

<p>Test Paper : II</p> <p>Test Subject : LIFE SCIENCE</p> <p>Test Subject Code : K-2814</p>	<p>Test Booklet Serial No. : _____</p> <p>OMR Sheet No. : _____</p> <p>Roll No. (Figures as per admission card)</p>
<p>Name & Signature of Invigilator/s</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Signature : _____</p> <p>Name : _____</p> </div> <div style="width: 45%;"> <p>Signature : _____</p> <p>Name : _____</p> </div> </div> <div style="text-align: center; margin-top: 10px;"> <p>Paper : II</p> <p>Subject : LIFE SCIENCE</p> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <p>Time : 1 Hour 15 Minutes</p> <p>Maximum Marks : 100</p> </div>	
<div style="display: flex; justify-content: space-between;"> <p>Number of Pages in this Booklet : 8</p> <p>Number of Questions in this Booklet : 50</p> </div>	
<p style="text-align: center;">ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು</p> <ol style="list-style-type: none"> ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ. ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಐವತ್ತು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ. ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ. <ol style="list-style-type: none"> ಪ್ರಶ್ನೆಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಚ್ ಸೀಲ್ ಇಲ್ಲದ ಪ್ರಶ್ನೆಪುಸ್ತಕ ಸ್ವೀಕರಿಸಬೇಡಿ. ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ. ಪುಸ್ತಕದಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೂಡಲೇ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು. ಉದಾಹರಣೆ: A B C D (C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ರಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ಮತ್ತು ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ II ರಲ್ಲಿ ಇರುವ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದೆ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ. ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕಿಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ. ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯ ಕೂಡದು. ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು. ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿ. ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ. ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ. 	<p style="text-align: center;">Instructions for the Candidates</p> <ol style="list-style-type: none"> Write your roll number in the space provided on the top of this page. This paper consists of fifty multiple-choice type of questions. 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 : <ol style="list-style-type: none"> 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. 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. 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 (C) is the correct response. Your responses to the questions are to be indicated in the OMR Sheet kept inside the Paper I Booklet only. If you mark at any place other than in the ovals in the Answer Sheet, it will not be evaluated. Read the instructions given in OMR carefully. Rough Work is to be done in the end of this booklet. If you write your name 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, you will render yourself liable to disqualification. You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall. You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination. Use only Blue/Black Ball point pen. Use of any calculator or log table etc., is prohibited. There is no negative marks for incorrect answers.
<div style="display: flex; justify-content: space-between;"> <p>K-2814</p> <p style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">1</p> <p>ಪು.ತಿ.ನೋ./P.T.O.</p> </div>	



LIFE SCIENCE
Paper – II

Note : This paper contains **fifty (50)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. The bond formed by sharing of electrons between two atoms is called
(A) Electrovalent bond
(B) Coordinate bond
(C) Covalent bond
(D) Ionic bond
2. Which of the following enzyme causes DNA strand separation during replication ?
(A) Polymerase
(B) Helical
(C) Ligase
(D) Nuclease
3. The reversal of the gene order which may result when 2 breaks occur in the same chromosome is called
(A) Inversion
(B) Duplication
(C) Translocation
(D) Deletion
4. Which of the following sequences correctly describes the cell cycle phases ?
(A) $G_1 \rightarrow G_2 \rightarrow S \rightarrow G_0 \rightarrow \text{mitosis}$
(B) $S \rightarrow G_2 \rightarrow \text{mitosis} \rightarrow G_1 \rightarrow G_0$
(C) $G_0 \rightarrow G_1 \rightarrow S \rightarrow G_2 \rightarrow \text{mitosis}$
(D) $\text{Mitosis} \rightarrow G_1 \rightarrow G_0 \rightarrow S \rightarrow G_2$
5. In which type of cleavage the egg or ovum is not completely divided into blastomeres ?
(A) Holoblastic cleavage
(B) Unequal holoblastic cleavage
(C) Discoidal meroblastic cleavage
(D) Meroblastic cleavage
6. Cancers arising from epithelial cells is called
(A) Adenoma
(B) Carcinoma
(C) Sarcoma
(D) Leukemia
7. "Vermiform appendix" is part of which of the following ?
(A) Alimentary canal
(B) Vascular system
(C) Nervous system
(D) Reproductive system
8. Respiratory system of cockroach is
(A) Integument
(B) Lungs
(C) Gills
(D) Trachea



