

LIFE SCIENCE

Name & Signature of the Invigilator

PAPER-II
SEPT/13/04

ICR Answer Sheet No. :

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Roll No. :

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Roll Number in words :




Time : 1.15 Minutes]

No. of Printed Pages : 12

[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. At the commencement of examination, the question booklet will be given to candidate. In the first 5 minutes, candidate is requested to open the booklet and compulsorily examine it as below :
 - (i) To have access to the question booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.
 - (ii) Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of five minutes. Afterwards, neither the question booklet will be replaced nor any extra time will be given.
 - (iii) After this verification is over, the test booklet number should be entered in the ICR answer sheet and the ICR Answer Sheet number should be entered on this test booklet.
4. 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  Wrong method  OR 
5. Your responses to the items for this paper are to be indicated on the ICR Answer Sheet under Paper II only.
6. Read instructions given inside carefully.
7. Rough work is to be done in the end of the booklet only.
8. You have to return the original ICR Answer Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the examination hall. You are, however, allowed to carry duplicate copy of ICR sheet and test booklet on conclusion of the examination.
9. Use black ball point pen.
10. Use of any Calculators or log tables or any other electronic devices is prohibited.
11. There shall be no negative marking.
12. In case of any discrepancy in Gujarati and English version of questions the English version should be taken as final.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

1. આ પાનાની ટોચમાં દર્શાવેલી જગ્યામાં તમારો રોલનંબર લખો.
2. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા કુલ પચાસ (૫૦) પ્રશ્નો આપેલા છે. બધા જ પ્રશ્નો ફરજિયાત છે.
3. પરીક્ષાની શરૂઆતમાં ઉમેદવારને પ્રશ્નપુસ્તિકા આપવામાં આવશે. પ્રથમ ૫ મિનિટ દરમિયાન, ઉમેદવારે પ્રશ્નપુસ્તિકા ખોલી અને ફરજિયાતપણે નીચે મુજબ પરીક્ષણ કરવું.
 - (i) પ્રશ્નપુસ્તિકાનો વપરાશ કરવા માટે આ કવર પેજની ધાર પર આપેલ સીલ ફાડી નાખો. કોઈપણ સંજોગોમાં સીલ સ્ટીકર વગરની કે ખુલ્લી પ્રશ્નપુસ્તિકા સ્વીકાર શો નહીં.
 - (ii) કવર પૃષ્ઠ પર છપાયેલ નિર્દેશાનુસાર પ્રશ્નપુસ્તિકાના પ્રશ્નો પૃષ્ઠો અને સંખ્યાને ભરાબર ચકાસી લો. ખામીયુક્ત પ્રશ્નપુસ્તિકા કે જેમાં પૃષ્ઠો/પ્રશ્નો ઓછા હોય, બે વાર છપાયા હોય, અનુક્રમમાં અથવા કોઈ અન્ય ફરક હોય અર્થાત કોઈપણ કારણે ખામીયુક્ત પ્રશ્નપુસ્તિકા સ્વીકારવી નહીં. એને જો ખામીયુક્ત પ્રશ્નપુસ્તિકા મળી હોય તો નિરીક્ષક પાસેથી તુરંત જ બીજી સારી પ્રશ્નપુસ્તિકા મેળવી લેવી. આ માટે ઉમેદવારને પાંચ મિનિટનો સમયગાળો આપવામાં આવશે. પછીથી, પ્રશ્નપુસ્તિકા બદલવામાં આવશે નહીં કે કોઈ વધારાનો સમય પણ આપવામાં આવશે નહીં.
 - (iii) આ ચકાસણી સમાપ્ત થાયપછી, ટેસ્ટ પુસ્તિકા નંબર ICR જવાબ પત્રકમાં લખવો અને ICR જવાબ પત્રક નંબર પ્રશ્નપુસ્તિકા પર લખવો.
4. પ્રત્યેક પ્રશ્ન માટે ચાર ઉત્તર વિકલ્પ (A), (B), (C) અને (D) આપવામાં આવેલ છે. પસંદગીની જવાબ માત્ર અંગ્રેજી કેપીટલ મૂળાક્ષર દ્વારા જ આપવો. પસંદ કરેલ અંગ્રેજી કેપીટલ અક્ષર આપેલ ખાનામાં સંપૂર્ણ રીતે સમાઈ જાય તે રીતે લખવો.

