C 3393 (Pages : 8) Name.....

Reg. No.....

Ph.D. ENTRANCE EXAMINATION, APRIL 2021

ZOOLOGY

Time : Two Hours Maximum : 100 Marks

Put a (√) mark against most appropriate answer.

Each question carries 1 *mark (Use ball point pen only).*

1. The gas absent during the prebiotic condition was :

   a) Nitrogen. b) Oxygen.

   c) CO_2. d) Methane.

2. Technique used to separate charged molecules is :

   a) Gel filtration. b) Spectroscopy.

   c) Electrophoresis. d) All the above.

3. A fall in Glomerular Filtration Rate (GFR) activates :

   a) Adrenal medulla to release aldosterone.

   b) Adrenal medulla to release adrenaline.

   c) Posterior Pituitary to release vasopressin.

   d) Juxta glomerular cells to release renin.

4. Part of nephron impermeable to water is :

   a) Ascending limb of loop of Henle.

   b) Descending limb of loop of Henle.

   c) Proximal convoluted tubule.

   d) Distal convoluted tubule.

5. Genes required for basic activities of all cells is :

   a) Luxury genes. b) House keeping genes.

   c) Jumping genes. d) Mutant genes.

6. Delayed type of hypersensitivity (DTH) is also called ———————— hypersensitivity.

a) Type I. b) Type II.

c) Type III. d) Type IV.

7. Addisons disease is caused due to the autoimmune response of :

a) Liver. b) Parathyroid.

c) Adrenal cells. d) Pancreas.

8. Graves disease is associated with malfunctioning of :

a) Pituitary. b) Thyroid.

c) Parathyroid. d) Pancreas.

9. The immunoglobulin which can pass through placenta is :

a) IgA. b) IgC.

c) IgG. d) IgM.

10. Suicidal bags are :

a) Ribosome. b) Polysome.

c) Lysosome. d) Chromosome.

11. The light and heavy chains of immunoglobulins are linked by :

a) Hydrogen bonds. b) Disulfide bonds.

c) Ionic bonds. d) Covalent bonds.

12. The co-expression of IgM and IgD is seen in hypersensitivity :

a) Pre B cells. b) Mature B Cells.

c) Native B cells. d) Plasma cells.

13. The subunits found in eukaryotic 80s ribosome is :

a) 40s and 40s. b) 50s and 30s.

c) 20s and 60s. d) 40s and 60s.

14. The factor required for binding natural mRNA to the smaller sub-unit of ribosome is :

a) IF -1. b) IF-2.

c) IF-3. d) EF.

15. The membrane model by suggested by Singer and Nicholson 1972 is :

a) Mosaic membrane concept.
b) Fluid mosaic model.
c) Lipid pillar model.
d) Bilamellar model.

16. Sperms are produced in :

a) Seminiferous tubules.
b) Vas deferens.
c) Prostrate glands.
d) Interstitial cells.

17. Proliferation of endometrium occurs under the influence of increasing amount of :

a) Estrogen.
b) Progesterone.
c) LH.
d) FSH.

18. Gonadotrophic hormone is secreted by :

a) Adenohypophysis of pituitary gland.
b) Parathyroids.
c) Interstitial cells of testis.
d) Adrenal medulla.

19. During menstrual cycle, a mid-cycle surge of ———————— triggers ovulation.

a) Estrogen.
b) Testosterone.
c) LH.
d) LTH.

20. Which of the following organs develop first ?

a) Liver.
b) Heart.
c) Kidney.
d) Notochord.

21. Anticodons pair with :

a) Amino acids.
b) DNA codons.
c) tRNA anticodons.
d) mRNA codons.

22. In translation, an initiation complex consists of :

a) An initiator tRNA.
b) A large ribosomal subunit.
c) A small ribosomal subunit.
d) Start codon of mRNA.

23. If sequence of bases in DNA is TAGC, Then the sequence of bases of RNA would be :

a) AUCG. b) TAGC.

c) ATCG. d) GCTA.

24. Which is not a major function of the genetic material :

a) Store information.

b) Catalyze chemical reaction.

c) Replicate itself.

d) Undergo mutation.

25. If a species contains 40 % Guanine in its DNA, what is the percentage of Cytocine that it could contain?

a) 60 %. b) 40 %.

c) 27 % d) 30 %.

26. An intervening sequence in eukaryotic gene that is not an active part of the gene is called :

a) Exon. b) Intron.

c) Replicon. d) None of the above.

27. The portion of the tRNA that permits proper sequencing of amino acid to acquire on the mRNA strand :

a) Is a codon. b) Is an anticodon.

c) A specific amino acid. d) All the above.

