehiscence ?

(A) Epidermis (B) Middle layer
(C) Endothecium (D) Tapetum

12. The triplet on coding strand of DNA is ATG. What would be the required anticodon on corresponding tRNA during translation ?

(A) UAA (B) UAG
(C) UGA (D) UAC

13. During anaerobic respiration, number of ATP molecules generated by the breakdown of 20 glucose molecule is _____

(A) 90 (B) 60
(C) 40 (D) 20

14. In E. Coli, _____ operons are formed by grouping nearly _____ genes.

(A) 80 operons and 260 genes (B) 75 operons and 260 genes
(C) 280 operons and 80 genes (D) 280 operons and 75 genes

15. A slender, prostrate subaerial branch of the stem which creeps along the ground helping in vegetative reproduction is

(A) stolon (B) sucker
(C) runner (D) offset

16. During fertilization if the pollen tube enters the ovule through integuments, then it is called as _____

(A) mesogamy (B) porogamy
(C) chalazogamy (D) siphonogamy

17. To determine whether F1 hybrid is homozygous or heterozygous for a particular trait _____ cross is performed.

(A) monohybrid (B) test
(C) back (D) reciprocal

18. Number of oxygen molecules utilized in glycolysis is _____

(A) 0 (B) 2
(C) 4 (D) 6

19. A cell organelle which lacks membrane, consists of 65% rRNA, 35% proteins and helps in protein synthesis is _____

(A) nucleus (B) nucleoid
(C) ribosome (D) nucleolus

20. Cyclic photophosphorylation will NOT take place in the absence of _____

(A) carotenoids (B) chlorophyll a
(C) xanthophylls (D) phycoerythrin

21. How many different types of gametes will be formed by a pea plant with genotype TtYy?

(A) 16 (B) 08
(C) 06 (D) 04

22. The megasporangium proper of an angiosperm ovule is represented by

(A) integument (B) funicle
(C) nucellus (D) micropyle

23. Which one of the following is an essential factor for photophosphorylation?

(A) Sunlight (B) Carbohydrate
(C) Oxygen (D) Water

24. Generally the pollen grains of monocots are _____ and dicots are _____ respectively.

(A) uniporate and biporate (B) biporate and triporate
(C) uniporate and triporate (D) triporate and tetraporate

25. A nucleic acid whose molecular weight ranges between 40,000 to 1,00,000 in a cell is _____

(A) DNA (B) mRNA
(C) tRNA (D) rRNA

26. Which of the following is an example of intergenic gene interaction?

(A) Multiple alleles (B) Co dominance
(C) Incomplete dominance (D) Polygenes

27. Which one of the following is NOT a disadvantage of self pollination?

(A) No scope for developing improved varieties (B) Progeny becomes weaker
(C) Genetic stability can be maintained (D) Less adaptability to climatic variations

28. Dark reaction of photosynthesis is a cyclic process as _____ is regenerated.

(A) RuBP (B) CO_2
(C) Glucose (D) PGA

29. What is the approximate size of nucleus in a typical mammalian cell?

(A) 2.2 meter (B) 1.2 meter
(C) 10^{-4} meter (D) 10^{-6} meter

30. In two turns of Krebs Cycle the number of $NADH_2$ molecules produced is _____

(A) Six (B) Five
(C) Four (D) Three

31. Which one of the following enzyme cuts the DNA within the specific positions?

(A) Exonuclease (B) Alkaline phosphatase
(C) Restriction endonuclease (D) Reverse transcriptase

32. The decomposers in an ecosystem are _____

(A) autotrophs (B) microconsumers
(C) macroconsumers (D) abiotic components

33. Which of the following represents the correct sequence of nucleic acids considering their decreasing molecular weight?

(A) DNA > mRNA > tRNA > rRNA (B) DNA > mRNA > rRNA > tRNA
(C) DNA > rRNA > tRNA > mRNA (D) DNA > tRNA > mRNA > rRNA

34. In members of family Crassulaceae _____ is regenerated from starch during night.

(A) Phospho Enol Pyruvic Acid
(B) Pyruvic Acid
(C) Malic Acid
(D) Oxalo Acetic Acid