સાચી રીત :



ખોટી રીત :



બધામાં



5. આ પ્રશ્નપુસ્તિકાના પ્રશ્નોના જવાબ અલગથી આપવામાં આવેલ ICR જવાબ પત્રકમાં પેપર-૨ લખેલ વિભાગમાં જ લખવા.
6. અંદર આપેલ સૂચનાઓ ધ્યાનપૂર્વક વાંચો.
7. આ પ્રશ્નપુસ્તિકાની અંતે આપેલ પાનું રફ કામ માટે છે.
8. પરીક્ષા સમય પૂરો થઈ ગયા પછી ઓરીજનલ ICR જવાબ પત્રક જે તે નિરીક્ષકને ફરજિયાત સોંપી દેવું અને કોઈપણ સંજોગોમાં પરીક્ષાખંડની બહાર જઈ શકશે નહીં. પરીક્ષા પૂર્ણ થયા બાદ ઉમેદવાર પ્રશ્નપુસ્તિકા તથા ICR જવાબવહીની ડુપ્લિકેટ કોપી પોતાની સાથે લઈ જઈ શકે છે.
9. માત્ર કાળી પેન/કાળી બોલ પેન વાપરવી.
10. કેલ્ક્યુલેટર અને અન્ય ઈલેક્ટ્રોનિક યંત્રોનો ઉપયોગ કરવાની મનાઈ છે.
11. ખોટા જવાબ માટે નેગેટિવ ગુણાંકન પ્રથા નથી.
12. પ્રશ્નપુસ્તિકાના કોઈ પ્રશ્નમાં અનુવાદ અંગે કોઈ વિવાદ/મતભેદ જણાય તો અંગ્રેજી વર્જન યોગ્ય ગણાશે.

SEAL

QUESTION NO. _____

DATE _____

PAGE NO. _____

Q.1. _____

Q.2. _____

Q.3. _____

A. _____

A. _____

A. _____

A. _____

A. _____

A. _____

LIFE SCIENCE

PAPER - II

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

1. An amino acid with four nitrogen atoms is :
(A) histidine (B) arginine
(C) leucine (D) lysine
2. An example for a basic buffer is :
(A) phosphate (B) histidine
(C) citrate (D) tris
3. One of the following parameters determines the efficiency of enzyme catalysis :
(A) low k_m (B) high k_{cat}
(C) high k_m/k_{cat} (D) low k_m/k_{cat}
4. The condition required for complete denaturation of protein containing disulphide bridges is :
(A) SDS and mercaptoethanol
(B) trichloroacetic acid
(C) SDS with alkali
(D) SDS with trichloroacetic acid
5. Z-DNA form is found in :
(A) any DNA molecule under high salt concentration
(B) AT rich repetitive DNA under high salt concentration
(C) palindromic sequences under high salt concentration
(D) methylated CG repeats under high salt concentration

6. The central role in membrane biosynthesis is played by :
- (A) mitochondria (B) Golgi complex
(C) endoplasmic reticulum (D) liposomes
7. Catalase is present in high level in :
- (A) mitochondria (B) peroxisomes
(C) lysosomes (D) endoplasmic reticulum
8. Neurons in adult brain are said to be quiescent because they are locked in :
- (A) G_0 phase (B) G_1 phase
(C) S phase (D) G_2 phase
9. Cyclic AMP activates glycogenolysis by activating :
- (A) phosphorylase α
(B) phosphorylase b
(C) phosphorylase b kinase
(D) phosphorylase b kinase kinase
10. Radiation tolerance in *Deinococcus radiodurans* is due to :
- (A) efficient ATP generation
(B) endospore formation
(C) efficient repairing of fragmented DNA
(D) efficient protein synthesis

