

**LIFE SCIENCES
PAPER-III**

Signature of Invigilators

Roll No.
(In figures as in Admit Card)

1.

Roll No.

2.

DEC-08/04

(in words)

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

Time Allowed : 2-1/2 hours]

[Maximum Marks : 200

Instructions for the Candidates

- Write your Roll Number in the space provided on the top of this page.
- Write name of your Elective/Section if any.
- 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.
- Read instructions given inside carefully.
- Last page is attached at the end of the test booklet for rough work.
- 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.
- Use of calculator or any other Electronics Devices is prohibited.
- There is no negative marking.
- 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 :

- આ પૃષ્ઠના ઉપલા ભાગે આપેલી જગ્યામાં તમારી ક્રમાંક સંખ્યા (રોલ નંબર) લખો.
- તમે જે વિકલ્પનો ઉત્તર આપો તેનો સ્પષ્ટ નિર્દેશ કરો.
- ટૂંકનોંધ કે નિબંધ પ્રકારના પ્રશ્નોના ઉત્તર દરેક પ્રશ્નની નીચે આપેલી જગ્યામાં જ લખો. વધારાના કોઈ કાગળનો ઉપયોગ કરશો નહીં.
- અંદર આપેલી સૂચનાઓ ધ્યાનથી વાંચો.
- આ ઉત્તર પોથીમાં અંતે આપેલું પૃષ્ઠ કાચા કામ માટે છે.
- આ ઉત્તર પોથીમાં ક્યાંય પણ તમારી ઓળખ કરાવી દે એવી રીતે તમારું નામ કે કોઈ ચોક્કસ નિશાની કરી હશે તો તમને આ પરીક્ષા માટે ગેરલાયક ગણવામાં આવશે.
- કેલક્યુલેટર અથવા ઈલેક્ટ્રોનિક્સ સાધનોનો ઉપયોગ કરવો નહીં.
- નકારાત્મક ગુણાંક પદ્ધતિ નથી.
- પ્રશ્નપત્ર લખાઈ રહે એટલે આ ઉત્તર પોથી તમારા નિરીક્ષકને આપી દેવી. પરીક્ષાખંડની બહાર કોઈ પણ પ્રશ્નપત્ર લઈ જવું નહીં.

**FOR OFFICE USE ONLY
MARKS OBTAINED**

| Question Number | Marks Obtained | Question Number | Marks Obtained | Question Number | Marks Obtained | Question Number | Marks Obtained |
|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|
| 1. | | 18. | | 35. | | 52. | |
| 2. | | 19. | | 36. | | 53. | |
| 3. | | 20. | | 37. | | 54. | |
| 4. | | 21. | | 38. | | 55. | |
| 5. | | 22. | | 39. | | 56. | |
| 6. | | 23. | | 40. | | 57. | |
| 7. | | 24. | | 41. | | 58. | |
| 8. | | 25. | | 42. | | 59. | |
| 9. | | 26. | | 43. | | 60. | |
| 10. | | 27. | | 44. | | | |
| 11. | | 28. | | 45. | | | |
| 12. | | 29. | | 46. | | | |
| 13. | | 30. | | 47. | | | |
| 14. | | 31. | | 48. | | | |
| 15. | | 32. | | 49. | | | |
| 16. | | 33. | | 50. | | | |
| 17. | | 34. | | 51. | | | |

Total Marks obtained

Signature of the co-ordinator
(Evaluation)

SEAL

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. Write a note on crustacean larvae.
2. Give an account of Tunicates.
3. Discuss adaptive radiation with reference to reptiles.
4. Give an overview of bioluminescence in animal kingdom.
5. Describe the preparatory changes that occur in the spermatozoan prior to its penetration into the ovum.
6. Write a note on patterns of cleavage.
7. Give a brief account of mimicry in animals.
8. Describe the social organization of honey bees.
9. Describe how arthropod vectors can be controlled.
10. Discuss the physiological adaptations of animals to high altitudes.
11. Describe the life cycle of *Plasmodium vivax*.
12. Give an account of *Wuchereria bancrofti*.
13. Explain the role of mutations in evolution.
14. Discuss the C-value paradox.
15. Explain application and importance of student 't' test in Biological Science.
16. Explain the principles and applications of Radioimmunoassay.

17. Explain the principle and application of Atomic absorption spectrophotometer.
18. What do you understand by South-Western blotting technique ? Explain its principle and use.
19. Write an explanatory note on DNA polymerases in PCR.
20. Explain principle and application of SDS-PAGE.
21. Differentiate between scanning and transmission electron microscope.
22. Write an explanatory note on signal transduction in bacteria.
23. What do you understand by knock-out mice ? Explain their significance in research.
24. Explain the role of cAMP in lac-operon.
25. Explain the use of cloning vectors.
26. Describe induction and lytic cycle of λ -phage.
27. Describe the role of viruses in oncogenesis.
28. Describe the significance of DNA-methylation in gene expression.
29. What do you know about expansion of genetic code ?
30. Explain the repair of damaged DNA.
31. Differentiate between substrate level and oxidative phosphorylation, giving examples.

32. Write a descriptive note on the structure and functions of fatty acid synthase complex.
33. Describe the structure and functions of bacterial peptidoglycon.
34. What are ribozymes ? Explain their potential applications.
35. Briefly describe genetic regulation of immune response.
36. Explain by flow diagram the production and recovery of penicillin.
37. Enlist the merits and demerits of Bentham and Hooker's system of classification.
38. Describe the nutritional and therapeutic properties of edible mushrooms.
39. Define morphogenesis. Explain the shoot apical organization in angiosperms.
40. What is pollen-pistil interaction ? Explain the genetic basis of self incompatibility in plants.
41. Explain the different methods of ex-situ conservation.
42. Discuss the role of abscisic acid in stomatal opening and closing.
43. What is dormancy ? Explain the factors responsible for seed dormancy.
44. Give an account of important seed-born diseases in plants.
45. How does a polygonum type of embryo sac develop ?
46. Describe defense mechanisms of plants against fungal pathogens.

47. Give an account of economic importance and harmful effects of Algae.
48. Briefly describe the conventional methods of plant breeding.
49. Discuss the limiting factors affecting photosynthesis.
50. Describe characteristic features and significance of mycoplasma.
51. Write a descriptive note on structure of HIV.
52. Write a note on 'Marine Fungi'.
53. Give an account of estuarine fisheries of west coast of India.
54. Discuss the role of microbes in sustainable environment.
55. Explain why environmental impact assessment is necessary prior to establishment of an industry.
56. Describe the role of microbes in nitrogen cycle.
57. Write an explanatory note on 'Energy Flow' in terrestrial ecosystem.
58. Explain mitochondrial genetic code.
59. Explain the role of ER and Golgi apparatus in transport of secretory material.
60. Sketch and describe the habitats encountered in oceans.