

LIFE SCIENCES

Name & Signature of the Invigilator

PAPER-II OMR Answer Sheet No. :  
SEPT-16/04


Roll No. :

(in figures as in Hall Ticket)

Roll Number in words : .....

Time : 1.15 Hours

No. of Printed Pages : 16

[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 of questions. All questions are compulsory.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are 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 5 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 on the OMR Answer Sheet and the OMR Answer Sheet Number should be entered on this Test Booklet.
4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.  
Example :  A  B  C  D where (B) is the correct response.
5. Your responses to the items are to be indicated on the OMR Answer Sheet under Paper – II only. If you mark your response at any place other than in the oval in the OMR Answer Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. You have to return the original OMR Answer Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet and duplicate copy of OMR Answer Sheet on conclusion of examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table etc., is prohibited.
12. There shall be no negative marking.
13. In case of any discrepancy in the English and Gujarati versions of questions, English version will be taken as final.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

1. આ પાનાની ટોચ પર દર્શાવેલી જગ્યામાં તમારો રોલ નંબર લખો.
2. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા પચાસ (૫૦) પ્રશ્નો આપેલા છે. બધાજ પ્રશ્નો કરજિયાત છે.
3. પરીક્ષાની શરૂઆતમાં આપને પ્રશ્નપુસ્તિકા આપવામાં આવશે. પ્રથમ પાંચ (૫) મિનિટ દરમ્યાન તમારે પ્રશ્નપુસ્તિકા ખોલી અને કરજિયાતપણે નીચે મુજબ પરીક્ષણ કરવું :
  - (i) પ્રશ્નપુસ્તિકાનો વપરાશ કરવા માટે આ કવર પૃષ્ઠની ધાર પર આપેલ સીલ સ્ટીકર ફાડી નાખો. કોઈપણ સંજોગોમાં સીલ સ્ટીકર વગરની કે ખુલ્લી પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં.
  - (ii) કવર પૃષ્ઠ પર છાપાયેલ નિર્દેશાનુસાર પ્રશ્નપુસ્તિકાના પ્રશ્નો, પૃષ્ઠો અને સંખ્યાને બરાબર ચકાસી લો. ખામીયુક્ત પ્રશ્નપુસ્તિકા કે જેમાં પ્રશ્નો/પૃષ્ઠો ઓછા હોય, બે વાર છપાયા હોય, અનુક્રમમાં અથવા અન્ય કોઈ ફરક હોય અર્થાત કોઈપણ સંજોગોમાં ખામીયુક્ત પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં. અને જો ખામીયુક્ત પ્રશ્નપુસ્તિકા મળી હોય તો નિરીક્ષક પાસેથી તુરંત જ બીજી સારી પ્રશ્નપુસ્તિકા મેળવી લેવી. આ માટે ઉમેદવારને પાંચ (૫) મિનિટનો સમયગાળો આપવામાં આવશે. પછી થી, પ્રશ્નપુસ્તિકા બદલવામાં આવશે નહીં કે કોઈ વધારાનો સમયગાળો આપવામાં આવશે નહીં.
  - (iii) આ ચકાસણી સમાપ્ત થાય પછી, પ્રશ્નપુસ્તિકાનો નંબર OMR જવાબ પત્રક પર લખવો અને OMR જવાબ પત્રકનો નંબર પ્રશ્નપુસ્તિકા પર લખવો.
4. પ્રત્યેક પ્રશ્ન માટે ચાર જવાબ વિકલ્પ (A), (B), (C) અને (D) આપવામાં આવેલ છે. તમારે સાચા જવાબના ઓવલ (oval) ને નીચે આપેલ ઉદાહરણ મુજબ પેનથી ભરીને સંપૂર્ણ કાળું કરવાનું રહેશે.  
ઉદાહરણ :  A  B  C  D કે જ્યાં (B) સાચો જવાબ છે.
5. આ પ્રશ્નપુસ્તિકાના પ્રશ્નો ના જવાબ અલગથી આપવામાં આવેલ OMR જવાબ પત્રકમાં પેપર-II લખેલ વિભાગમાં જ અંકિત કરવા. જો આપ OMR જવાબ પત્રકમાં આપેલ ઓવલ (oval) સિવાય અન્ય સ્થાને જવાબ અંકિત કરશો તો તે જવાબનું મૂલ્યાંકન કરવામાં આવશે નહીં.
6. અંદર આપેલ સૂચનાઓ ધ્યાનપૂર્વક વાંચો.
7. કાંચું કામ (Rough Work) પ્રશ્નપુસ્તિકાના અન્તિમ પૃષ્ઠ પર કરવું.
8. જો આપ OMR જવાબ પત્રક નિયત જગ્યા સિવાય અન્ય કોઈપણ સ્થાને, આપનું નામ, રોલ નંબર, ફોન નંબર અથવા એવું કોઈ ચિન્હ કે જેનાથી તમારી ઓળખ થઈ શકે, અંકિત કરશો અથવા અભદ્ર ભાષાનો પ્રયોગ કરો, અથવા અન્ય કોઈ અનુચિત સાધનોનો ઉપયોગ કરો, જેમ કે અંકિત કરી દીધેલ જવાબ ભૂંસી નાખવા કે સફેદ શાલીનો ઉપયોગ કરી બદલશો તો આપને પરીક્ષા માટે અયોગ્ય જાહેર થઈ શકો છો.
9. પરીક્ષા સમય પુરો થઈ ગયા બાદ ઓરીજનલ OMR જવાબ પત્રક જે તે નિરીક્ષકને ફરજિયાત સોંપી દેવું અને કોઈ પણ સંજોગોમાં તે પરીક્ષાખંડની બહાર લઈ જવું નહીં. પરીક્ષા પૂર્ણ થયા બાદ ઉમેદવાર ઓરીજનલ પ્રશ્નપુસ્તિકા અને OMR જવાબ પત્રકની ડુપ્લિકેટ કોપી પોતાની સાથે લઈ જઈ શકે છે.
10. માત્ર કાળી/ભૂરી બોલ પોઈન્ટ પેન વાપરવી.
11. કેલક્યુલેટર અને અન્ય ઈલેક્ટ્રોનિક યંત્રોનો ઉપયોગ કરવાની મનાઈ છે.
12. પોતા જવાબ માટે નકારાત્મક ગુણાંકન પ્રથા નથી.
13. પ્રશ્નપુસ્તિકાના કોઈ પ્રશ્નમાં અનુવાદ અંગે કોઈ વિવાદ/મતભેદ જણાય તો અંગ્રેજી વર્ઝન યોગ્ય ગણાશે.