9. Which hormone regulates the amount of urine by controlling the rate of water absorption in nephron tubules ?
(A) Oxytocin
(B) Antidiuretic hormone (ADH)
(C) Luteotropic hormone (LTH)
(D) Thyronine
10. In which of the following technique radionuclides are used ?
(A) PET Scan
(B) CT Scan
(C) CAT Scan
(D) Ultrasonography
11. Which of the following could not be a correlation coefficient ?
(A) 0
(B) -0.3
(C) 10
(D) 1
12. Which of the following is arranged in correct sequence for systematic classification ?
(A) Kingdom, phylum, family, order, genus, class, species
(B) Kingdom, phylum, class, order, family, genus, species
(C) Kingdom, order, phylum, genus, class, family, species
(D) Kingdom, order, phylum, family, class, genus, species
13. Formation of diverse species from a single ancestor is called
(A) Mutualism
(B) Commensalism
(C) Speciation
(D) Adaptive radiation
14. Life on the earth originated about
(A) 1.5 billion years ago
(B) 2.5 billion years ago
(C) 3.5 billion years ago
(D) 4.5 billion years ago
15. Diversity encompass
(A) Species richness
(B) Species frequency of occurrence
(C) Relative abundance
(D) Both (A) and (B)
16. The great barrier reef exists nearer to
(A) Australia
(B) New Zealand
(C) Malaysia
(D) Indonesia
17. The term 'halophilic' refers to
(A) Temperature tolerance
(B) Salinity tolerance
(C) Tolerance to low water activity
(D) Tolerance to acidic pH



18. The isotope used in the treatment of Grave's disease is
(A) Co^{60}
(B) p^{32}
(C) g^{131}
(D) C^{14}
19. In a sample of DNA, analysis of its base composition showed that the proportion of A + G was not equal to T + C. Hence, this DNA is
(A) Double stranded DNA
(B) Single stranded DNA
(C) Mutated DNA
(D) DNA from a cancer cell
20. Hydrogen bond can be formed with the following except
(A) $\text{O} - \text{H} \cdots \text{O}$
(B) $\text{O} - \text{H} \cdots \text{N}$
(C) $\text{O} - \text{H} \cdots \text{S}$
(D) $\text{N} - \text{H} \cdots \text{N}$
21. The expression of tryp operon in E. Coli is regulated in part by the availability of tryptophan. This regulation is called
(A) Attenuation
(B) Translational read-through
(C) Antitermination
(D) Nonsense suppression
22. The rate constant of a reaction at 293°K was found to be $3.2 \times 10^{-3}/\text{sec}$. At 303°K it is likely to be
(A) $3.2 \times 10^{-3}/\text{sec}$
(B) $6.4 \times 10^{-3}/\text{sec}$
(C) $1.6 \times 10^{-3}/\text{sec}$
(D) $6.4 \times 10^{-6}/\text{sec}$
23. Ramachandran plot
(A) Represents sterically allowed conformation of polypeptide
(B) Can give orientation of cofactors in proteins
(C) Can identify nonprotein amino acids if present in proteins
(D) Presence of metal ions
24. Peptidyl transferase reaction is catalysed by
(A) Ribosomal proteins
(B) Ribosome
(C) Ribosomal RNA
(D) t-RNA
25. The enzyme responsible for generation of IP_3 in cells is
(A) Protein kinase C
(B) Phospholipase C
(C) Phospholipase A_2
(D) Sphingomyelinase



26. The complementarity determining region of an immunoglobulin molecule is located in
(A) VH domain
(B) CL domain
(C) VH and CH domains
(D) VH and VL domains
27. One of the X chromosomes in human females undergoes _____ type of heterochromatilisatlon.
(A) Constitutive
(B) Facultative
(C) Defective
(D) Variable
28. pH of lysozyme is maintained by
(A) Proton pump
(B) Sodium pump
(C) Calcium pump
(D) Chloride pump
29. Replicative transposition is characterized by
(A) Movement of transposon from one cell to another
(B) Replication of repeated DNA sequences
(C) Excision of transposon from one location and its subsequent insertion at a different location
(D) The original sequence remains in place and the new sequence is inserted at a different location
30. Major nucleotide repeats of a telomere is
(A) Adenine rich repeats
(B) Guanine rich repeats
(C) Thymine rich repeats
(D) Uracil rich repeats
31. Functional property of m-RNA is
(A) Transcription
(B) Recombination
(C) Replication
(D) Translation
32. Calcium independent cell surface adhesion molecule is
(A) Cadherins
(B) Selections
(C) Ig-superfamily
(D) Integrins
33. On removing thyroid from the tadpole it will
(A) Remain as tadpole
(B) It will grow into giant frog
(C) Die immediately
(D) Grow into small frog
34. The functional unit of vertebrate excretory system is
(A) Kidney
(B) Urinary bladder
(C) Neuron
(D) Nephron



