

LIFE SCIENCE

Paper - II

OCT-11/04

Signature of Invigilators

Roll No.

(In figures as in Admit Card)

1.

Roll No.

2.

(in words)

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.
 8. There shall be no negative marking.
 9. Use of calculator or any other electronic devices is prohibited.

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 પાનામાં બરાબર સમાઈ જાય તે રીતે લખવાની રહેશે.

ખરી રીત : **A** ખોટી રીત : **A** અથવા **A**

૪. આ પ્રશ્નપત્રના જવાબ આપેલ ICR Answer Sheet ના Paper II વિભાગની નીચે આપેલ પાનાઓમાં 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 કાળજી પરીક્ષા ખંડની બહાર લઈ જવો નહીં.
૮. ખોટા જવાબ માટે નેગેટિવ ગુણાંકન પ્રથા નથી.
૯. કેલ્ક્યુલેટર અને ઈલેક્ટ્રોનિક યંત્રોનો પ્રયોગ કરવાની મનાઈ છે.

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LIFE SCIENCE

PAPER - II

Note : This paper contains **FIFTY (50)** multiple-choice questions, each question carrying **TWO (2)** marks. Attempt **All** the questions.

1. Why is haemoglobin described as a 'conjugated protein' ?

- (A) It is not made entirely of amino acids
- (B) It contains more than one chain
- (C) It binds to oxygen
- (D) It is fixed to the cell membrane

2. Which of these is a protein ?

- (A) Catalase
- (B) Chlorophyll
- (C) Cholesterol
- (D) Cytosine

3. Match column A with column B :

Column A	Column B
(TCA Intermediate)	(Product of Oxidation)
(a) Malate	(i) Isocitrate
(b) Alpha Ketoglutarate	(ii) Acetyl Co-A
(c) Pyruvate	(iii) Oxaloacetate
(d) Succinate	(iv) Succinyl Co-A
(e) Citrate	(v) Fumarate
(A) (a)-(iii), (b)-(iv), (c)-(v), (d)-(ii), (e)-(i)	
(B) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii), (e)-(v)	
(C) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(v), (e)-(i)	
(D) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i), (e)-(v)	

4. Tyrosine kinase is a :
- (A) G linked receptor
 - (B) Catalytic receptor
 - (C) Receptor with adenylate cyclase activity
 - (D) Ca associated receptor
5. Secretory protein synthesis initiated and later completed in :
- (A) RER-free ribosomes
 - (B) Free ribosomes-RER
 - (C) RER-cytoplasm
 - (D) Free ribosomes only
6. A substance secreted from mast cell causes anaphylactic shock :
- (A) Histamine
 - (B) Heparin
 - (C) Histidine
 - (D) 5-hydroxy tryptamine
7. The bcl-2 plays an important role as :
- (A) Anti-apoptotic factor
 - (B) Pro-apoptotic factor
 - (C) Pro-hematopoietic factor
 - (D) Anti-hematopoietic factor
8. All of the following are true with respect of IgM antibodies EXCEPT which one :
- (A) they fix complement
 - (B) they occur on the surface of lymphocytes
 - (C) they predominate in the primary response to antigen
 - (D) they mediate allergic reaction
9. The frequency of mutation :
- (A) can be increased by recombination
 - (B) varies in the character and the organism
 - (C) is affected by the environment
 - (D) can be increased by sunlight

10. Three-dimensional structure of protein can be predicted by :
- (A) Homoplasmy (B) Homology modeling
(C) Logical alignment (D) High scoring segment pairing
11. Which one of the following statements is NOT TRUE ?
SDS is a molecule that :
- (A) is amphipathic
(B) coats proteins in a uniform positive charge
(C) helps pull proteins through a gel to the positive electrode
(D) denatures proteins
12. PBR-322 is one of the best cloning vectors, in this BR refers to :
- (A) Name of university (B) Name of scientist
(C) Variety of plasmid (D) Name of city
13. Resurrection in *Selaginella*, lichens is due to the process of :
- (A) Osmosis (B) Imbibition
(C) Absorption (D) Transpiration
14. A specimen cited with the original description other than holotype is called :
- (A) Syntype (B) Paratype
(C) Neotype (D) Isotype
15. Which of the following dates have been chosen to decide the priority of publication for naming the spermatophytes ?
- (A) 1.1.1935 (B) 1.1.1953
(C) 1.1.1958 (D) 1.5.1753

16. Acid precipitation kills fishes due to the release of :
- (A) Cadmium ions (B) Aluminium ions
(C) Excess of iron ions (D) Mercury
17. Benthos of pond ecosystem are :
- (A) Producers (B) Primary consumers
(C) Secondary consumers (D) Tertiary consumers
18. 'Ganga Action Plan' for controlling pollution in the river Ganga was started in the year :
- (A) 1985 (B) 1972
(C) 1962 (D) 1974
19. The individual as well as combined aspects of the positions of each species in the community structure can be shown with the help of graphics known as :
- (A) Polygraphs (B) IVI
(C) Phytographs (D) Monographs
20. Which of the following is the *correct* depiction of 'Law of Frequency' given by Raunkiaer ?
- (A) $A > B > C \begin{matrix} > \\ \equiv \\ < \end{matrix} D < E$ (B) $A < B > C \begin{matrix} > \\ \equiv \\ < \end{matrix} D < E$
(C) $A > B < C \begin{matrix} > \\ \equiv \\ < \end{matrix} D < E$ (D) $A > B < C \begin{matrix} > \\ \equiv \\ < \end{matrix} D > E$
21. AUG codon in mRNA will have anticodon on tRNA as :
- (A) TAC (B) CUA
(C) UAC (D) AUG