**LIFE SCIENCES**  
**PAPER-II**

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

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1. The most common storage polysaccharide in yeast is :

(A) Glycogen

(B) Starch

(C) Dextrans

(D) Cellulose

**C**

2. The amino acid which occupies maximum area in Ramachandran plot is :

(A) Proline

(B) Glycine

(C) Alanine

(D) Leucine

**B**

3. There are ..... base pairs per helical turn of Z-DNA.

(A) 12

(B) 10.5

(C) 11.5

(D) 10.3

**A**

4. Which one of the following coenzymes acts as a donor of one carbon unit ?

(A) Tetrahydrofolate

(B) Riboflavin

(C) Lipoic acid

(D) Pyridoxal phosphate

**A**

5. In plants, transfer cells are involved in :
- (A) Long distance transport
  - (B) Temporary storage of food for transport to other cells where needed
  - (C) Movement from one tissue to another
  - (D) Short distance transport D
6. Succinate dehydrogenase is a marker for :
- (A) Mitochondria
  - (B) Cell membrane
  - (C) Chloroplast
  - (D) Golgi A
7. The ionophore valinomycin transports which ion ?
- (A)  $K^+$
  - (B)  $Na^+$
  - (C)  $Cl^-$
  - (D)  $Ca^{+2}$  A
8. Phosphatidyl choline is *not* present in the membranes of :
- (A) RBC
  - (B) *E. coli* cell membrane
  - (C) Mitochondria
  - (D) Neuron B