28. A virus that can reproduce without killing its host is called :

a) Temperate virus. b) Lytic virus.

c) A retro active virus. d) Viron.

29. An operon is a :

a) Protein that suppresses gene expression.

b) Protein that accelerates gene expression.

c) Cluster of structural genes with related functions.

d) Gene that switches other genes on or off.

30. An eukaryotic chromosome differs from a bacterial chromosome in having :

a) Reverse transcriptase.

b) Introns.

c) Start and stop signals.

d) Thyamine instead of Uracil.

31. Viral genes are made up of :

a) DNA only.

b) RNA only.

c) Either DNA or RNA.

d) Either proteins or nucleic acids.

32. When lactose is present :

a) Transcription of *lac-y lac-z* and *lac-a* occurs.

b) Repressor is unable to bind to the operator.

c) Repressor is able to bind to the operator.

d) Both (a) and (b).

33. A base sequence signalling the start of a gene is :

a) Activator protein. b) Operator.

c) Enhancer. d) Promotor.

34. DNA fragments result when ———————— cut DNA molecule at specific sites.

a) RELPS.

b) DNA probes.

c) Restriction enzymes.

d) DNA Polymerase.

35. In a nucleosome, the DNA is wrapped around :

a) Polymerase molecules. b) Ribosomes.

c) Histones. d) Nucleolus.

36. RNA retroviruses have a special enzyme that :

a) Disintegrates the host DNA.

b) Polymerise host DNA.

c) Transcribes viral RNA to cDNA.

d) Translate host DNA.

37. A gene earned by recombinant DNA is cloned when :

a) It is transcribed.

b) It is hybridised.

c) It is fragmented by restriction enzymes.

d) It's host bacterium divides by binary fission.

38. A piece of nucleic acid used to find a gene by forming a hybrid with it is called a :

a) Probe. b) Retrovirus.

c) Vector. d) Restriction sequence.

39. In reverse transcription, ———— is assembled on ————.

a) mRNA, DNA. b) DNA, Agar.

c) cDNA, mRNA. d) DNA, enzymes.

40. Which of the following molecules form lengths of DNA with 'sticky ends' :

a) DNA ligase.

b) DNA polymerase.

c) RNA polymerase.

d) Restriction enzymes.

41. What is the function of polymerase chain reaction in genetic engineering :

a) Cut DNA into many fragments.

b) Carry DNA into a new cell.

c) Link together newly joined fragments of DNA.

d) Make millions of copies of a specific segment of DNA.

42. The molecule needed to allow a cell to transfer genetic information from RNA to DNA is :

a) DNA polymerase.
b) RNA polymerase.
c) Reverse transcriptase.
d) Chlorophyll.

43. Bt cotton is resistant to :

a) Insects.
b) Herbicides.
c) Salt.
d) Drought.

44. An intimate relationship between two species in which co-evolution and adaptation occurs is :

a) Competition.
b) Community.
c) Predation.
d) Symbiosis.

45. A form of symbiosis in which both participants benefit is :

a) Commensalism.
b) Parasitism.
c) Mutualism.
d) Predation.

46. All the organisms living together and interacting with one another in a common environment are in a natural habit in a local area are known as :

a) Biome.
b) Biosphere.
c) Biomass.
d) Community.

47. Altruistic behaviour between closely related animals are selected for because they :

a) Reduce fighting between species.
b) Ensure survival of the altruistic individual.
c) Force individuals to co-operate with one another so increase population growth.
d) Increase the frequency of the altruistic individuals genes in the next generation.

48. ———————— are species rich with most threatened reservoirs of plants and animals on earth.

a) Red data book.
b) Hotspots.
c) Botanical gardens.
d) Germ plasm banks.

49. First National Park of India is :

    a) Jim Corbett National Park.

    b) Indira Gandhi National Park.

    c) Kasiranga National Park.

    d) Nilgiri Biosphere Reserve.

50. Genotype of a person with Turner's syndrome will be :

    a) 44 + XXY. b) 44 + XYY.

    c) 44 + XO. d) 44 + XXYY.

(50 × 1 = 50 marks)

Part B

Answer any **ten** *of the following.*
Each question carries 5 *marks.*

1. Describe mechanisms of enzyme action.
2. Write an account on Carbohydrates.
3. Southern blotting.
4. Down's syndrome.
5. Noise pollution.
6. Graphical presentation data.
7. Green house effect.
8. Stability and Complexity of ecosystem.
9. Biological clock.
10. Animal associations.
11. Transcription.
12. Menstrual cycle.
13. Pituitary gland.
14. Conservation of Energy.
15. Vermi-composting.

(10 × 5 = 50 marks)