22. Kerogen is :
- (A) Limestone
 - (B) Dolomite
 - (C) Sedimentary organic matter
 - (D) Chalcopyrite
23. The source of hydrogen for the synthesis of glucose during photosynthesis is :
- (A) Glucose
 - (B) NADH_2
 - (C) FADH_2
 - (D) H_2O
24. Agent orange is :
- (A) Ethylene
 - (B) TTC
 - (C) Chlorofluorocarbons
 - (D) 2,4-D and 2, 4, 5-T
25. Which of the following is associated with the differentiation of eukaryotes and prokaryotes ?
- (A) Cell compartmentalization
 - (B) Well developed nucleus
 - (C) Presence of nucleolus
 - (D) All of the above
26. Pasteur's contribution relates to :
- (A) Vaccines
 - (B) Biological basis of chemical transformation
 - (C) Theory of Abiogenesis
 - (D) All of the above

27. Plasmids in the cell are confirmed by :
- (A) Blue-white screening (B) Restriction digestion
(C) Gel electrophoresis (D) All of these
28. Alkaline phosphatase :
- (A) Removes the phosphate group from 5'-end of DNA
(B) Joins double stranded DNA
(C) Adds a phosphate group to the 5' end of DNA
(D) Cuts double-stranded DNA
29. PCR :
- (A) Uses a DNA polymerase (B) Uses *d*NTP's
(C) Uses primers (D) All of these
30. Genetic exchange in bacteria is carried out by :
- (A) Conjugation (B) Transformation
(C) Transduction (D) All of the above
31. In conjugation :
- (A) Cell to cell contact is essential
(B) Cell pili are not involved
(C) DNA transfer is not directional
(D) Plasmids are not involved
32. Which of the following relates to viruses ?
- (A) They contain either DNA or RNA
(B) HIV contains RNA and is a retrovirus
(C) They are acellular in nature
(D) All of the above

33. Lac operon is :
- (A) An inducible operon (B) Under positive control
(C) Under negative control (D) All of these
34. Which of the following is *not* used for protein estimation ?
- (A) Lowry method (B) Bradford method
(C) DNS method (D) Absorbance at 280 nm
35. Ion exchange chromatography depends on :
- (A) Size of the molecule
(B) Net charge and charge distribution on molecule
(C) Size and charge of the molecule
(D) All of the above
36. Chemically defined medium :
- (A) Contains only organic components
(B) Contains both organic and inorganic components
(C) Contains only inorganic components
(D) Contains components whose quantity and chemical nature is known
37. The part of spermatozoa that helps in penetration through the egg membrane is called :
- (A) Acrosome (B) Middle piece
(C) Tail (D) Head

38. The haploid male and female gametes fuse to form a/an.....cell.
- (A) Diploid (B) Haploid
(C) Aneuploid (D) Polyploid
39. During the development at some stage, every cell's ultimate fate becomes fixed, a process referred to as :
- (A) Determination (B) Commitment
(C) Capacitation (D) Induction
40. The Lipases are present in the following part of the Alimentary canal :
- (A) Mouth (B) Oesophagus
(C) Stomach (D) Small Intestine
41. The oxygenated blood from the lungs returns to the :
- (A) Left ventricle (B) Right atrium
(C) Left atrium (D) Right ventricle
42. Vitamin D is derived from :
- (A) Mevalonate (B) HMG Co-A
(C) Calcium (D) Cholesterol
43. The rough endoplasmic reticulum is the site of synthesis :
- (A) Lipids (B) Proteins
(C) Carbohydrates (D) Nucleic acids
44. A genotype in which the two alleles are alike is said to be :
- (A) Multiple allelic (B) Heterozygous
(C) Homozygous (D) Incomplete allelic

45. The following is used to detect presence of a clot in the brain :
- (A) CAT (B) ECG
(C) PET (D) EEG
46. BRDURD monoclonal antibody is used to detect :
- (A) G_0 phase cells (B) G_1 phase cells
(C) S-phase cells (D) G_2 phase cells
47. Liver rot is caused by the following in the sheep :
- (A) Plasmodium falciparum (B) Ascaris lumbricoides
(C) Plasmodium vivax (D) Fasciola hepatica
48. The suppression of an action of a gene by other genes non-allelomorphic of those suppressed is called :
- (A) Hypostatic (B) Pseudo dominance
(C) Complementary (D) Epistasis
49. Appearance of the characters of distant ancestor in offspring is known as :
- (A) Segregation (B) Recombination
(C) Atavism (D) Clone
50. On average, how many fragments would a restriction enzyme which recognizes a specific 4 base sequence in DNA be expected to cleave a double-stranded bacteriophage with a genome size of 5,000 bp into ?
- (A) about 2 (B) about 4
(C) about 20 (D) about 50

ROUGH WORK

SEAL