MHT-CET 2021 Question Paper

25th September 2021

1. Sometimes a pregnant woman is injected with _____ hormone to hasten parturition.
   (A) FSH (B) thyroxine
   (C) oxytocin (D) glucagon

2. In brood parasitism _____.
   (A) the eggs after being laid in hosts nest are incubated by parent bird.
   (B) the eggs of host bird are destroyed.
   (C) the parasites egg hatch after the hosts egg.
   (D) the eggs of one bird are laid in another birds nest who incubates them.

3. The patent titled "Control of plant gene expression" is based on a gene producing toxic protein that _____.
   (A) causes allergic reactions.
   (B) does not allow seeds to germinate.
   (C) has adverse effect on Monarch butterfly population.
   (D) develops resistance to herbicide.

4. Which one of the following is the substrate for the activity of restriction endonuclease enzyme?
   (A) Double stranded DNA at VNTR's only.
   (B) RNA primers used in PCR for gene amplification.
   (C) Single stranded DNA separated by denaturation.
   (D) Specific recognition sites of double stranded DNA.

5. The remnant of the embryonic aperture on the inter-auricular septum is called _____.
   (A) foramen ovalis
   (B) foramen of Monroe
   (C) foramen of Luschka
   (D) foramen of Magendie

6. Abscisic acid causes efflux of _____ ions from guard cells and brings about closure of stomata.
   (A) Na^+ (B) K^+
   (C) Mg^{++} (D) H^+

7. A large increase in blood volume and pressure stimulates atrial wall to produce _____.
   (A) ANP (B) ACTH
   (C) RAAS (D) ADH

8. All living beings have equal right to survive irrespective of their known or prospective economic use. "This is _____ reason for conservation of biodiversity.
   (A) constitutional (B) broad utilitarian
   (C) narrowly utilitarian (D) ethical

9. If a person has blood group 'A', then antigen A will be present, _____.
   (A) in stroma of RBC
   (B) on plasma membrane of RBC
   (C) on plasma membrane of WBC
   (D) in plasma of blood

10. Which plant hormone increases rate of respiration?
    (A) Auxins (B) Ethylene
    (C) Gibberellins (D) Cytokinins

11. In angiosperms, the embryo sac is _____.
    (A) uninucleate (B) binucleate
    (C) multinucleate (D) enucleate

12. Which one of the following sets contain enzymes coded by structural gene of lac operon of *E.coli*?
    (A) β - galactosidase, phophoglucose isomerase and transacetylase
    (B) β - galactosidase, β - galactoside permease and glycogen synthetase.
    (C) β - galactosidase, β - galactoside permease and transacetylase
    (D) β - galactosidase, β - galactoside permease and helicase.

13. During biogas formation which one of the following process is NOT involved in anaerobic digestion of slurry?
    (A) Methanogenesis (B) Acidogenesis
    (C) Photolysis (D) Hydrolysis

14. The specific site where the DNA is cut by REN's is called _____ site.
    (A) recognition (B) initiation
    (C) 'ori' (D) termination

15. Which one of the following is an arboreal ape?
    (A) Gorilla (B) Gibbon
    (C) Orangutan (D) Chimpanzee

16. Which one of the following cranial nerves does NOT innervate eye muscles?
    (A) Pathetic (B) Abducens
    (C) Hypoglossal (D) Occulomotor

17. Which one of the following is unlike other nuclei in the embryo sac of angiosperms regarding ploidy?
(A) Male gamete nucleus
(B) Egg nucleus
(C) Secondary nucleus
(D) Antipodal nucleus

18. Following are sex ratios obtained from a given area. Which one will show evolutionary stable strategy between males and females respectively?
(A) 1000 : 1000 (B) 1015 : 1000
(C) 1000 : 1015 (D) 1000 : 800

19. Number of NADH + H^+ molecules formed during acetylation from end product of glycolysis in aerobic respiration is _____.
(A) 2 (B) 3
(C) 6 (D) 8

