

## PAPER – II

## LIFE SCIENCES

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

1. Which of the following ion is important for coagulation?
  - (A)  $\text{Na}^+$
  - (B)  $\text{K}^+$
  - (C)  $\text{Ca}^{++}$
  - (D) Phosphate
2. In proteins, annealing is a process of
  - (A) denaturation with rapid heating
  - (B) denaturation with very slow heating
  - (C) renaturation with rapid cooling
  - (D) renaturation with very slow cooling
3. Ionic product of water ( $K_w$ ) at temperature below  $25^\circ\text{C}$  is
  - (A) less than  $10^{-14}$
  - (B) more than  $10^{-14}$
  - (C) equal to  $10^{-14}$
  - (D) no change
4. The efficiency of an enzyme in catalysing a reaction is due to its capacity
  - (A) to form a strong enzyme substrate complex
  - (B) to decrease the bond energy of all substrate molecules
  - (C) to change the shape of the substrate molecule
  - (D) to lower the activation energy of the reaction
5. Intracellular communication between adjacent cell cytosol occurs through
  - (A) tight junctions
  - (B) communication tubes
  - (C) junction phores
  - (D) gap junction
6. The lamellae of endoplasmic reticulum become golgi lamellae by loss of
  - (A) membrane
  - (B) ribosomes
  - (C) enzymes
  - (D) all of the above
7. First identified chromosome disorders in humans
  - (A) Turner's syndrome
  - (B) Down syndrome
  - (C) Klinefelter syndrome
  - (D) Raynaud's phenomenon
8. The arrangement of chromosome in a cell is called
  - (A) chromotype
  - (B) prototype
  - (C) karyotype
  - (D) cytotype
9. The addition of primer for replication initiation is provided by
  - (A) Primase
  - (B) Helicase
  - (C) DNA binding proteins

- (D) Topoisomerase
10. In translation first t-RNA binds to
- (A) P site
  - (B) B site
  - (C) T site
  - (D) A site
11. Linker histones are
- (A) H1
  - (B) H2A
  - (C) H2
  - (D) H2B
12. Indirect method of counting virus particles by
- (A) microscopical observation
  - (B) hemagglutination assay
  - (C) counting plaque-forming units
  - (D) colony counting
13. Immunoglobulin that increases in number during allergy is
- (A) IgA
  - (B) IgE
  - (C) IgG
  - (D) IgM
14. Rapid but non-antigen specific immune responses are produced by
- (A) Innate immune system
  - (B) Adaptive immune system
  - (C) Leukocytes
  - (D) Lymphatic system
15. Totipotent stem cells are produced from the fusion of
- (A) an egg and a sperm
  - (B) two egg and a sperm
  - (C) an egg and two sperms
  - (D) two egg and two sperms
16. Which of the following plant hormones hasten apple ripening?
- (A) Gibberellin
  - (B) Auxin
  - (C) Abscisic acid
  - (D) Ethylene
17. Which is the suitable model organism to study the normal cellular processes
- (A) Arabidopsis
  - (B) Caenorhabditis
  - (C) Dictyostelium
  - (D) Antirrhinum
18. Which of the following phenotype is not a result of a mutation in the Agamous homeotic gene of Arabidopsis?
- (A) Stamens become petals
  - (B) Carpels are replaced with a new flower
  - (C) Recursively repeated sepal-petal-petal pattern
  - (D) Leafy calyx and irregular corolla
19. In which type the stomata are present exclusively on the upper surface of the leaves
- (A) potato type

- (B) potamogeton type  
(C) water lily type  
(D) barley type
20. Oxygen which is liberated during photosynthesis comes from  
(A)  $\text{CO}_2$   
(B)  $\text{H}_2\text{O}$   
(C) Chlorophyll  
(D) Phosphoglyceric acid
21. During biological nitrogen fixation how many ATP molecules are required for the conversion of one  $\text{N}_2$  to  $2\text{NH}_4^+$ ?  
(A) 8  
(B) 10  
(C) 12  
(D) 16
22. Which one of the following factors is most important in regulation of transpiration?  
(A) Humidity  
(B) Light  
(C) Wind  
(D) Temperature
23. Sciophytes are formed due to  
(A) Cold stress  
(B) Water stress  
(C) Salt stress  
(D) Light stress
24. Concave surfaces of mammalian RBCs is helpful in  
(A) formation of more haemoglobin  
(B) increasing surface area of RBCs  
(C) reducing surface tension of plasma membrane  
(D) providing more space for haemoglobin
25. The physiological dead space in lungs increases with  
(A) pulmonary hypertension  
(B) hypotension  
(C) atelectasis  
(D) pleural effusion
26. Volume of urine in a healthy person is regulated by  
(A) Aldosterone and Antidiuretic hormone  
(B) Antidiuretic hormone  
(C) Aldosterone  
(D) Aldosterone, testosterone and Antidiuretic hormone
27. The function of ileum is  
(A) Absorb nutrients  
(B) Absorb vitamin  $\text{B}_{12}$  and Bile salts  
(C) To introduce bile and pancreatic juice  
(D) Absorb alcohol and aspirin
28. The genotype of an individual with turner syndrome  
(A) YO  
(B) XXX  
(C) XO  
(D) XXY