35. Which one of the following plants reproduces vegetatively by epiphyllous buds?

(A) Sweet potato
(B) Potato
(C) Onion
(D) Kalanchoe

36. In *Aulosira*, *Tolypothrix* and *Nostoc*, _____ are the sites for Nitrogen fixation.

(A) vesicles
(B) arbuscles
(C) akinetes
(D) heterocysts

37. The number of phenotype recombinant offsprings formed during F_2 generation of a dihybrid cross are _____

(A) 9/16
(B) 7/16
(C) 6/16
(D) 4/16

38. During glycolysis the compounds PGAL and DHAP are formed from fructose 1, 6 diphosphate by _____

(A) cleavage
(B) isomerisation
(C) phosphorylation
(D) condensation

39. Select correct statement from the following :

(A) In a DNA molecule, the two strands are antiparallel and non complementary.
(B) The rRNA is always present in variously folded form.
(C) During DNA replication, leading strand is formed in 3' → 5' while lagging strand is formed in 5' → 3' direction.
(D) The mRNA molecule may be straight or coiled upon itself to form a hairpin like shape.

40. Relatively small DNA molecules of plasmids can be identified _____

(A) due to similarity to original nuclear DNA molecule
(B) by their restriction fragment patterns
(C) by the size of bacterial cell
(D) by their circular shape

41. Stamens with long bifurcated connective are found in _____ flower.

(A) *Bignonia*
(B) *Bombax*
(C) *Salvia*
(D) *Cestrum*

42. The spatial pattern of density and distribution of species along a horizontal gradient is called as _____

(A) Stratification
(B) zonation
(C) trophic niche
(D) volume niche

43. The cos ends of DNA of lambda phage has _____ nucleotides.

(A) Five
(B) Ten
(C) Twelve
(D) Fifteen

44. The CO_2 content in biogas ranges from _____ _____

(A) 10 – 14%
(B) 15 – 45%
(C) 50 – 60%
(D) 70 – 80%

45. Which of the following is an algal source of SCP?

(A) *Candida*
(B) *Methanobacillus*
(C) *Chlorella*
(D) *Saccharomyces*

46. The plasmid of which one of the following has 'Nif' gene in it?

(A) *Rhizobium*
(B) *Agrobacterium tumefaciens*
(C) *Bacillus thuringiensis*
(D) *Salmonella typhimurium*

47. Which one of the following material is NOT safe to prepare carry bags ?

(A) Cloth
(B) Paper
(C) Jute
(D) Polythene

48. Which one of the following disease is caused by bacteria?

(A) Red rot of sugarcane
(B) Black rot of crucifers
(C) Brown rust of wheat
(D) Late blight of potato

49. If the cells of the nucellus in the angiosperm ovule contains 24 chromosomes, what will be the number of chromosomes in the endosperm of a self pollinated flower?

(A) 12
(B) 24
(C) 36
(D) 48

50. Which one of the following is NOT a bacterial herbicide?

(A) *Pseudomonas* sp. (B) *Xanthomonas* sp.
(C) *Fusarium* sp. (D) *Agrobacterium* sp.

51. Formation of urea takes place in the _____.

(A) Heart (B) Kidney
(C) Liver (D) Lung

52. In MOET technique, _____ is administered to bring about super ovulation.

(A) ACTH (B) FSH
(C) LH (D) TSH

53. *Seymouria* is a connecting link between _____.

(A) Aves and mammals (B) Amphibians and Reptiles
(C) Pisces and Amphibians (D) Reptiles and Aves

54. Which one of the following is NOT an example of ex-situ conservation of endangered species?

(A) Zoological park (B) National park
(C) Culture collection (D) Botanical garden

55. Atrial systole lasts for _____ in Cardiac Cycle.

(A) 0.1 second (B) 0.3 second
(C) 0.5 second (D) 0.7 second

56. Select the correct match :

Column A	Column B
(a) Seminal fluid	(i) Corpus spongiosum
(b) Prostate gland	(ii) Membranous urethra
(c) Ejaculatory duct	(iii) Clitoris
(d) Erectile tissues	(iv) Fructose
	(v) Prostaglandins

(A) (a) – (iv) (B) (b) – (v)
(C) (c) – (i) (D) (d) – (ii)

57. Transgenic animals are extensively used for all of the following procedures EXCEPT

(A) Bioremediation (B) Chemical safety
(C) Vaccine safety (D) Toxicity test

58. Grave's disease is characterised by the following EXCEPT

(A) Deposition of fats in eye sockets (B) Enlargement of thyroid gland
(C) Weight loss (D) Weight gain

59. Feminised males have _____ chromosomes.

(A) 44 (B) 45
(C) 46 (D) 47

60. The post-fertilization change involves _____.

(A) Haploid gametic maturation (B) Introduction of centrioles in the ovum
(C) Inhibition of Meiosis II (D) Formation of vitelline membrane