20. III ventricle of human brain is connected posteriorly to IV ventricle through _____.
(A) foramen of Magendie
(B) duct of Bellini
(C) foramen of Monro
(D) duct of Sylvius

21. The substance upon which an enzyme acts is termed as _____.
(A) prosthetic group (B) exoenzyme
(C) endoenzyme (D) substrate

22. Given below are two statements with respect to Menstrual cycle.
Statement I: Menstrual phase in menstrual cycle occurs when an ovulated egg does not fertilize and thus shed out along with the menstruum.
Statement II: Menstrual phase is called, 'funeral of unfertilized egg'.
Choose the most appropriate answer from the options given below.
(A) Both Statement-I and Statement-II are correct
(B) Statement-I is correct but Statement-II is incorrect.
(C) Both Statement-I and Statement-II are incorrect.
(D) Statement-I is incorrect but Statement-II is correct.

23. The heterochromatin part of chromosome is _____ times more rich in DNA than euchromatin.
(A) 2 – 3 (B) 9 – 12
(C) 5 – 8 (D) 4 – 6

24. Which of the following does NOT contribute to the formation of thoracic cage?
(A) Diaphragm (B) Sternum
(C) Pleura (D) Ribs

25. Select the correct sequence of stage occurring in primary hydrarch succession.
(A) Free floating plants → submerged plants → trees→ reed swamp stage
(B) Reed swamp stage → trees → submerged plants → free floating plants
(C) Submerged plants → free floating plants → reed swamp stage → trees
(D) Submerged plants → reed swamp stage → free floating plants → trees

26. Nucleic acid was first discovered from _____.
(A) red blood cells
(B) bacteriophages
(C) white blood cells
(D) *Streptococcus pneumoniae*

27. Rate of breathing in new born is about _____ times per minute.
(A) 44 (B) 12
(C) 16 (D) 20

28. Secondary succession takes place in / on _____
(A) newly formed volcanic island.
(B) recently burnt or destroyed forest.
(C) newly created pond.
(D) bare rocky area

29. T-wave in normal ECG represents _____.
(A) atrial depolarization.
(B) ventricular depolarization.
(C) atrial repolarization
(D) ventricular repolarization

30. Choose the INCORRECT statement with respect to T.S. of Artery.
(A) Arterial lumen is devoid of valves.
(B) Angular margin around the lumen shows tessellations
(C) The outermost tunic externa is thick and tough layer of collagen fibers.
(D) Tunica media is thin and lumen is wide.

31. To provide energy for a metabolic process, ATP molecule undergoes _____.
(A) phosphorylation (B) hydrolysis
(C) oxidation (D) dehydrogenation

32. In which of the following plants male flower floats on the surface of water?
(A) *Potamogeton* (B) *Zostera*
(C) Water lily (D) *Vallisneria*

33. The cyanobacteria *Tolypothrix* is associated symbiotically with _____.
(A) Lichen (B) *Azolla*
(C) *Cycas* (D) Endomycorrhiza

34. Match the terms is Column-I with their explanation in Column-II.

	Column I		Column II
A.	Polycythemia	I.	Decrease in number of WBCs
B.	Erythrocytopenia	II.	Increase in number of RBCs
C.	Leukemia	III.	Decrease in number of RBCs
D.	Leucopenia	IV.	Uncontrolled increase in number of WBCs

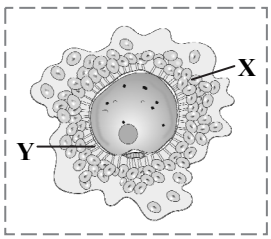
(A) A – II B – III C-IV D – I
(B) A – I B – II C – III D – IV
(C) A – IV B - II C – I D – III
(D) A - III B - IV C – II D – I