35. Master of master gland is
(A) Hypothalamus
(B) Pituitary
(C) Thymus
(D) Thyroid
36. Which will be the genotypic ratio of the cross between Bb and bb ?
(A) 1 : 2 : 1
(B) 3 : 1
(C) 1 : 1
(D) 1 : 1 : 1
37. The correct number of human chromosome was reported by
(A) Painter
(B) Boveri and Sutton
(C) Wilson
(D) Tjio and Levan
38. Mutation which replaces purine to purine and pyrimidine to pyrimidine is
(A) Transition
(B) Transversion
(C) Translocation
(D) Frameshift mutation
39. The totality of genes of a given population is called
(A) Gene frequency
(B) Gene pool
(C) Gene family
(D) Genome
40. Darwinian fitness of an organism is the measure of
(A) Survival
(B) Physical fitness
(C) Adaptation to the environment
(D) Number of viable offspring
41. Which of the following are sympatric species ?
(A) Different species living in the same place
(B) Same species living in different places
(C) Morphologically different species
(D) Morphologically same species
42. Which one of the following species is listed in the Red Data Book of India ?
(A) Rauwolfia suspentina
(B) Santalum album
(C) Pterocarpus santalinus
(D) Ochreinauculia missionis
43. The State having a largest area of forest cover in India is
(A) Arunachal Pradesh
(B) Madhya Pradesh
(C) Assam
(D) Haryana



44. Climax community is in the state of
(A) Equilibrium
(B) Nonequilibrium
(C) Abrupt change
(D) Constant change
45. Which of the following traits do archaea and bacteria share ?
I) Composition of cell wall
II) Presence of plasma membrane
III) Lack of a nuclear envelope
IV) Identical r-RNA sequence
(A) I correct
(B) III correct
(C) I and III are correct
(D) II and III are correct
46. Which of the following is a false statement ?
(A) 'A' blood group individuals have 'B' antibodies
(B) 'B' blood group individuals have 'A' antibodies
(C) 'AB' blood group individuals have A antigen and B antibody
(D) 'O' blood group individuals have both antibodies
47. When pea and rose comb chickens are crossed what is the comb phenotype in F_1 individual ?
(A) Pea comb
(B) Rose comb
(C) Single comb
(D) Walnut comb
48. Who coined the term "Prebiotic soup" ?
(A) J. B. Hooker
(B) J. B. S. Haldane
(C) S. W. Fox
(D) A. Oparin
49. In which of the following provirus DNA is formed in viral life cycle ?
(A) ϕ X174
(B) Polio Virus
(C) Rous Sarcoma Virus
(D) Influenza Virus
50. The oldest microfossil so far of age 3.5 billion years ago was
(A) Cyanobacteria
(B) Eobionts
(C) Coacervates
(D) Microspheres



Total Number of Pages : 8

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Test Paper : III
Test Subject : LIFE SCIENCE
Test Subject Code : K-2814

Test Booklet Serial No. : _____
OMR Sheet No. : _____
Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature: _____
Name : _____

Signature: _____
Name : _____

Paper : III
Subject : LIFE SCIENCE

Time : 2 Hours 30 Minutes

Maximum Marks : 150

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 75

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶವಾಹಕ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲ್‌ನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಚ್ ಸೀಲ್ ಇಲ್ಲದ ಪ್ರಶ್ನೆಪುಸ್ತಕ ಸ್ವೀಕರಿಸಬೇಡಿ. ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪುಸ್ತಕಿಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ. ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.
ಉದಾಹರಣೆ:

A	B	C	D
---	---	---	---

(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು, ಪತ್ರಿಕೆಯಲ್ಲಿ ಪ್ರಸ್ತುತವಾಗಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕಿಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆಯಬೇಡಿ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯ ಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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.
- 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 (C) is the correct response.
- Your responses to the question of Paper III are to be indicated in the **OMR Sheet kept inside the Booklet**. If you mark at any place other than in the ovals in OMR Answer Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table etc., is prohibited.
- There is no negative marks for incorrect answers.



**LIFE SCIENCE
PAPER – III**

Note : This paper contains **seventy-five (75)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. Polytene chromosomes are found in

- (A) Metaphase I
- (B) Prophase I
- (C) Interphase
- (D) Leptotene stage

2. The differentiated part of the chromosome which gets associated with spindle fibers during cell division is

- (A) Telomere
- (B) Centriole
- (C) Kinetochore
- (D) Centrosome

3. TATA boxes and Pribnow boxes are components of

- (A) Operators
- (B) Enhancers
- (C) Promoters
- (D) Activators

4. Segmentation genes in *Drosophila* are divided into three groups-gap, pair rule and segment polarity, based on their mutant phenotype. Which of the following sequences of genes expressed from early to late embryo is correct ?

- (A) *hairy* → *paired* → *patched* → *tailless*
- (B) *hunchback* → *even-skipped* → *fushi tarazu* → *wingless*
- (C) *odd* → *skipped* → *giant* → *paired* → *wingless*
- (D) *tailless* → *hairy* → *fushi tarazu* → *gooseberry*

5. During urine formation, the filtration of blood at the glomerulus is

- (A) An active process
- (B) An osmotic process
- (C) A pressure-dependent physical process
- (D) a non energy-mediated transport process



