LIFE SCIENCES
Paper - II

Signature of Invigilators

1. .....

2. .....

Roll No. ☐☐☐☐☐
(In figures as in Admit Card)

Dec-08/04

Roll No. .....

.....
(in words)

Name of the Areas/Section (if any) .....

Time Allowed : 75 Minutes] **[Maximum Marks : 100**

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page.
2. This paper consists of **fifty (50)** multiple choice type questions. **All** questions are compulsory.
3. Each item has upto four alternative responses marked (A), (B), (C) and (D). The answer should be a capital letter for the selected option. The answer letter should entirely be contained within the corresponding square.

   Correct method [A] Wrong method [A] OR [A]
4. Your responses to the items for this paper are to be indicated on the ICR Answer Sheet under Paper II only.
5. Read instructions given inside carefully.
6. Extra sheet is attached at the end of the booklet for rough work.
7. You should return the test booklet to the invigilator at the end of paper and should not carry any paper with you outside the examination hall.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

૧. આ પાનાની ટોચમાં દર્શાવેલી જગ્યામાં તમારો રોલનંબર લખો.

૨. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા કુલ **પચાસ (૫૦)** પ્રશ્નો આપેલા છે. **બધા જ** પ્રશ્નો ફરજિયાત છે.

૩. પ્રત્યેક પ્રશ્ન વધુમાં વધુ ચાર બહુવૈકલ્પિક ઉત્તરો ધરાવે છે. જે (A), (B), (C) અને (D) વડે દર્શાવવામાં આવ્યા છે. પ્રશ્નનો ઉત્તર કેપીટલ સંજ્ઞા વડે આપવાનો રહેશે. ઉત્તરની સંજ્ઞા આપેલ ખાનામાં બરાબર સમાઈ જાય તે રીતે લખવાની રહેશે.

   ખરી રીત : [A] ખોટી રીત : [A] , [A]

૪. આ પ્રશ્નપત્રના જવાબ આપેલ ICR Answer Sheet ના Paper II વિભાગની નીચે આપેલ ખાનાઓમાં આપવાના રહેશે.

૫. અંદર આપેલ સૂચનાઓ કાળજીપૂર્વક વાંચો.

૬. આ બુકલેટની પાછળ આપેલું પાનું રફ કામ માટે છે.

૭. પરીક્ષા સમય પૂરો થઈ ગયા પછી આ બુકલેટ જે તે નિરીક્ષકને સોંપી દેવી. કોઈપણ કાગળ પરીક્ષા ખંડની બહાર લઈ જવો નહીં.

LIFE SCIENCES

PAPER–II

Note : This paper contains **FIFTY (50)** multiple-choice/Assertion and Reasoning/Matching questions, each question carrying **two (2)** marks. Attempt ALL the questions.

નોંધ : આ પ્રશ્નપત્રમાં **પચાસ (૫૦)** બહુવૈકલ્પિક પ્રશ્નો છે. દરેક પ્રશ્નના **બે (૨)** ગુણ છે. બધા પ્રશ્નો ફરજિયાત છે.

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1. Bacteria tend to stain more readily with cationic dyes because :