35. Match the following enzymes in Column-I with their source in Column-II.

	Column I		Column II
A.	Pectinase	I.	*Saccharomyces cerevisiae*
B.	Lipase	II.	*Aspergillus niger*
C.	Invertase	III.	*Trichoderma konigii*
D.	Cellulase	IV.	*Candida lipolytica*

(A) A – II B – I C-IV D – III
(B) A – II B – III C – I D – IV
(C) A – II B - IV C – I D – III
(D) A - IV B - III C – II D – I

36. Given below is a diagram of an unfertilized egg. Identify 'X' and 'Y' respectively.



(A) vitelline membrane and zona pellucida
(B) zona pellucida and vitelline membrane
(C) perivitelline space and corona radiata
(D) corona radiate and zona pellucida

37. Vasa recta refers to _____.
(A) loop shaped capillary network around Henle's loop of juxtamedullary nephrons.
(B) juxtaglomerular apparatus of nephrons.
(C) neuronal circuit of hypothalamus,
(D) vascular portion of pia mater of CNS.

38. Which one of the following is an example of milk sugar?
(A) Lactose (B) Fructose
(C) Sucrose (D) Maltose

39. Select the INCORRECT statement regarding transport of respiratory gases.
(A) ppO_2 of capillary blood is 40 mm Hg before oxygenation.
(B) Alveolar membrane is equally permeable to oxygen and carbon dioxide.
(C) Dissocation of oxyhaemoglobin into haemoglobin and oxygen is favored by low $ppCO_2$.
(D) $ppCO_2$ of alveolar air is 45 mm Hg.

40. In angiosperms, the embryo is developed at _____ of the embryo sac.
(A) antipodal side (B) micropylar end
(C) chalazal end (D) centre

41. Which one of the following is the decarboxylated compound formed during TCA cycle?
(A) Citrate (B) α-ketoglutarate
(C) Isocitrate (D) Cis-aconitate

42. Which of the following is NOT a character of open circulation?
(A) Blood flows with low pressure.
(B) Respiratory pigment is usually absent.
(C) Presence of blood capillaries.
(D) Presence of haemocoel.

43. Match the following types of adaptations given in Column-I and their examples given in Column-Ii. Choose the correct answer from the options given below.

	Column-I		Column-II
A.	Morphological	I.	CAM plants
B.	Physiological	II.	Migration of birds
C.	Behavioural	III.	Leaves reduced to spines in opuntia

(A) A – II, B – I, C – III
(B) A – I, B – II, C – III
(C) A – III, B – I, C – II
(D) A – I, B – III, C – II

44. Identify the correct statement/s regarding unsaturated fatty acids.
A. They have one or more double between the carbon atoms of hydrocarbon chains.
B. Are generally solid at room temperature.
C. Are generally liquid at room temperature.
D. They do not have any double bonds between the carbon atoms of hydrocarbon chains.
(A) Only A (B) Both A and C
(C) Both A and B (D) A, B and C

45. The smallest WBC is _____.
(A) basophil. (B) monocyte.
(C) lymphocyte. (D) neutrophil.

46. Lac-operon is an example of which one of the following types of regulation of gene expression?
(A) Transcriptional level
(B) Translational level
(C) Regulation of splicing/ processing level
(D) Transport of mRNA from nucleus to cytoplasm

47. The Human Genome Project formally began in __A__ and was completed in __B__.
(A) A – 1993 B – 2000
(B) A – 1995 B – 2005
(C) A – 1990 B – 2003
(D) A – 1980 B – 2001

48. During translation in protein synthesis, and codon bind by formation of _____ bond.
(A) peptide (B) glycosidic
(C) hydrogen (D) phosphodiester

49. Epstein-barr virus and Human papilloma virus cause _____.
(A) dermatophytosis (B) nasopharyngitis
(C) pneumonia (D) cancer

50. Species diversity is bountiful in the tropics near equator because of the following factors EXCEPT _____.
(A) higher annual rainfall.
(B) warmer temperature.
(C) intense sunlight.
(D) drastic seasonal climatic changes.