61. Deposition of fatty substances in the lining of arteries is termed as _____.

(A) Arteriosclerosis (B) Atherosclerosis
(C) Arthritis (D) Angiogenesis

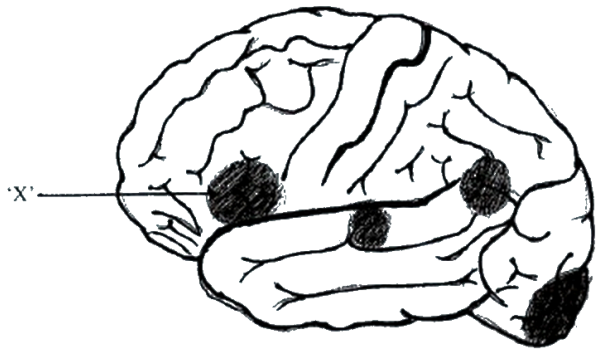
62. An axial filament in the tail of sperm is modified _____.

(A) Distal centriole (B) Endoplasmic reticulum
(C) Golgi complex (D) Proximal centriole

63. In DNA fingerprinting technique, the radioactive intermediates formed during hybridization are ____ molecules

(A) Double-stranded DNA (B) Single-stranded DNA
(C) Single-stranded mRNA (D) Double-stranded rRNA

64. The functional area of human cerebrum marked by 'X' is _____.



(A) Wernicke's area (B) Somato-sensory area
(C) Premotor area (D) Broca's area

65. Uraemia is indicated when the blood urea level rises above _____

(A) 0.05% (B) 0.04 %
(C) 0.03% (D) 0.02%

66. Introduction of attenuated pathogens in human body results in _____

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

67. HCG is secreted by _____

(A) Allantois
(B) Corona radiata
(C) Corpus luteum
(D) Placenta

68. Banting and Best successfully purified insulin from the pancreas of _____

(A) Guinea pig
(B) Dog
(C) Cow
(D) Buffalo

69. Organ of Corti is located on the _____

(A) Basilar membrane
(B) Basement membrane
(C) Reissner membrane
(D) Synovial membrane

70. The _____ is a primary constriction

(A) Telomere
(B) Sarcomere
(C) Chromomere
(D) Centromere

71. Southern blotting technique uses _____ paper for embedding DNA strands.

(A) Whatman No. 1
(B) Parchment
(C) Nitrocellulose
(D) Cellophane

72. If cranial nerves : 12 pairs, then spinal nerves :

(A) 30 pairs
(B) 31 pairs
(C) 32 pairs
(D) 33 pairs

73. One of the following is NOT an example of incomplete sex linkage.

(A) Total colour blindness
(B) Retinitis pigmentosa
(C) Nephritis
(D) Myopia

74. During secretory phase of menstrual cycle, the endometrial lining attains thickness of _____

(A) 10 – 12 mm
(B) 5 – 6 mm
(C) 3 – 4 mm
(D) 1 – 2 mm

75. *Homo habilis* is also called _____

(A) Tool maker man
(B) Man with ape brain
(C) Java ape man
(D) Heidelberg man

76. The prostatic fluid forms about _____ of total volume of semen.

(A) 60%
(B) 50%
(C) 40%
(D) 30%

77. In gene therapy, _____ can be treated by gene DNase.

(A) Pituitary dwarfism
(B) Hepatitis B
(C) Hemophilia
(D) Cystic fibrosis

78. Stimulation of RBC production is by the hormone _____

(A) Aldosterone
(B) Adrenaline
(C) Cortisol
(D) Nor Adrenaline

79. The yellow colour of normal urine is due to

(A) Bilirubin
(B) Biliverdin
(C) Urochrome
(D) Uric acid

80. Mule is an example of _____

(A) Cross breeding
(B) Interspecific Hybridization
(C) Out breeding
(D) Out crossing

81. Select the correct match :

Column A	Column B
a) Rock bee	i) Apis indica
b) Little bee	ii) Apis dorsata
c) European bee	iii) Apis florea
d) Indian bee	iv) Apis mellifera

(A) a – iv, b – i, c – iii, d – ii
(B) a – iii, b – ii, c – iv, d – i
(C) a – ii, b – iii, c – iv, d – i
(D) a – iv, b – iii, c – i, d – ii

82. When members of a population attain sexual maturity at different times preventing inter breeding, it is termed as _____ isolation.