11. The classical experiments to demonstrate the split gene concept involved :
- (A) β -globin gene of human hemoglobin
 - (B) ovalbumin gene of chicken
 - (C) protamine gene of salmon
 - (D) insulin gene of cattle
12. The sequence of one strand of DNA is 5'TCGATC3'. The sequence complementary strand would be :
- (A) 5'GATCGA3' (B) 5'AGCTAG3'
 - (C) 5'CTAGCT3' (D) 5'GCTAGC3'
13. Which one of the following amino acid is incorporated during translation into proteins and is not a component of genetic code ?
- (A) aspartate semialdehyde
 - (B) hydroxy proline
 - (C) iodotyrosine
 - (D) seleno cysteine
14. One of the following enzymes is *not* involved in lagging strand DNA synthesis :
- (A) Primase (B) DNA polymerase III
 - (C) Helicase (D) Ligase
15. RNA editing is :
- (A) capping of mRNA
 - (B) alternate splicing of mRNA
 - (C) replacing specific nucleotides in mRNA
 - (D) incorporation of specific nucleotides in mRNA

16. The protein molecules responsible for binding the epithelial cells to the basal lamina are :
- (A) collagen (B) laminin
(C) integrin (D) cadherins
17. One of the following is *not* associated with apoptosis :
- (A) cathepsin D (B) cytochrome C
(C) caspases (D) phosphatidyl serine
18. Which one of the following immunoglobulin heavy chain does *not* have the hinge region ?
- (A) IgD (B) IgA
(C) IgE (D) IgG
19. Hyaluronidase assists spread of microbes by :
- (A) forming clots around the body's immune organs
(B) breaking down blood clots
(C) resisting phagocytosis
(D) breaking hyaluronic acid that binds cells together
20. Which of the following does *not* have lymphoid lineage ?
- (A) natural killer cells (B) basophils
(C) dendritic cells (D) plasma cell
21. Abdominal-A and abdominal-B genes in *Drosophila* represent :
- (A) bithorax complex of homeo box genes
(B) antennapedia complex of homeo box genes
(C) X1H box genes
(D) self-incompatibility complex genes

22. Neoteny is found in the life of amphibians inhabiting in pond water of high altitudes because of :
- (A) low dissolved oxygen content
 - (B) high dissolved CO₂ content
 - (C) heavy pollution caused by tourists
 - (D) the deficiency of iodine in water
23. Progressive developmental genesis occurring in a zygote of multicellular animals are called :
- (A) paedogenesis
 - (B) genesis
 - (C) epigenesis
 - (D) parthenogenesis
24. Induction of floral development from vegetative state requires :
- (A) more nutrients
 - (B) specific duration of day and night
 - (C) phenolics
 - (D) rhamno lipids
25. The process of senescence is triggered by :
- (A) auxin and ethylene
 - (B) abscisic acid and ethylene
 - (C) gibberellins and kinetin
 - (D) auxin and gibberellin
26. Which of the following proteins associated with photosystem in plants is very unstable ?
- (A) PS II complex
 - (B) Cytochrome b_{6f} complex
 - (C) PS I complex
 - (D) Ferredoxin
27. Glycine decarboxylase in plants is localized in :
- (A) cytosol
 - (B) mitochondria
 - (C) chloroplasts
 - (D) glyoxisomes

