



Previous Year Question Paper
of

SET – TAMIL NADU

LIFE SCIENCES - III

State Eligibility Test

2016

(Original Question Paper with Answer Key)

State Eligibility Test



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PAPER – III

LIFE SCIENCES

Note : Attempt all the questions. Each question carries *two* (2) marks.

1. Dynamic attractions between molecules that occur when oppositely charged regions approach one another, are called _____
(A) Covalent bonds
(B) Ionic bonds
(C) Hydrogen bonds **Ans. D**
(D) Vander Waal's attraction
2. The following reaction: $2\text{FeCl}_3 + \text{SnCl}_2 \rightarrow 2\text{FeCl}_2 + \text{SnCl}_4$ is an example of _____
(A) First order reaction
(B) Second order reaction
(C) Third order reaction **Ans. C**
(D) Zero order reaction
3. Electrostatic interactions between biomolecules are called as
(A) Bio bridges
(B) Intermolecular
(C) Stable bridges
(D) Salt bridges **Ans. D**
4. Which among the following does not occur in nucleus?
(A) Transcription
(B) Translation
(C) Replication **Ans. B**
(D) Repair
5. In TCA cycle malonate is competitive inhibitor structurally similar to
(A) Succinate
(B) Fumarate
(C) Oxaloacetate
(D) α -Keto glutarate **Ans. A**
6. Renal threshold for glucose is
(A) 8.5–9.5 mmol/L
(B) 6.3–7.5 mmol/L
(C) 9.5–10.0 mmol/L **Ans. C**
(D) 9.0–10.0 mmol/L
7. Hollow tubes composed of globular proteins are known as
(A) Macrotubules
(B) Microtubules
(C) Tubulin
(D) Skeletal fiber **Ans. B**
8. The condensed unit of E. coli chromosome
(A) Nucleus
(B) Nucleosome
(C) Nucleolus
(D) Nucleoid **Ans. D**
9. Polytene chromosomes are found in
(A) Digestive gland
(B) Neurons

- (C) Salivary gland **Ans. C**
(D) Prostate gland
10. During cell cycle duplication of chromosome occurs during
(A) S phase
(B) G₁ phase **Ans. A**
(C) M phase
(D) G₂ phase
11. Bacteria reproduce asexually by
(A) Transverse binary fission
(B) Budding
(C) Endospore formation **D**
(D) All of the above
12. Nutrients engulfed to cytoplasmic sacs called
(A) Storage sacs
(B) Food vacuoles
(C) Phagocytic sacs **B**
(D) Nutrients vacuoles
13. The largest among transcription factor is
(A) TF11A
(B) TF11B **D**
(C) TF11C
(D) TF11D
14. LAC operon is an example for
(A) Anabolic pathway
(B) Catabolic pathway
(C) Regulation pathway **A**
(D) Termination pathway
15. The enzyme which denature DNA is
(A) Topoisomerase
(B) Helicase
(C) Primase **B**
(D) DNA polymerase II
16. In nucleic acids the phosphate group is attached to the _____ carbon of sugar
(A) 5'
(B) 4'
(C) 3' **A**
(D) 2'
17. Which mRNA lack poly 'A' tail?
(A) Ferritin
(B) Interferon
(C) Insulin **B**
(D) Cistron
18. The compressed chromosome structure is
(A) 700 nm
(B) 250 nm
(C) 500 nm **A**
(D) 100 nm
19. The leading cause of viral gastroenteritis in infants and young children is

- (A) Rota virus
(B) Rubella virus
(C) Retro virus **A**
(D) Cytomegalovirus
20. The condition in which the host cell chromosome carries bacteriophage DNA is called as
(A) Temperate
(B) Prophage
(C) Lysis
(D) Lysogen **B**
21. Which one of the following is a cell adhesion molecule
(A) Integrin
(B) Lysine
(C) Myosin **A**
(D) Keratin
22. Junction with in the cell which prevents small molecules from passing in between two cells are termed as
(A) Gap junctions
(B) Tight junctions
(C) Adhesions
(D) Plasmodesmata **B**
23. The delayed type hypersensitivity is mediated by
(A) Antibodies
(B) T. Cells
(C) Mast cells **B**
(D) B. Cells
24. The small organic molecules which are antigenic but not immunogenic are called as
(A) Carriers
(B) Adjuvants
(C) Haptens **C**
(D) Epitopes
25. Inhibin from sertoli cells of testis selectively inhibits
(A) Follicle stimulating hormone
(B) Thyroid stimulating hormone
(C) Growth hormone **A**
(D) Luteinizing hormone
26. During fertilization polyspermy is prevented by
(A) Vitelline membrane
(B) Zona pellucida
(C) Cortical granules **C**
(D) Hyaluronidase enzyme
27. The very first event of mammalian fertilization
(A) Acrosomal reaction
(B) Capacitation
(C) Activation of egg
(D) Entry of sperm in egg
28. Homeobox sequences are **B**
(A) Integration site for viruses
(B) Junk DNA sequences
(C) Conserved sequences which regulate development of many animal species