   (A) They contain large amount of alkaline substances

   (B) They contain large amount of acidic substances

   (C) They are neutral

   (D) They have thick walls

2. Fusion between a plasma cell and a tumour cell creates a :

   (A) Lymphoblast (B) Hybridoma

   (C) Myeloma (D) Lymphoma

3. Which type of antibodies appear first in circulation after an infection ?

   (A) IgG (B) IgM

   (C) IgA (D) IgD

4. Archaebacterial cell wall contains :

   (A) Pseudomurine with muramic acid

   (B) Lipo-poly saccharides

   (C) Phospholipids

   (D) Pseudomurine with N-acetyltalosaminuroric acid

5. Meiosis II has to follow Meiosis I because :

(A) Sister chromatids are yet to separate

(B) Chromosome formation is yet to occur

(C) Centrioles are yet to form centrosome

(D) Telophase is yet to occur

6. In G_0 phase of cell cycle, the most significant event not shared by G_1 phase is the :

(A) Proliferation of vacuolar system

(B) Multiplication of mitochondria

(C) Proliferation of cytoskeleton

(D) Contraction of interphase nucleus

7. Ultrastructure of cell organelles can be studied by using :

(A) Transmission electron microscope

(B) Scanning electron microscope

(C) Atomic force microscope

(D) Phase contrast microscope

8. Fermentation of glucose molecule has the potential to generate a net number of how many ATPs ?

(A) Four (B) Two

(C) Thirty-eight (D) Six

9. Who discovered Lysozyme ?

(A) Alexander Fleming

(B) Anton Von Leewenhoek

(C) Robert Koch

(D) Stanley Prusiner

10. The target for sulfanilimide is :

(A) Cytoplasmic membrane proteins

(B) Folic acid synthesis

(C) Lysine synthesis

(D) Gyrase

11. First organic product of CO_2 fixation in Calvin cycle is :

(A) Pyruvic acid

(B) Phosphoglyceric acid

(C) Starch

(D) Sucrose

12. Which of the following amino acids is coded by a single codon ?

(A) Serine

(B) Histidine

(C) Methionine

(D) Leucine

13. An enzyme with the highest turn over number is :

(A) Amylase

(B) Penicillinase

(C) Carbonic Anhydrase

(D) Alkaline protease

14. Sphingolipides are membrane lipids without :

(A) Glycerol molecule

(B) Polar head

(C) Fatty acids

(D) Sphingosine

15. The chain initiation factor 1 is responsible for :

(A) Activation of amino acid

(B) Binding of *m*-RNA to smaller sub-unit of ribosome

(C) Binding of smaller sub-unit to larger sub-unit of ribosome

(D) Binding of *t*-RNA-amino acid complex to *m*-RNA

16. Which of the following is an example of a separated fatty acid ?

(A) Oleate

(B) Palmitate

(C) Linoleate

(D) Arachidonate

17. Gibberellin has no effect on :

(A) Leaves (B) Stem

(C) Roots (D) Fruits

18. Which of the following vitamins *does not* have anti-oxidant potential ?

(A) Vitamin A (B) Vitamin B_{12}

(C) Vitamin C (D) Vitamin D

19. Enterogastrone secreted by intestinal mucosa helps in :

(A) Promoting gastric secretion

(B) Promoting churning action

(C) Relaxing pyloric sphincter

(D) Suppressing acid secretion

20. An unfertilized egg giving rise to an embryo is referred to as :

(A) Syngamy (B) Triple fusion

(C) Parathenogenesis (D) Vivipary

21. Type of self-incompatibility determined by the genotype of the pollen is :

(A) Sporophytic (B) Saprophytic

(C) Gametophytic (D) Heteromorphic

22. One of the irreversible reactions that controls the rate of glycolysis is catalyzed by :

(A) Aldolase

(B) Glyceraldehyde-3-PO_4-dehydrogenase

(C) Phospho-fructokinase

(D) Phosphoglycerate kinase

23. Which of the following is a photosynthetic bacterium ?

(A) Pseudomonas fluorescence

(B) Thermus aquaticus

(C) Rhodospirillum rubrum

(D) None of the above

24. "Vitamin F" refers to :

(A) Essential Amino acids (B) Essential Fatty acids

(C) Ascorbic acid (D) Cyanocobalamin

25. Growth of pollen tubes towards ovules is an example of :

(A) Chemotropism (B) Phototropism

(C) Thermotropism (D) Photoperiodism

26. In which of the following organisms oxygen is *not* evolved during photosynthesis ?

(A) Anacystis (B) Chlorella

(C) Chlamydomonas (D) Chlorobium

27. Assumed that thymine makes up 15% of bases in a specific DNA molecule then what percentage of the bases is cytosine :