6. A technique for visualizing chromosome aberrations using fluorescent labelled DNA probes which are hybridized to chromosomal DNA
- (A) Karyotyping
 - (B) G banding
 - (C) Chromosome painting
 - (D) ELISA
7. When two mutants having the same phenotype were crossed, the progeny obtained showed a wild phenotype. Thus the mutations are
- (A) segregating from each other
 - (B) non allelic
 - (C) allelic
 - (D) independently assorting
8. In humans, the haploid number of chromosomes is 23. By independent assortment, how many possible different gametes can be produced ?
- (A) 23^2
 - (B) 22^3
 - (C) 24
 - (D) 23^{23}
9. Lethal autosomal dominant trait with complete penetrance has a population frequency of 1 : 50000. What is the rate of new mutation ?
- (A) 1/150000
 - (B) 1/100000
 - (C) 1/50000
 - (D) 1/25000
10. The correct order of performing DNA profiling is
- (A) DNA isolation → PCR amplification → electrophoresis → southern blotting → autoradiography → analysis of DNA pattern
 - (B) DNA isolation → restriction digestion → PCR amplification → electrophoresis → southern blotting → autoradiography → analysis of DNA pattern
 - (C) DNA isolation → PCR amplification → restriction digestion → electrophoresis → southern blotting → autoradiography → analysis of DNA pattern
 - (D) DNA isolation → restriction digestion → PCR amplification → southern blotting → electrophoresis → autoradiography → analysis of DNA pattern



11. Uptake of naked DNA by a bacterium is
- (A) Transduction
 - (B) Transfection
 - (C) Conjugation
 - (D) Transformation
12. Which part of the chromosome is involved in aging ?
- (A) Kinetochore
 - (B) Chromocenter
 - (C) Centromere
 - (D) Telomere
13. Name the techniques to identify cells involved in transcription
- (A) Northern blots and Restriction digestion
 - (B) PCR and Restriction digestion
 - (C) Northern blots and in situ hybridization
 - (D) In situ hybridization and Restriction digestion
14. The formation of the acrosome
- (A) Occurs in the epididymis
 - (B) Involves the maturation of lysosomal enzymes
 - (C) Involves mitotic activity
 - (D) Involves meiotic divisions
15. The primary regulator of Leydig cell secretion is
- (A) Follicle Stimulating Hormone (FSH)
 - (B) Luteinizing Hormone (LH)
 - (C) FSH releasing factor
 - (D) Inhibin
16. During oxidative phosphorylation in mitochondria synthesis of ATP occurs due to
- (A) Oxidation of glucose by glycolysis
 - (B) Electrochemical proton gradient
 - (C) Oxidation of NADH to NAD⁺
 - (D) Oxidation of pyruvate to acetyl CoA
17. Copper is associated with which of the following mitochondrial enzymes ?
- (A) Cytochrome oxidase
 - (B) Succinate dehydrogenase
 - (C) Catalase
 - (D) Acid Phosphatase



18. Enzymes, vitamins and hormones are common in
- (A) Being proteinaceous
 - (B) Being synthesized in the body of organisms
 - (C) Enhancing oxidation metabolism
 - (D) Regulating metabolism
19. BRACA I and BRACA II are involved in diagnosis of
- (A) Breast Cancer
 - (B) Myeloma
 - (C) Carcinoma
 - (D) Teratoma
20. Carcinomas are tumours of
- (A) Hematopoietic system
 - (B) Lymph nodes
 - (C) Epithelial cells
 - (D) Connective tissues
21. Replica plating is used to detect
- (A) Mutant colony
 - (B) Aerobic Bacteria
 - (C) Blue white colony
 - (D) Normal cells
22. The female sex organ of *Batrachospermum* is called as
- (A) Oogonium
 - (B) Carpogonium
 - (C) Female conceptacle
 - (D) Female cryptoblast
23. During the dark reaction of photosynthesis in cyanobacteria
- (A) Water is split
 - (B) CO_2 is reduced to organic compound
 - (C) Chlorophyll is activated
 - (D) 6-C sugar broken into 3-C sugar
24. The net gain of ATP molecules in glycolysis
- (A) Zero
 - (B) Two
 - (C) Four
 - (D) Eight
25. The etiological agent responsible for tikka disease of ground nut is
- (A) *Cercospora* sp.
 - (B) *Alternaria* sp.
 - (C) *Xanthomonas* sp.
 - (D) *Puccinia* sp.



26. The chromosomes appear as beaded structure at
(A) Leptotene
(B) Pachytene
(C) Diakinesis
(D) Telophase I
27. Which of the following bacteria convert nitrites to nitrates ?
(A) *Nitrosomonas*
(B) *Chromatium*
(C) *Nitrobacter*
(D) *Chlorobium*
28. The plant cell differs from the animal cell in the absence of
(A) Endoplasmic reticulum
(B) Ribosomes
(C) Mitochondria
(D) Centrioles
29. According to Baltimore system of classification positive-sense single stranded RNA virus belongs to which of the following groups ?
(A) Group IV
(B) Group III
(C) Group II
(D) Group I
30. Bacterial blight of Paddy is caused by
(A) *Xanthamonas oryzae*
(B) *Xanthamonas compestris*
(C) *Xanthamonas malvacearum*
(D) *Erwinia amylovora*
31. The etiological agent of Head smut of sorghum is
(A) *Cercospora arachidicola*
(B) *Pyricularia grysea*
(C) *Sclerospora graminicola*
(D) *Sphacelotheca sorghi*
32. An antigen is
(A) A highly specific protein produced by the body in response to a foreign body
(B) A chemical that inhibits the growth of microorganisms
(C) An antibody produced by the body that stimulates the production of antibodies by the body's immune system
(D) A chemical/biological substance that stimulates the production of antibodies by the body's immune system