- (D) Transcription start site **C**
29. Which among the following is not a substrate ribulose 1, 5-bisphosphate carboxylase?
(A) CO₂
(B) Glyceraldehyde-3-phosphate
(C) Ribulose 1, 5-bisphosphate
(D) O₂ **B**
30. Which one of the following is not correct about glyoxylate cycle?
(A) It is a variant of tricarboxylic acid cycle
(B) It results in the formation of succinate from acetyl CoA
(C) It takes place in glyoxysome
(D) It occurs in all eukaryotic cells **D**
31. Which of the following is a non-nitrogen fixer?
(A) Rhizobium
(B) Frankia
(C) Vicia faba
(D) Azospirillum **C**
32. Plasmolysis occurs when a cell is placed in
(A) Isotonic solution
(B) Hypertonic solution
(C) Hypotonic solution
(D) Pure water **B**
33. Brown sugar and heroin are the secondary metabolism of which of the following plants
(A) Papaver somniferum
(B) Conium maculatum
(C) Claviceps purpurea
(D) Ruwofla repentine **A**
34. The amino acid which acts as an osmolyte and accumulates high during osmotic stress is
(A) Leucine
(B) Proline
(C) Methionine
(D) Valine **B**
35. Focal length of eye lens is controlled by
(A) Iris muscles
(B) Ciliary muscles
(C) Cornea
(D) Vitreous humour **B**
36. Zymogen cells of gastric glands secrete
(A) Pepsinogen
(B) Chymotrypsin
(C) Pepsin
(D) Trypsin **A**
37. Which of the following parts does not constitute a part of single uriniferous tubule?
(A) Henle's loop
(B) Bowman's capsule
(C) Collecting duct
(D) Glomerulus **C**
38. Receptor cells for balance and equilibrium in mammals are the

- (A) Statolith
(B) Hair cell
(C) Malleus, incus and stapes **B**
(D) Horizontal cells
39. Cushing's disease is related to
(A) Hyperadrenalism
(B) Hypothyroidism **A**
(C) Hyperparathyroidism
(D) Hyperinsulinism
40. The function of tracheal hairs is to
(A) Pass air out
(B) Pass air in
(C) Pass mucous in **B**
(D) Pass mucous out
41. Functional unit of gene that specifies synthesis of one polypeptide is
(A) Codon
(B) Cistron
(C) Muton **B**
(D) Recon
42. If a mutation in the gene responsible for a particular autosomal dominant disorder has 80% penetrance, then how many of the persons with the particular mutation will develop the disease
(A) 0%
(B) 20%
(C) 80% **C**
(D) 100%
43. Which of the following is horizontal transfer of DNA?
(A) Transfer of DNA from parent to offspring
(B) Synthesis of RNA from a DNA template
(C) Translation **D**
(D) Transmission of genetic material from one nature organism to another
44. Recombination occurs between
(A) Chromosomes in different cells
(B) Chromatids of homologous chromosomes **B**
(C) Chromatids found in different gametes
(D) Non-homologous chromosomes
45. Hemophilia is a
(A) X-linked recessive inheritance
(B) X-linked dominant inheritance
(C) Y-linked inheritance **A**
(D) Autosomal dominant inheritance
46. Which of the following is not a genetic marker?
(A) SNP's
(B) SINE
(C) VNTR
(D) RFLP **B**
47. Feeding on dead and decaying organisms is called
(A) Autotrophic
(B) Saprophytic
(C) Parasitic