(A) 15% (B) 55%

(C) 35% (D) 70%

28. The phenomenon wherein two mutations when present together produce a wild type phenotype is known as :

(A) Epistasis (B) Co-dominance

(C) Complementation (D) Incomplete dominance

29. Plants are protected from pathogenic fungi and bacteria by :

(A) Auxins (B) Abscisic acid

(C) Ethylene (D) Phenolics

30. Moving genetic elements were observed for the first time in :

(A) Rice (B) Mustard

(C) Sorghum (D) Maize

31. A promoter gene is situated :

(A) Within an operon (B) Upstream an operon

(C) Downstream an operon (D) At random location

32. Induced thymine dimer formation is common in cells exposed to :

(A) Gamma radiations

(B) Nitrogen mustard compounds

(C) Base analogues

(D) U.V. radiations

33. Humulin is produced using recombinant :

(A) *B. subtilis* (B) *E. coli*

(C) *Pseudomonas denitrificens* (D) *Brevibacterium glutamicum*

34. Satellites are commonly encountered in DNA of :

(A) Plastids (B) Plasmids

(C) Prokaryotes (D) Eukaryotes

35. The most significant step in origin of biomolecules during chemical evolution has been the synthesis of :

(A) Methane (B) Ammonia

(C) Hydrocyanic gas (D) Organic acids

36. Which of the following was *not* proposed by Lamarck ?

(A) Environment induces hereditary changes

(B) Organs and organisms tend to enlarge through generations

(C) Size and strength of organs is influenced by the extent of their employment

(D) Graded variations in heritable characters result from sexual reproduction

37. Abiogenesis refers to the :

(A) Spontaneous generation of organisms from non-living matter

(B) Development of life forms from the pre-existing ones

(C) Development of aseptic techniques

(D) Germ theory of disease

38. Individuality is related to :

(A) SNP (B) Satellites

(C) Recombinations (D) Environmental mutagenesis

39. Which of the following is *not* a structural component of biotic factor in an ecosystem ?

(A) Producers (B) Organic matter

(C) Microconsumers (D) Macroconsumers

40. Maximum eutrophication may result from :

(A) Fertilizer industry effluents

(B) Effluents from nuclear power plants

(C) Effluents from mining industry

(D) Effluents from pharmaceutical industry

41. In a climax ecosystem there is the :

(A) Greatest niche separation as well as specialization

(B) Greatest niche separation and least niche specialization

(C) Least niche separation as well as specialization

(D) Least niche separation and the greatest niche specialization

42. The most hazardous component generated in photochemical reactions in smog :

(A) Para-amino nitrogen

(B) Halogenated hydrocarbons

(C) Ethyl-methyl sulphonates

(D) Hydrogenated chloro-fluoro carbons

43. The term 'taxon' was first coined by :

(A) Carl Linn (B) Hutchinson

(C) De Candolle (D) Lamarck

44. For cryopreservation the samples are fixed in :

(A) Alcohol (B) Acetic acid

(C) Liquid nitrogen (D) Chloroform

45. Carl Woese proposed three domain concept of biological classification based on :

(A) Genome sequence analysis

(B) Transcriptomic analysis

(C) 165 *r*-RNA sequence analysis

(D) Proteomic analysis

46. The approach used for identifying microbes is based on :

(A) Morphology

(B) Physiology

(C) Polyphasic

(D) Cell-wall structure

47. Species is a group of organisms capable of breeding freely among themselves and having fertile offspring is this concept of species :

(A) Biological

(B) Chronological

(C) Genetic

(D) Phylogenetic

48. More than 80% of known antibiotics are produced by :

(A) Fungi

(B) Actinobacteria

(C) Firmicutes

(D) Archaebacteria

49. Tetrodotoxin is obtained from a :

(A) Salamander

(B) Puffer fish

(C) Gecko

(D) Opposum

50. Which of the following is a rapid screening test for chemicals of carcinogenic potential ?

(A) MPOV test

(B) Cis-trans test

(C) Luria-Delbruck test

(D) Aines test

ROUGH WORK