9. Which of the following increases the release of  $\text{Ca}^{+2}$  from the endoplasmic reticulum ?

- (A) Diacylglycerol (B) Inositol triphosphate  
(C) Calcitonin (D) Phosphatidic acid

**B**

10. Which enzyme is unique to glyoxylate cycle ?

- (A) Citrate synthase (B) Malate dehydrogenase  
(C) Isocitrate lyase (D) Aconitase

**C**

11. Which virus uses protein as a primer for DNA replication ?

- (A) Adenovirus (B) M13  
(C) Q X 173 (D) T7 virus

**A**

12. KFERQ sequence in a protein acts as a signal for :

- (A) Glycosylation (B) Phosphorylation  
(C) Acetylation (D) Lysosomal degradation

**D**

13. Receptor ligand interactions are studied usually :

- (A) Scatchard plot
- (B) Lineweaver-Burk plot
- (C) Michaelis-Menton equation
- (D) Henderson Haselbalch plot

A

14. In humans, the TLR signalling is an example of :

- (A) Receptor-ligand interaction
- (B) Gated ion channel interaction
- (C) Receptor enzymes
- (D) Exocytosis

A

15. Which of the following molecules is responsible for quorum sensing in gram -ve bacteria ?

- (A) Lactone
- (B) Acyl homoserine lactone
- (C) Statins
- (D) Asparagine

B

16. Cholera toxin modifies  $G_{sc\alpha}$  to activate .....enzyme.

- (A) Adenyl cyclase
- (B) Gumylate cyclase
- (C) Protein kinase A
- (D) Phosphodiesterase

A

17. Agamospermy in which embryo is formed from nucellus is :

- (A) Gametophytic apomixis
- (B) Adventive embryony
- (C) Diplospory
- (D) Parthenogenesis

**B**

18. Heterostyly is an adaptation for :

- (A) Capturing large number of pollen grains
- (B) Ensuring that several pollen tubes will reach the multiovulate ovary
- (C) Attraction of diverse pollinators
- (D) Preventing self-pollination

**D**

19. Parthenogenesis commonly occurs in .....

- (A) Crustaceans
- (B) Social insects
- (C) Corals
- (D) Birds

**B**

20. During development in mammals the type of cleavage observed is .....

- (A) bilateral holoblastic
- (B) radial holoblastic
- (C) rotational holoblastic
- (D) spiral holoblastic

**C**

21. Which one of the following sugars is present in cell walls of aquatic monocotyledons ?

- (A) Sorbose (B) Rhamnose  
(C) Galactose (D) Apiose

D

22. Phytochrome mediated red light effects on morphogenic responses can be reversed by far-red light of ..... nm.

- (A) 710-740 (B) 650-680  
(C) 540-610 (D) 680-690

A

23. Typically a CAM plant loses ..... gram of water for every gram of CO<sub>2</sub> gained.

- (A) 0.5 to 1.0 (B) 5 – 10  
(C) 50 – 100 (D) 500 – 1000

C

24. Alkaloids are usually synthesised from :

- (A) amino acids (B) sugars  
(C) nucleic acids (D) lipids

A

25. The refractive error in human eye leading to problem to see distant objects is termed as .....

(A) Hypermetropia (B) Presbyopia

(C) Myopia (D) Cataract

C

26. In amphibians and reptiles, the type of blood circulation, majorly of ..... with reference to oxygenated blood.

(A) Single circulation (B) Double circulation

(C) Incomplete circulation (D) Portal circulation

C

27. The articulation of jaws in shark is termed as .....

(A) Hyostylic (B) Holostylic

(C) Pleurostylic (D) Craniostylic

A

28. The structure 'Rete mirabile' is associated to ..... in case of fishes.

(A) Digestion (B) Respiration

(C) Excretion (D) Reproduction

B



29. Environmental sex determination is observed in .....

- (A) Bonellia (B) Corals  
(C) Nereis (D) Starfish

A

30. Inheritance of characters in both male and female children, the source must be .....

- (A) Y-chromosome (B) X-chromosome  
(C) mt-DNA (D) Cytoplasm

C

31. Somaclonal variation in a crop can be generated with the help of .....

- (A) X-rays (B) chemical mutagens  
(C) R-DNA technology (D) Tissue culture

D

32. Ultraviolet light causes mutations in bacteria :

- (A) by breaking the chromosome  
(B) by causing a frameshift  
(C) by binding together adjacent thymine bases  
(D) by reversing a segment of DNA