- (D) Holozoic **B**
48. Ecosystem with the highest productivity
(A) Estuary
(B) Coral reef **B**
(C) Tropical forest
(D) Pond
49. Which of the following is not a positive interaction?
(A) Symbiosis
(B) Commensalism
(C) Mutualism **D**
(D) Amensalism
50. Rate of energy storage at consumer level is known as
(A) Net community productivity
(B) Net primary productivity
(C) Secondary productivity **C**
(D) Gross primary productivity
51. Which of the following is a post zygotic isolating mechanism in speciation?
(A) Behavioural isolation
(B) Seasonal isolation
(C) Fertilization failure
(D) Hybrid sterility **D**
52. A species facing an extremely high risk of extinction in the immediate future is called
(A) Vulnerable
(B) Rare
(C) Endangered **C**
(D) Link species
53. In zoos, lions and tigers mate and produce viable hybrid offspring called tigons and ligers. Hybrids were never recorded in Asia, however, where their ranges once overlapped, hybrids were probably not produced because of
(A) Hybrid infertility
(B) Gametic mortality **C**
(C) Behavioural isolation
(D) Mechanical isolation
54. The word 'Filial' is used for
(A) Pedigree
(B) Progeny **B**
(C) Pod
(D) Cotyledon
55. Basic idea of evolution is
(A) Descent with modification
(B) Spontaneous generation
(C) Special creation **A**
(D) Cosmic evolution
56. Which of the following was the earliest form with liquid bilayer and can reproduce by budding?
(A) Coacervates
(B) Microspheres
(C) Probiotics
(D) Monospheres **B**
57. The enzyme which occur in all eucaryotes and show great homology is

- (A) Cytochrome oxidase
(B) Cytochrome C
(C) Cytochrome B **B**
(D) Cytochrome A
58. The raw material for evolution is variability of gene or allele in
(A) Individual level
(B) Population
(C) Gene pool **C**
(D) Community
59. Kanamycins A, B and C are produced by
(A) *Streptomyces noursei*
(B) *Streptomyces nooses*
(C) *Streptomyces fradiae*
(D) *Streptomyces kanamyceticus* **D**
60. Aeration in a bioreactor is provided by
(A) Impeller
(B) Baffles
(C) Sparger **C**
(D) None of the above
61. Resistance to herbicide chlorosulfuron in plants is due to a change in
(A) Glutamine synthetase
(B) Threonine deaminase
(C) Acetolactate synthase
(D) DNA polymerase **C**
62. Which of the following is a biopolymer?
(A) Polyethylene
(B) Polystyrene
(C) Polyester
(D) Polynucleotide **D**
63. Technique used for the separation of protein of identical molecular weight and different charge is
(A) SDS page
(B) Isoelectric focusing **B**
(C) Native page
(D) Agarose gel electrophoresis
64. RAPD stands for
(A) Rapid action of polymerase chain reaction of dinucleotide
(B) Random amplification of polymorphic DNA
(C) Repeat action of polynucleotide DNA
(D) Polycyclic antiviral programme and development **B**
65. In flow cytometry side scattering of light measures the _____
(A) Cell size
(B) Cell granularity and complexity
(C) Cell surface marker fluorescence
(D) Cell surface phosphorescence **B**
66. The helix content of a protein can be determined specifically by _____
(A) Infrared spectrometer
(B) Fluorescence spectrometer
(C) Circular dichroism spectrometer

- (D) UV-Visible spectrophotometer **C**
67. The phenomenon of piezoelectric effect is used in
(A) MRI
(B) FET
(C) CT scanning **D**
(D) Sonography
68. Blue baby syndrome is caused by
(A) Endosulfan
(B) Excess nitrate
(C) Furans **B**
(D) Copper sulphate
69. Kalakkad-Mundanthurai is concerned with
(A) Sardar Sarovar
(B) Konkan Railways
(C) Tsunami **D**
(D) Project Tiger
70. Which of the following pyramids is always upright?
(A) Pyramid of energy
(B) Pyramid of biomass
(C) Pyramid of number
(D) None of the above **A**
71. Myelinated nerve fibres differ from non-myelinated nerve fibres in _____
(A) Lacking nodes of Ranvier
(B) Being without Schwann cells
(C) Showing saltatory conduction of impulses **C**
(D) Slow conduction of impulses
72. A taxonomic system which weighs only phenotypic characters is called
(A) Phylogeny
(B) Phenetics
(C) Cladistics
(D) Classical evolutionary taxonomy **B**
73. Phenology is the
(A) Study of bird migration
(B) Study of plant development
(C) Study of periodic plant and animal life cycle **C**
(D) Study of bird immigration
74. Which of the following causes lock-jaw disease
(A) Clostridium tetani
(B) Bacillus anthracis
(C) Corynebacterium diphtheria **A**
(D) Mycobacterium Sp
75. When a population enters a new niche or habitat within the range of the parent species, the form of speciation is called?
(A) Parapatric
(B) Sympatric **A**
(C) Allopatric
(D) Peripatric
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