(A) Seasonal
(B) Mechanical
(C) Habitat
(D) Ethological

83. One of the following is a positive inter-action in a population.

(A) *Adamsia* – Hermit Crab
(B) *Plasmodium* – Mosquito
(C) *Sacculina* – Crab
(D) *Wuchereria* – Man

84. Mitral valve and tricuspid valve are attached to the papillary muscles by _____

(A) Corpus callosum
(B) Columnae carnae
(C) Crura cerebri
(D) Chordae tendinae

85. Cytotoxic T-cells are _____

(A) Helper T-cells (B) Killer T-cells
(C) Memory T-cells (D) Suppressor T-cells

86. Organisms possessing strong and stout fore-limbs with clawed digits show _____ adaptations.

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

87. Athlete's foot is caused by a _____

(A) Virus (B) Roundworm
(C) Fungus (D) Bacterium

88. The birth control pill contains _____

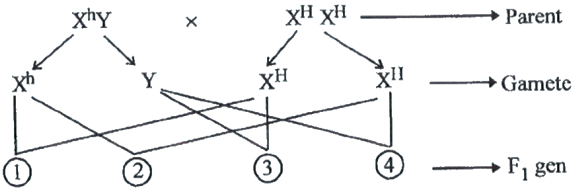
(A) Progesterone and estrogen (B) LH and estrogen
(C) FSH and LH (D) FSH and estrogen

89. Find the correct match :

Column A	Column B
a) Tactile receptor	i) Taste
b) Frigido receptor	ii) Touch
c) Gustato receptor	iii) Pressure
d) Tango receptor	iv) Cold
	v) Tension

(A) a – iii (B) b – v
(C) c – i (D) d – iv

90. Select the correct sequence of the F_1 generation.

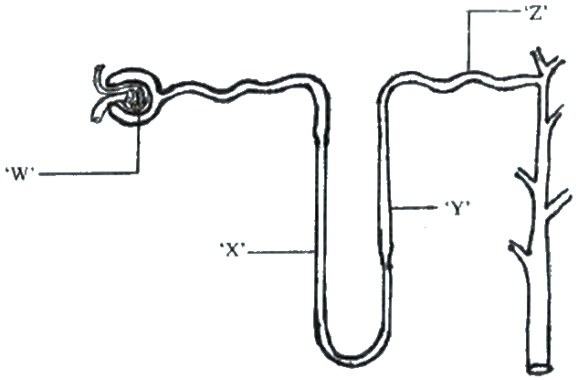


(A) ① X^HX^H, ② X^hX^H, ③ X^HY, ④ X^HY
(B) ① X^HX^h, ② X^HX^h, ③ X^HY, ④ X^HY
(C) ① X^HX^h, ② X^hX^H, ③ X^hY, ④ X^hY
(D) ① X^hX^H, ② X^HX^h, ③ X^HY, ④ X^hY

91. *Treponema pallidum* is a _____ bacterium.

(A) Streptococcus (B) Streptobacillus
(C) Spirochaete (D) Oligochaete

92. In the given diagram, water absorption does NOT occur in part labelled as _____



(A) W (B) X
(C) Y (D) Z

93. Maximum cranial capacity is found in _____

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

94. Methods to control air pollution include the following EXCEPT

(A) Scrubber (B) Electrostatic precipitator
(C) Electrodialysis (D) Catalytic converter

95. During sinus arrhythmia _____

(A) Heart rate increases during inspiration (B) Heart beat decreases during inspiration
(C) Heart rate increases during expiration (D) Heart rate remains constant

96. Francisco Redi and Spallanzani disproved the theory of _____ by their classical experiments.

(A) Abiogenesis (B) Biogenesis
(C) Cosmozoic (D) Special creation

97. Density of population increases when _____

(A) Emigration increases (B) Immigration decreases
(C) Mortality increases (D) Natality increases

98. Antibodies are synthesized by _____

(A) Eosinophil (B) Lymphocyte
(C) Monocyte (D) Neutrophil

99. Kupffer's cells of liver are an example of _____

(A) Anatomical barrier
(B) Inflammatory barrier
(C) Physiological barrier
(D) Phagocytic barrier

100. The spermiogenesis involves all of the following EXCEPT

(A) Formation of mitochondrial sheath
(B) Formation of proximal and distal centrioles
(C) Formation of acrosomes
(D) Shortening of sperm

- End of Question Paper -