51. Symptoms such as intermittent pain below ribcage in the back and sideways, hazy, pinkish urine along with pain during micturition generally indicate _____.
(A) uremia (B) kidney stones
(C) diabetes mellitus (D) nephritis

52. How many copies of DNA will be produced in the thermal cycler of PCR after 5 cycles?
(A) 64 (B) 16
(C) 128 (D) 32

53. Which one of the following is NOT a cause of diarrhea?
(A) Colitis
(B) Ulcer
(C) Inflammation of intestine
(D) Inadequate enzyme secretion

54. Given below are two statements regarding evolution.
Statement-I: Selection against harmful mutation leads to a mutation balance.
Statement-II: In mutation balance, the allele frequency of harmful recessives keep on changing generation after generation.
In the light of above statements, choose the most appropriate answer from the options given below:
(A) Statement-I is correct but Statement-II is incorrect
(B) Both Statement-I and Statement-II are correct.
(C) Both Statement-I and Statement-II are incorrect.
(D) Statement-I is incorrect but Statement-II is correct.

55. Which one of the following is a hormone releasing IUD?
(A) LNG – 20 (B) CuT
(C) Cu7 (D) Multiload 375

56. With reference to the Mendelian experiments, which one of the following statements is INCORRECT?
(A) A factor has only one allele.
(B) Recessive allele is not expressed in the presence of an alternative allele.
(C) The alleles accupy identical loci on homologous chromosomes.
(D) Allele is an alternative form of a given gene.

57. Based on the statements regarding dialysis choose the correct answer from options given below.
Statement-I: Dialysis is regarded as a 'holding measure' until a renal transplant is performed.
Statement-II: Sometimes dialysis is not supportive measure in those for whom a transplant is inappropriate.
(A) Statement-I is incorrect but Statement-II is correct.
(B) Both Statement-I and Statement-II are correct.
(C) Both Statement-I and Statement-II are incorrect.
(D) Statement-I is correct but Statement-II is incorrect.

58. Select the mismatch pair with respect to hormones.
(A) Milk ejecting hormone – Oxytocin
(B) Sleep inducing hormone – Melatonin
(C) Salt retaining hormone – Thyroxine
(D) Emergency hormone – Adrenaline

59. During sewage treatment the activated sludge is present in _____.
(A) settling tank.
(B) aeration tank.
(C) sedimentation tank.
(D) grit chamber.

60. In Zea mays, color and shape of grain show _____ linkage.
(A) complete (B) complete sex
(C) incomplete (D) incomplete sex

61. Flame cell are also called __A__ and they are found in animals like __B__ .
(A) A - Salt excreting glands, B - marine birds
(B) A - Protonephridia, B - rotifers
(C) A - metanephridia, B - Echinoderms
(D) A - nephrons, B - Crustaceans

62. Polyembryony was first observed by Leeuwenhoek in the seeds of _____.
(A) Citrus (B) Mango
(C) Orchid (D) Papaya

63. Symptoms of malaria do NOT include _____.
(A) sweating and shivering
(B) arthralgia
(C) conjunctivitis
(D) fever with chills

64. India shares about _____% of total biodiversity wealth on earth.
(A) 2.4 (B) 12 (C) 8.1 (D) 15

65. Given below are two statements with respect to counter current mechanism.
Statement-I: Tissue fluid around descending limb of Henle's loop becomes concentrated, during counter current mechanism.
Statement-II: Water moves out from descending limb of Henle's loop into tissue fluid by osmosis.
In the light of above statements select the correct option from codes given below:
(A) Both Statement-I and Statement-II are incorrect.
(B) Both Statement-I and Statement-II are correct.
(C) Statement-I is incorrect but Statement-II is correct.
(D) Statement-I is correct but Statement-II is incorrect.