33. Cancerous cells are destroyed by the following type of cell

- (A) Macrophages
- (B) NK cells
- (C) Neutrophils
- (D) Eosinophils

34. Phagocytosis may be characterized by which of the following statements ?

- (A) It involves fluid uptake by small vesicles
- (B) It involves the uptake of cellular debris in large endocytic vesicles
- (C) It is not important in digestive process in mammals
- (D) It is a constitutive process

35. Consider the following statements : IS elements are

- 1) Cut and paste transposons
- 2) These are sequence of DNA in genome of prokaryotes
- 3) These sequences are parasites of host genome

Which of the above statements are correct ?

- (A) 1 and 2 are correct
- (B) 3 and 1 are correct
- (C) 2 and 3 are correct
- (D) 1, 2 and 3 are correct

36. Which of the following is not involved in DNA damage repair ?

- (A) Excision repair
- (B) Recombinational repair
- (C) SOS repair
- (D) RNA polymerase

37. Multigene families evolve through

- (A) Only gene duplication
- (B) Random mutations
- (C) Only unequal crossing-over
- (D) Both duplication and unequal crossing

38. Antibiotic resistance among bacteria represents

- (A) Balancing selection
- (B) Stabilizing selection
- (C) Directional selection
- (D) Disruptive selection

39. MHC class I molecules presents peptides to T-cells in which pathway ?

- (A) Endocytic
- (B) Humoral
- (C) Complement
- (D) Endogenous



40. What is the meaning of Molecular clock ?

- (A) Rate of DNA or protein sequence evolution is constant over time or among evolutionary lineages
- (B) Rate of only protein sequence evolution is constant over time or among evolutionary lineages
- (C) Rate of only DNA sequence evolution is constant over time or among evolutionary lineages
- (D) Rate of DNA or protein sequence evolution is not constant over time or among evolutionary lineages

41. Blue tongue virus causes high mortality among

- (A) Fish
- (B) Human
- (C) Sheep
- (D) Poultry

42. Gondwana land includes the following

- (A) North America
- (B) Europe
- (C) Antarctica
- (D) India

43. Which of the following cannot be diagnosed by amniocentesis ?

- (A) Down syndrome
- (B) Cystic fibrosis
- (C) Sickle cell anemia
- (D) Polio

44. Which of the following plant that existed abundantly during Mesozoic era is considered as a living fossil ?

- (A) *Ginkgo biloba*
- (B) *Pinus*
- (C) *Taxus*
- (D) *Glossopteris*

45. Plant movements that take place in response to contact stimulus is called

- (A) Thigmotrophic movement
- (B) Thermonastic movement
- (C) Chemotrophic movement
- (D) Hydrotrophic movement



46. Which of the following statement does not relate to hydrogen bonds ?

- (A) A hydrogen bond takes place between an electron deficient hydrogen and an electron rich heteroatom
- (B) Weaker than electrostatic interactions but stronger than van der Waals interactions
- (C) The electron deficient hydrogen is called a hydrogen bond donor
- (D) Water molecules interact with each other and form an ordered layer next to hydrophobic regions

47. The termination of DNA replication occurs

- (A) At stop codon
- (B) When replication fork reaches *Ter* sequence
- (C) After formation of *Tus-Ter* complex
- (D) At *Ori-C*

48. The binding of RNA polymerase to DNA can be established by

- (A) Fingerprint analysis
- (B) Footprint analysis
- (C) Western blot analysis
- (D) Northern blotting

49. During translation the 30S initiation complex formation does not involve

- (A) fMet-tRNA^{Met}_f
- (B) mRNA
- (C) IF-3
- (D) eIF-3

50. The maintenance of lysogeny is mediated by gene products of

- (A) *cl*
- (B) *N*
- (C) *cro*
- (D) *cIII*

51. Metagenomics deals with

- (A) Culture independent analysis of biodiversity
- (B) Isolation of soil bacteria
- (C) Study of metabolic genes
- (D) Study of proteins