29. If a single base substitution modifies a codon to a termination codon, the chain may terminate at the point of mutation. Such mutations are called
- (A) frame shift mutation
  - (B) missense mutation
  - (C) nonsense mutation
  - (D) germinal mutation
30. A gene which masks the action of another gene which is not presented on the same loci on the same chromosome is known as
- (A) Epistatic gene
  - (B) Jumping gene
  - (C) Suppressor gene
  - (D) Supplementary gene
31. A taxonomic system which weighs only phenotypic character is called
- (A) Phenetics
  - (B) Phylogeny
  - (C) Cladistics
  - (D) Classical evolutionary taxonomy
32. Hermaphroditism is seen in
- (A) Honey bees
  - (B) Earthworms
  - (C) Lizards
  - (D) Nematodes
33. The common ectoparasite of human
- (A) Tick
  - (B) Plasmodium
  - (C) Pediculus
  - (D) Wucheria
34. Ideal animal and plant conservation is possible in
- (A) Sanctuaries
  - (B) Zoo's
  - (C) National parks
  - (D) Botanical gardens
35. A habit not suitable for primary productivity is
- (A) Cane
  - (B) Pond
  - (C) Meadow
  - (D) Forested riverbank
36. When a forest is destroyed by fire and again reoccupied by herbs in the initial stages it is called as?
- (A) Climax stage
  - (B) Autogenic succession
  - (C) Climax succession
  - (D) Secondary succession
37. Group of animals with same genetic composition
- (A) Ecotype
  - (B) Ecotone
  - (C) Ecads
  - (D) Biome
38. How many biogeographical zones are there in India?
- (A) 5

- (B) 10  
(C) 15  
(D) 18
39. Which among the following is the famous tiger reserves of India?  
(A) Sariska  
(B) Loktak lake  
(C) Narayanan sarovar  
(D) Gir forest
40. The phenomenon “Ontogeny recapitulates phylogeny” is governed by  
(A) Darwinian law  
(B) Neo Darwinian law  
(C) Biogenetic law  
(D) Lamarckian law
41. The major cause of specification according to biological species concept is  
(A) Reproductive isolation  
(B) Ecological isolation  
(C) Morphological isolation  
(D) Geographical isolation
42. Jurassic period of Mesozoic era is characterized by  
(A) Gymnosperms are dominant plants and first birds appear  
(B) Flowering plants and dinosaur appear  
(C) Radiation of reptiles and origin of mammal like reptiles  
(D) Dinosaurs become extinct angiosperms appear
43. Which is identified during pregnancy test?  
(A) Ketone bodies  
(B) Albumin  
(C) Creatinine  
(D) Human chorionic gonadotropin
44. Recombinant like attenuated vaccine against hepatitis B was prepared from  
(A) Plasma of infected individual  
(B) Recombinant yeast expressing hepatitis B surface antigen  
(C) Heat killed hepatitis B virus  
(D) Transgenic plant expressing hepatitis B surface
45. Which of the following method to identify bacterial species precisely?  
(A) 16S ribosomal RNA sequencing  
(B) Shine-Dalgano sequence  
(C) 18S ribosomal RNA sequencing  
(D) Glucose utilization
46. Glucose monitoring biosensor uses which of the following enzymes?  
(A) Glucose isomerase  
(B) Glucose oxidase  
(C) Hexonase  
(D) Phosphatase
47. An enzyme that recognises a specific palindromic sequence and cuts within a DNA molecule is termed as  
(A) Methylase  
(B) Reverse transcriptase  
(C) DNA polymerase – I  
(D) Restriction endonuclease

48. A technique for defining gene arrangement in very long stretches of DNA (50-100Kb) is
- RFLP
  - Chromosome walking
  - Southern blotting
  - Nick translation
49. The tertiary structure of protein is detected by
- X-ray diffraction
  - Spectrophotometry
  - Electrophoresis
  - Chromatography
50. Statistical test used to compare two or more group means is termed as
- Post-hoc test
  - T-test for correlation coefficient
  - One way analysis of variance
  - Simple regression

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Paper – II Answer

1	C	16	D	31	A	46	B
2	D	17	C	32	B	47	D
3	A	18	D	33	C	48	B
4	D	19	C	34	C	49	A
5	D	20	B	35	A	50	C
6	B	21	D	36	D		
7	B	22	B	37	A		
8	C	23	D	38	B		
9	A	24	B	39	A		
10	D	25	B	40	C		
11	A	26	A	41	A		
12	B	27	B	42	A		
13	B	28	C	43	D		
14	A	29	C	44	B		
15	A	30	A	45	A		