66. Generally the pigment bilirubin formed by breakdown of haemoglobin is excreted through _____.
(A) faeces. (B) sebum.
(C) sweat. (D) urine.

67. Following accessory ducts in human males are in pairs, EXCEPT _____.
(A) epididymis (B) ejaculatory duct
(C) vas deferens (D) urethra

68. How many of the following statements are true about angiosperms?
A. The generative cell floats in the cytoplasm of vegetative cell.
B. The stalk of ovule is called funiculus.
C. Pollen grains are shed at two celled stage.
D. Embryo sac is diploid.
E. Megaspore mother cell towards chalazal end becomes functional.
(A) A, B and C only (B) D and E only
(C) A and B only (D) B and C only

69. Given below are two statements.
Statement-I: In root hair outer layer of cell wall is composed of pectin.
Statement-II: In root hair inner layer of cell wall is composed of cellulose.
Choose the correct answer from the options given below with reference to structure of root hair.
(A) Statement-I is correct but Statement-II is incorrect.
(B) Statement-I is incorrect but Statement-II is correct
(C) Both Statement-I and Statement-II are correct.
(D) Both Statement-I and Statement-II are incorrect.

70. Which one of the following hormone is produced by β-cells of is islets of Langerhans of pancreas?
(A) Oxytocin (B) Insulin
(C) Glucagon (D) Vasopressin

71. Anaerobic process after glycolysis, during lactic acid formation is called _____.
(A) Fermentation (B) Citric acid cycle
(C) HSK pathway (D) Calvin cycle

72. Given below are two statements.
Statement-I: Enzyme pyruvate dehydrogenase is present in mitochondria of eukaryotes.
Statement-II: Enzyme pyruvate dehydrogenase is present in cytoplasm of prokaryotes.
In the light of the above statements choose the correct answer from the options given below.
(A) Both Statement-I and Statement-II are incorrect.
(B) Statement-I is incorrect but Statement-II is correct.
(C) Both Statement-I and Statement-II are correct.
(D) Statement-I is correct but Statement-II is incorrect.

73. Fishes have _____ for respiration
(A) external gills (B) internal gills
(C) book gills (D) book lungs

74. In neural system, chemical synapse shows synaptic gap of about _____.
(A) 400 nm to 60 nm (B) 80 nm to 100 nm
(C) 20 nm to 40 nm (D) 60 nm to 80 nm

75. Following are infection sites for syphilis, EXCEPT _____.
(A) conjunctiva of eye.
(B) oral mucous membrane.
(C) mucous membrane in genital region.
(D) mucous membrane in rectum.

76. Following are the functions of cerebrospinal fluid EXCEPT _____.
(A) Acts as shock absorber.
(B) Maintenance of constant pressure.
(C) Helps in binding the neurotransmitter to receptor.
(D) Exchange of nutrients and waste.

77. Formation of oogonia in human females is completed in _____.
(A) embryonic stage.
(B) puberty.
(C) at the time of birth.
(D) proliferative phase of menstruation

78. Match different cells of Islets of Langerhans in Column-I with their role in Column-II. Select the correct answer from the options given below.

	Column-I		Column-II
A.	Alpha cells	I.	Stimulates muscles for glycogenesis.
B.	Beta cells	II.	Decreases gastric secretions and absorption in digestive tract.
C.	Delta cells	III.	Inhibits the release of pancreatic juice.
D.	F cells	IV.	Stimulates liver for glucogenolysis.