C

33. Classification of algae is based largely on the basis of :

- (A) reproductive features                      (B) habitat  
(C) pigments                                      (D) cell structure

**C**

34. Which of the following is *not* found in nature in India ?

- (A) *Cycas*    (B) *Welwitschia*  
(C) *Psilotum*                                        (D) *Taxus*

**B**

35. Chlorocruorin pigment is found in .....

- (A) Cockroach                                      (B) Nereis  
(C) Sepia    (D) Planaria

**B**

36. Polymorphism is a characteristic feature of :

- (A) Porifera                                        (B) Cnidaria  
(C) Annelida                                        (D) Mollusca

**B**

37. On a bare rock, the pioneer species are of :

- (A) mosses (B) algae  
(C) lichens (D) liverworts

C

38. Which of the following is *not* a criterion for identification of Norman Myer's biodiversity hotspots ?

- (A) species richness (B) endemism  
(C) species loss (D) unique species

D

39. Montreal protocol relates to :

- (A) conservation of biodiversity (B) transgenic organisms  
(C) ozone layer (D) climate change

C

40. The native habit of the threatened species "*Commiphora wightii*" is :

- (A) Arunachal Pradesh-Sikkim  
(B) Rajasthan-Gujarat  
(C) Bihar-Odisha  
(D) Himachal Pradesh-Uttarakhand

B

41. Which one of the following species of Homo survived with Homo sapiens ?
- (A) Homo erectus                      (B) Homo neanderthal
- (C) Homo ergaster                      (D) Homo idaltu                      **B**
42. The molecular clock, a technique to deduce the time in prehistory when two or more life form diverged was proposed by .....
- (A) Zuckerkandl and Pauling              (B) Wilson and Sarich
- (C) Excoffier and Yang                      (D) Watson and Crick                      **A**
43. A catalogue of behaviours exhibited by an animal is known as .....
- (A) Myogram                      (B) Echogram
- (C) Ethogram                      (D) Cardiogram                      **C**
44. Coacervates were formed by :
- (A) DNA
- (B) Gamma radiation
- (C) Polymerization only                      **D**
- (D) Polymerization and aggregations

45. The technique used to operate single stranded DNA from double stranded DNA is :
- (A) Hydroxyapatite chromatography
  - (B) Ultracentrifugation
  - (C) Isoelectric focussing
  - (D) Pulse field electrophoresis **A**
46. What method is useful for separating insulin and lysozyme ?
- (A) Ascending paper chromatography
  - (B) Isoelectric precipitation
  - (C) Descending paper chromatography
  - (D) Affinity chromatography **B**
47. At high ionic strengths, the solubility of proteins generally decreases. This property is called as :
- (A) Salting in
  - (B) Salting out
  - (C) Solvation
  - (D) Hydrophobic interaction **B**

48. Which of the following techniques is used to determine population of fecal pollution indicator bacteria in water sample at small concentration (10 bacteria per liter) ?

- (A) Pour plate technique
- (B) Serial dilution technique
- (C) Double dilution technique
- (D) Filtration technique

**D**

49. Rapid analysis of thousands of genes can be done using :

- (A) DNA microarray
- (B) PCR
- (C) Northern blotting
- (D) Western blotting

**A**

50. According to ICBN, the correct botanical name of periwinkle is :

- (A) *Vinca rosea*
- (B) *Althea rosea*
- (C) *Lochnera rosea*
- (D) *Catheranthus roseus*

**D**