52. Bacteria respond to oxidative stress by production of
(A) Super Oxide Dismutase
(B) Phytochelatin
(C) Sucrose
(D) Protamine
53. ESR spectroscopy provides information on
(A) Metal concentration in solutions
(B) Neutrons in an element
(C) Free radicals
(D) Molecular structure
54. Which of the following statement about succession is correct ?
(A) Secondary succession occurs where no soil exists
(B) Primary succession occurs in areas where soil remains after a disturbance
(C) Secondary succession can occur where a disturbance has left soil intact
(D) Some cases of succession involve facilitation, a phenomenon in which local species inhibit the growth of newcomers
55. If two populations are merged, each with different frequencies of an allele at a locus and randomly mating occurs immediately, how long will it take to achieve Hardy-Weinberg equilibrium in the new population ?
(A) One generation
(B) Ten generation
(C) Depends on the allele frequencies
(D) Never
56. Multi-gene families evolve through
(A) Only gene duplication
(B) Random mutations
(C) Only unequal crossing-over
(D) Both duplication and unequal crossing
57. Antibiotic resistance among bacteria represents
(A) Balancing selection
(B) Stabilizing selection
(C) Directional selection
(D) Disruptive selection



58. Total genes of a given population is

- (A) gene frequency
- (B) genotype
- (C) gene family
- (D) gene pool

59. 'Use and disuse' theory was proposed by

- (A) Morgan
- (B) Lamarck
- (C) Darwin
- (D) Weismann

60. Consider the following statements.

The main drawbacks of the Darwinism were

- i) The lack of any direct evidence of the effectiveness of natural selection in nature
- ii) Considering evolution as individual phenomena not as population phenomena
- iii) Ignorance of laws of inheritance
- iv) Struggle for existence

Which of the following combinations is correct ?

- (A) i, ii, iv
- (B) i, iii, iv
- (C) i, ii, iii
- (D) ii, iii, iv

61. All of the following are believed to contribute to genomic diversity among various species, *except*

- (A) gene duplication
- (B) gene transcription
- (C) lateral gene transfer
- (D) chromosomal rearrangements

62. Choose the correct combination of molecular markers used in PCR based DNA amplification

- (A) RFLP, AFLP and SSR
- (B) AFLP, SSR and RAPD
- (C) RFLP, RAPD and SSR
- (D) RAPD, RFLP and SSR



63. Choose the correct sequence of events in a next generation sequencing based whole genome sequencing project

- (A) DNA extraction → shearing → library preparation → sequencing → assembly → finishing → annotation → submission to Genbank
- (B) DNA extraction → library preparation → sequencing → assembly → annotation → finishing → submission to Genbank
- (C) DNA extraction → shearing → adapter ligation → library amplification → sequencing → assembly → finishing → annotation → submission to Genbank
- (D) DNA extraction → adapter ligation → library amplification → shearing → sequencing → finishing → assembly → annotation → submission to Genbank

64. Which of the following forms of DNA travel faster when run together in an agarose gel electrophoresis ?

- (A) Nicked supercoiled DNA
- (B) Supercoiled DNA
- (C) Linear DNA
- (D) Plasmid DNA

65. After agarose gel electrophoresis RNA is detected by

- (A) Horse radish peroxidase
- (B) Glucose oxidase
- (C) cDNA probes
- (D) Spectro photometer

66. The scintillation counters detect radioactivity by

- (A) Absorption of radiation
- (B) Excitation of fluors
- (C) Ionization of gas by radiation
- (D) Molecular size



67. Which of the following organisms genome was chemically synthesized ?

- (A) *Mycoplasma genitalium*
- (B) *Saccharomyces cerevisiae*
- (C) *Rana pipiens*
- (D) *Drosophila melanogaster*

68. The total protein coding sequence is the human genome is

- (A) 15%
- (B) 1.5%
- (C) 0.15%
- (D) 30%

69. Match the following :

List – I	List – II
i) Desert adaptation	1) Gibbon
ii) Fossorial adaptation	2) Naked mole rat
iii) Scansorial adaptation	3) Opossum
iv) Arboreal adaptation	4) Horned toad

Which of the following is right match ?

- (A) i – 1, ii – 2, iii – 3, iv – 4
- (B) i – 1, ii – 3, iii – 2, iv – 4
- (C) i – 4, ii – 3, iii – 2, iv – 1
- (D) i – 4, ii – 2, iii – 3, iv – 1

70. The co-factor involved in the conversion of succinic acid to fumaric acid is

- (A) NAD^+
- (B) FAD
- (C) GTP
- (D) NADP

71. The plants enduring salt stress tend to accumulate which of the following substance

- (A) Alanine
- (B) Proline
- (C) Oxalic acid
- (D) Salicylic acid



72. BioNET-International was initiated by

(A) CAB-International

(B) ICSU

(C) WWF

(D) UNEP

73. The most preferred organism for industrial production of Recombinant insulin is

(A) *Saccharomyces*

(B) *Lactobacillus*

(C) *Pichia*

(D) *Bacillus*

74. Antibodies obtained from hybridoma for one antigen are known as

(A) Polyclonal antibody

(B) Monoclonal antibody

(C) Multiclonal antibody

(D) Differential antibody

75. The scientist associated with work of genetically engineered bacteria for degradation by hydrocarbon is

(A) Joseph Lister

(B) Anand Chakraborty

(C) H. G. Khoranna

(D) Inder Verma



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work



ಚಿತ್ರ ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Total Number of Pages : 16