(A) A – III, B – II, C – IV, D – I
(B) A – I, B – IV, C – III, D – II
(C) A – II, B – III, C – I, D – IV
(D) A – IV, B – I, C – II, D – III

79. How many phenotypes can be obtained if a pea plant (RrTt) is crossed with another pea plant with the same genotype?
(A) 4 (B) 9 (C) 12 (D) 16

80. The _____ is regarded as an inborn metabolic disorder.
(A) sickle cell anemia (B) Thalassemia
(C) Window's peak (D) phenylketonuria

81. Which one of the following restriction enzyme has recognition sequence of 4 nucleotides and makes blunt end in the DNA?
(A) Hind II (B) Bam H I
(C) Alu I (D) Eco RI

82. Complete the following about the absence of clotting factors. Haemophilia A:____x____: : Haemophilia B:__y__ .
(A) x – IX y – VIII
(B) x – X y – IX
(C) x – VIII y – IX
(D) x – IX y – X

83. Which one of the following gland is NOT present in human females?
(A) Bartholin's glands
(B) Endometrial glands
(C) Bulbourethral glads
(D) Mammary glands

84. Which one of the following statements is INCORRECT about angiospermic seed/fruit?
(A) The micropyle of the ovule persists in the seed.
(B) Coconut is a non-endospermic seed.
(C) Coconut is a fleshy fruit.
(D) Fruit development is triggered by hormones produced by developing seeds.

85. 'Bt' cotton contains the gene of a _____.
(A) bacterium. (B) nematode.
(C) protozoan. (D) virus.

86. Which one of the following is NOT a psychological disorder?
(A) Anxiety disorder
(B) Autism spectrum disorder
(C) Bipolar disorder
(D) Pulmonary disorder

87. Which one of the following is NOT correct regarding vaccines?
(A) It is used to control diseases like measles, polio etc.
(B) It is antigenic protection against particular pathogen.
(C) It teaches immune system to recognize and eliminate the pathogenic organism.
(D) It is introduction of antibodies into animal body.

88. Which one of the following is NOT a derivative of cholesterol?
(A) Vitamin D (B) Progesterone
(C) Testosterone (D) Diosgenin

89. Which one of the following is a chromosomal disorder?
(A) Sickle cell anaemia
(B) Phenylketonuria
(C) Colorblindness
(D) Turner's syndrome

90. Heterostyly is a contrivance for _____.
(A) geitonogamy only
(B) autogamy only
(C) xenogamy only
(D) geitonogamy and xenogamy

91. A heterozygous tall pea plant was crossed with a dwarf pea plant. The progeny of cross shows _____.
(A) 1 Tall : 1 dwarf (B) 3 Tall : 1 dwarf
(C) 1 Tall : 3 dwarf (D) 4 Tall : 2 dwarf

92. In the genome of mouse, the estimated number of genes is _____.
(A) 33,000 (B) 19,000
(C) 13,000 (D) 25,000

93. What is ubiquinol?
(A) Oxidized ubiquinone
(B) Co enzyme Q
(C) Ubiquinone
(D) Reduced ubiquinone

94. In which zone / region root hairs occur?
(A) Zone of elongation
(B) Zone of maturation
(C) Meristematic region
(D) Zone of absorption

95. In the ecological hierarchy the basic unit is _____.
(A) biome.
(B) community.
(C) individual organism.
(D) population.

96. The fossil of which one of the following has been found in Ethiopia as well as Tanzania?
(A) *Homo erectus*
(B) *Australopithecus*
(C) *Ramapithecus*
(D) *Drypithecus*

97. At the end of replication, the contribution of nucleotides from mother DNA is _____ percent.
(A) 75 (B) 25 (C) 100 (D) 50

98. With respect to derivatives of germinal layers in human beings, complete the analogy.
Ectoderm : Sweat glands : : Endoderm : _____.
(A) Mammary glands (B) Salivary glands
(C) Thyroid glands (D) Pineal glands

99. In Platyhelminthes and rotifers the excretory organs are _____.
(A) flame cells.
(B) green glands.
(C) nephridia.
(D) Malpighian tubules.

100. The spiral configuration of α-helix and β-helix of polypeptide chains are held together by _____ bonds to form secondary structure of protein.
(A) phosphodiester (B) hydrogen
(C) peptide (D) disulphide