

LIFE SCIENCES

PAPER - III

Roll No.

(In figures as in Admit Card)

Roll No.

(in words)

JY-06/04

Signature of Invigilators

1.

2.

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

Time Allowed : 2-1/2 hours]

[Maximum Marks : 200

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page.
2. Write name of your Elective/Section if any,
3. Answer to short answer/essay type questions are to be written in the space provided below each question or after the questions in test booklet itself. No additional sheets are to be used.
4. Read instructions given inside carefully.
5. Last page is attached at the end of the test booklet for rough work.
6. If you write your name or put any special mark on any part of the test booklet which may disclose in any way your identity, you will render yourself liable to disqualification.
7. Use of calculator or any other Electronics Devices is prohibited.
8. There is no negative marking.
9. You should return the test booklet to the invigilator at the end of the examination and should not carry any paper outside the examination hall.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

૧. આ પૃષ્ઠના ઉપલા ભાગે આપેલી જગ્યામાં તમારી ક્રમાંક સંખ્યા (રોલ નંબર) લખો.
૨. તમે જે વિકલ્પનો ઉત્તર આપો તેનો સ્પષ્ટ નિર્દેશ કરો.
૩. ટૂંકનોંધ કે નિબંધ પ્રકારના પ્રશ્નોના ઉત્તર દરેક પ્રશ્નની નીચે આપેલી જગ્યામાં જ લખો. વધારાના કોઈ કાગળનો ઉપયોગ કરશો નહીં.
૪. અંદર આપેલી સૂચનાઓ ધ્યાનથી વાંચો.
૫. આ ઉત્તરપોથીમાં અંતે આપેલું પૃષ્ઠ કાચા કામ માટે છે.
૬. આ ઉત્તરપોથીમાં કયાંય પણ તમારી ઓળખ કરાવી દે એવી રીતે તમારું નામ કે કોઈ ચોક્કસ નિશાની કરી હશે તો તમને આ પરીક્ષા માટે ગેરલાયક ગણવામાં આવશે.
૭. કેલક્યુલેટર અથવા ઈલેક્ટ્રોનિક્સ સાધનો નો ઉપયોગ કરવો નહીં.
૮. નકારાત્મક ગુણાંકપદ્ધતિ નથી.
૯. પ્રશ્નપત્ર લખાઈ રહે એટલે આ ઉત્તરપોથી તમારા નિરીક્ષકને આપી દેવી. પરીક્ષાખંડની બહાર કોઈ પણ પત્રપત્ર લઈ જવું નહીં.

FOR OFFICE USE ONLY MARKS OBTAINED

Question Number	Marks Obtained	Question Number	Marks Obtained	Question Number	Marks Obtained
1.		18.			
2.		19.			
3.		20.			
4.		21.			
5.		22.			
6.		23.			
7.		24.			
8.		25.			
9.		26.			
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					

SEAL

Total Marks obtained

Signature of the co-ordinator
(Evaluation)

LIFE SCIENCES

Paper - III

NOTES :

- (a) This paper consists **SIXTY (60)** questions. Answer any **TWENTY (20)** questions.
 - (b) All questions carry **EQUAL** marks. Each question carries **TEN (10)** marks.
 - (c) Answer each question in about **200 (Two hundred)** words.
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1. What do you understand by Kranz anatomy? Discuss its physiological relevance.
2. What is the importance of creating male sterile plants ?
3. Describe the nature of storage materials in different plants and its relevance to human kind.
4. Enlist the major plant groups known for symbiosis with nitrogen fixing microorganisms.
5. Discuss the logical basis of seed dormancy. How can dormancy be broken in some cases ?
6. Give in brief, principles of classifying plants.
7. Compare evolutionary trends in lower groups of plants.
8. Trace various steps followed in differentiation in plants.
9. Discuss different drug yielding plants with suitable examples.
10. Discuss recent information on opening and closing of stomata in plants.
11. Elucidate different theories to explain incompatibility in plants.
12. Examine in brief, different theories put forward to explain senescence encountered in plants.

13. Give an account of filter feeding amongst non-chordates.
14. Discuss the reproductive strategies of lower invertebrates.
15. Write a note on adaptive radiation in fishes.
16. Describe the histophysiology of testis.
17. Give a brief account of electric organs in aquatic animals.
18. Write a note on fate maps.
19. Discuss the role of maternal contribution in early embryogenesis.
20. Write briefly on homeotic genes.
21. Describe the social life of termites.
22. Discuss the importance of mosquitoes as vectors of human diseases.
23. Write a note on IPM.
24. Give an account of bionomics of silkworm.
25. Describe briefly the nature of DNA damage caused by ionizing radiations, and mention the molecular basis of mutations caused by ionizing radiations.
26. What are the features of human mitochondrial genome and explain why do genes encoded on mitochondrial chromosomes. Show a different pattern of inheritance from nuclear encoded genes ?
27. Describe the fluid mosaic model for organization of biomembranes.
28. What are checkpoints in cell cycle ?
29. Discuss the nature of change in flora as one climbs from foot hills to higher places in a mountain.
30. Describe the course of ecological succession beginning with a barren rocky formation.

31. What are the biogeochemical cycling of elements ? Discuss nitrogen cycle in animals.
32. Enlist the criteria you would use for environmental impact assessment of a proposed cement plant.
33. Enlist any seven properties of water.
34. Describe DNA - DNA hybridization techniques and give its uses.
35. Briefly discuss the fermentative production of streptomycin.
36. Describe microbial recovery of copper from ore.
37. Describe the replication process of phage T₇.
38. Discuss waste water treatment through oxidation ditches.
39. What is K_La ? Discuss any two methods used for determination of K_La.
40. What is passive immunity and how can it be attained ?
41. Give the classification and significance of isoenzymes.
42. Describe mechanisms of nitrogen fixation by bacteria and give its significance in sustainable development.
43. Discuss how *E. coli* can grow and utilize acetate as sole source of carbon.
44. Explain regulation of glycogenolysis.
45. Describe how transduction mediated gene transfer be used for genetic mapping in bacteria.
46. What are B and T cells ? Comment on their roles.
47. Write a note on abzymes.
48. Discuss the importance of Ramachandran's plot in predicting protein conformation.

49. Discuss the significance of redox potential in energy metabolism.
50. Describe the molecular mechanism of action of alkylating agents in causing mutations.
51. Describe the various components of RNA processing.
52. Describe the various mechanisms of post-translational modifications of proteins.
53. What is Cerenkov radiation ? How is it measured ?
54. Explain the principle of atomic absorption spectrophotometry and its applications.
55. Explain western blot technique and its importance.
56. Distinguish between native PAGE and SDS-PAGE. Comment on their applications.
57. Give a short account on transmission electron microscopic technique.
58. What is meant by transgenic organism and is it theoretically possible to transfer a gene from any organism to any other organism ? Why or why not ?
59. What is a probe and how are they useful in molecular genetics ? How would the probing experiment be done?
60. Describe 't' test and explain its uses.