28. Tryptophan is the precursor of :
- (A) abscisic acid (B) gibberellic acid
(C) auxin (D) ethylene
29. The protons required for nitrogen fixation by diazotrops are generally obtained from :
- (A) ferredoxin (B) ubiquinone
(C) cytochrome b_{6f} (D) water
30. Stomata open when guard cells :
- (A) sense an increase in CO_2 in the air spaces of leaf
(B) due to decrease in turgor pressure
(C) closing of aquaporins preventing water uptake
(D) become more turgid because of influx of potassium followed entry of water
31. Which one of the following digestive secretions lack enzymes ?
- (A) gastric juice (B) bile juice
(C) pancreatic juice (D) intestinal juice
32. If diameter of the afferent and efferent arterioles would be same in glomeruli, then :
- (A) rate of absorption will increase
(B) rate of reabsorption will decrease
(C) filtration process will not occur
(D) filtration process will be fast
33. Purkinje fibres are :
- (A) nerve fibres (B) muscle fibres
(C) connective tissues (D) dendrites

34. An Hfr bacterium is one that contains :
- (A) a plasmid integrated into its chromosome
 - (B) many unusual plasmids
 - (C) chromosomal material acquired from recipient cell
 - (D) the ability to undergo transduction
35. The sex determination factors referred to as TDF and TDY are found respectively in :
- (A) Arabidopsis and Drosophila
 - (B) Sea Urchin and Ascaris
 - (C) Hamster and Mouse
 - (D) Man and Rat
36. Down syndrome is caused due to which of the following mutations ?
- (i) deletion
 - (ii) duplication
 - (iii) translocation
 - (iv) trisomy
- (A) (i) and (iii) (B) (ii) and (iv)
(C) (iii) and (iv) (D) (ii) and (iii)
37. Which one of these animals is taxonomically odd ?
- (A) sea pen (B) sea cucumber
 - (C) sea star (D) sea urchin
38. Which of the class of protozoans contains both contractile vacuole and pseudopodium ?
- (A) ciliata (B) flagellata
 - (C) sporozoa (D) sarcodine

39. 16 S rRNA is present in :
- (A) 40 S ribosomal subunit
 - (B) 30 S ribosomal subunit
 - (C) 50 S ribosomal subunit
 - (D) 60 S ribosomal subunit
40. Peptic ulcers are caused by :
- (A) *Shigella sonnei*
 - (B) *Helicobacter pylori*
 - (C) *Giardia lamblia*
 - (D) *Escherichia coli*
41. Which of the following produce diploid spores ?
- (A) bracket fungi
 - (B) club mosses
 - (C) tree ferns
 - (D) rusts and smuts
42. The great Indian bustard prefers this habitat :
- (A) warm deciduous forest
 - (B) cloud forest
 - (C) grassy plains
 - (D) hilly scrub forest
43. Soil component humus is composed of :
- (A) phosphates and nitrates
 - (B) organic matter that resists decay
 - (C) fermented acids and bases
 - (D) inorganic sulphur and iron oxide
44. Ligase chain reaction (LCR) is used for the detection of :
- (A) point mutations
 - (B) deletion mutations
 - (C) insertional mutations
 - (D) deletion and insertional mutations

45. Lamarck's theory of inheritance of acquired characters was challenged by :
- (A) Hugo de Vries (B) Carl Linneus
(C) August Weismann (D) Charles Darwin
46. *Zymomonas mobilis* can be used for the fermentation production of :
- (A) ethanol (B) glutamic acid
(C) citric acid (D) glycerol
47. The single cell protein Quoren[®] is produced by :
- (A) *Fusarium graminearum*
(B) *Aspergillus nidulans*
(C) *Agaricus bisporous*
(D) *Kluyberomyces lactis*
48. Which one of molecular localization *cannot* be achieved by immunofluorescence technique ?
- (A) specific protein molecules (B) specific lipid molecules
(C) specific mRNA molecules (D) specific DNA sequence
49. Ampholytes are used in one of the following separation techniques :
- (A) Western blotting (B) Southern blotting
(C) Immunoelectrophoresis (D) Isoelectric focussing
50. In an experiment the SE value of the data was found to be high with respect to mean. The number of experiments to decrease the SE value of half is :
- (A) 2 (B) 4
(C) 8 (D) 16

ROUGH WORK

SEAL