Test Paper : II

Test Subject : LIFE SCIENCE

Test Subject Code : K-2815

Test Booklet Serial No. : _____

OMR Sheet No. : _____

Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Paper : II

Subject : LIFE SCIENCE

Time : 1 Hour 15 Minutes

Maximum Marks : 100

Number of Pages in this Booklet : 8

Number of Questions in this Booklet : 50

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಐವತ್ತು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆ ಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಕ್ರಾಪ್ ಸೀಲ್ ಇಲ್ಲದ ಆಥವಾ ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪುಸ್ತಕಿಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ. ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕವಾಗಿಸಬೇಕು.
ಉದಾಹರಣೆ: (A) (B) (C) (D)
(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ರಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ II ಮತ್ತು ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ III ರಲ್ಲಿ ಇರುವ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕಿಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಖಾಲಿ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳ ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of fifty multiple-choice type of questions.
- 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 the cover page. Do not accept a booklet without sticker seal or 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.
- 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 (C) is the correct response.
- Your responses to the questions are to be indicated in the OMR Sheet kept inside the Paper I Booklet only. If you mark at any place other than in the ovals in the Answer Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator or log table etc., is prohibited.
- There is no negative marks for incorrect answers.
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.



LIFE SCIENCE
Paper – II

Note : This paper contains **fifty (50)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. In the glycolytic pathway, 1,3 bis phospho glycerate is converted into 3 phospho glycerate and the phosphate group is transferred to ADP to produce ATP. This type of reaction is called
(A) Futile cycle
(B) Substrate level phosphorylation
(C) Energy conservation reaction
(D) Oxidative phosphorylation
2. A plasmid vector has two restriction sites for *EcoRI* and one restriction site for *BamHI*. A double digest of the plasmid with these two restriction enzymes will yield how many fragments ?
(A) 1 (B) 2
(C) 3 (D) 4
3. Which of the following is not an intermediate in the citric acid cycle ?
(A) Pyruvate
(B) Oxaloacetate
(C) Succinate
(D) Malate
4. The sequence of a strand of DNA is 5'-CATTAG-3'. What will be the sequence of the complimentary strand ?
(A) 5'-GTAATC-3'
(B) 5'-CATTAG-3'
(C) 5'-CTAATG-3'
(D) 5'-GATTAC-3'
5. Swi/Snf complex is involved in
(A) Histone modification
(B) Chromatin remodeling
(C) Heterochromatinization
(D) Nucleosome condensation
6. Toll-like receptors are involved in
(A) Antigen processing by B cells
(B) Maturation of B cells
(C) Maturation of dendritic cells
(D) Damage pattern recognition
7. A couple has four children each having a different blood group. Hence the blood group of the parents will be
(A) $I^A I^A$ and $i i$
(B) $I^B I^B$ and $i i$
(C) $I^A I^A$ and $I^B I^B$
(D) $I^A i$ and $I^B i$



8. The relationship between D-Glucose and d-Glucose is
(A) Both are the same
(B) D-refers to optical rotation and d-refers to configuration
(C) D-refers to configuration and d-refers to optical activity
(D) D configuration always gives rise to dextro rotation
9. A restriction endonuclease recognizes 6 bases in a DNA sequence and makes a cut. Assuming that the bases are randomly distributed in the DNA, what will be the size of the fragments generated by this endonuclease ?
(A) 256 bp (B) 2096 bp
(C) 4096 bp (D) 6096 bp
10. Membrane rafts are examples of
(A) Membrane microdomains
(B) Membrane vesicles
(C) Polarized membrane
(D) Clathrin coated vesicles
11. Which of the following statements regarding lac operon is FALSE ?
(A) When both glucose and lactose are present, there is a large amount of transcription
(B) When both glucose and lactose are absent, there is no transcription
(C) When glucose is present and lactose is absent, there is no transcription
(D) When glucose is absent and lactose is present, there is a large amount of transcription
12. The backbone atoms in a peptide linkage is as follows
(A) C-N-C-C (B) C-C-N-C
(C) C-O-N-C (D) C-C-O-N
13. In biological nomenclature, if a specific epithet exactly repeats generic name, then it is called
(A) Synonym (B) Basionym
(C) Tautonym (D) Homonym
14. In Stanley Miller's experiment that provided a conclusive evidence for the chemical synthesis of biomolecules, the following gases were used
(A) Methane, ammonia and hydrogen
(B) Methane and hydrogen peroxide
(C) Helium, oxygen and hydrogen peroxide
(D) Hydrogen, carbon dioxide and helium
15. *Bacteria bassiana* is commercially useful as a
(A) Biofertiliser
(B) Bioinsecticide
(C) Pathogen
(D) Fermenting agent



16. Flavr Savr gene is responsible for the improvement in the quality of
(A) Potato (B) Tomato
(C) Chillies (D) Brinjal
17. Which one of the following is not included in the family Orchidaceae ?
(A) Bulbophyllum
(B) Rhynia
(C) Cypridium
(D) Vanilla
18. Which one of the following is not an internal factor of differentiation ?
(A) Polarity
(B) Inductive effect
(C) Mutual incompatibility
(D) Cytoplasm
19. The nutritive tissue of the mature anther is
(A) Nucellus (B) Endosperm
(C) Tapetum (D) Endothecium
20. The precursor for the biosynthesis of Auxin is
(A) Tryptophan
(B) Hydroxylamine
(C) Tryptamine
(D) Indole acetic acid
21. Which one of the following accumulates under both drought and salinity stress in plants ?
(A) Proline
(B) Glycine
(C) Tryptophan
(D) Methionine
22. The compound that binds metal ions and capable of ion transport
(A) Ionophore
(B) Isoprenes
(C) Interferons
(D) Introns
23. Which one of the following is not a secondary metabolite ?
(A) Alkaloids
(B) Antibiotics
(C) Terpenes
(D) Trichoroacetic acid
24. Which one of the following is not concerned with hematopoiesis ?
(A) G-CSF
(B) Thyroxin
(C) Erythropoietin
(D) M-CSF



25. Which one of the following is a virus induced cancer ?
(A) Breast cancer
(B) Colorectal cancer
(C) Cervical cancer
(D) Oral cancer
26. Which one of the following destabilizes Hardy-Weinberg law in a population ?
(A) Absence of natural selection
(B) Random mating of individuals in the population
(C) Migration of individuals from one population to another
(D) Absence of mutation in the population
27. Synthesis of DNA strand occurs in
(A) $3' \rightarrow 5'$ direction
(B) $5' \rightarrow 3'$ direction
(C) Both the directions
(D) Either $3' \rightarrow 5'$ or $5' \rightarrow 3'$ direction depending on energy budget
28. In a diploid organism, the mitotic cell division is characterized by
(A) Extended anaphase
(B) Absence of chromosome condensation
(C) Formation of haploid daughter cells
(D) Formation of diploid daughter cells
29. The molecular formula of immunoglobulin E is
(A) K_2 or $\lambda_2 + \delta_2$
(B) K_2 or $\lambda_2 + \gamma_2$
(C) K_2 or $\lambda_2 + \epsilon_2$
(D) K_2 or $\lambda_2 + \mu_2$
30. Facultative heterochromatin is characterized by
(A) Presence of repetitive DNA
(B) Transcriptional inactivity in some cell types in an organism
(C) Absolute transcriptional inactivity
(D) Transcriptional activity in all cell types in an organism
31. Who won the Nobel Prize for the discovery of G protein ?
(A) Thomas Check and Philip Sharp
(B) Rodbell and Gilman
(C) Karry Mullis
(D) Arthur Kornberg
32. Bacterial recombination mediated by bacteriophage is called
(A) Transdetermination
(B) Transformation
(C) Transcription
(D) Transduction



33. The chromosome abnormality in individuals with Down syndrome belongs to the category
(A) Trisomy
(B) Nullisomy
(C) Gene duplication
(D) Tetraploidy
34. The preponderance of heterozygous individuals in a population is referred to as
(A) Density dependent selection
(B) Frequency dependent selection
(C) Heteroselection
(D) Kin selection
35. One of the most useful methods for identifying a specific gene is
(A) Eastern blotting
(B) Western blotting
(C) Southern blotting
(D) Northern blotting
36. Which one of the following vectors has been most successful for the introduction of DNA into human cells ?
(A) Retroviruses
(B) Yeast plasmid
(C) Bacterial plasmid
(D) T-DNA
37. Which one of the following is not the characteristic of normal cells in culture ?
(A) They do not require substratum
(B) They lack contact inhibition
(C) They grow rapidly
(D) They do not possess aneuploidy
38. Direct cytoplasmic communication between neighbouring cells is facilitated by
(A) Gap junctions
(B) Tight junctions
(C) Desmosomes
(D) Golgi apparatus
39. Human sperm nucleus contains
(A) 22 pairs of autosomes + X or Y chromosome
(B) 22 autosomes + X or Y chromosome
(C) 22 autosomes + X and Y chromosomes
(D) 22 pairs of autosomes + X and Y chromosomes
40. Standard error is calculated by the equation
(A) $\frac{\sqrt{\sum (X - \mu_x)^2}}{N}$
(B) $X - m$
(C) $\frac{\sum (X - m)^2}{n - 1}$
(D) $\frac{SD}{\sqrt{n}}$



41. The presynaptic membrane and postsynaptic membrane are separated by synaptic cleft whose width is
(A) 2 nm (B) 200 nm
(C) 20 nm (D) 100 nm
42. Which one of the following is not a region of nephron ?
(A) Malpighian body
(B) Proximal convoluted tubule
(C) Loop of Henle
(D) Renal medulla
43. A cell or its group alters the developmental fate of another cell. This phenomenon is called
(A) Induction
(B) Competence
(C) Germplasm theory
(D) Cell fate
44. Gonadotrophic hormones secreted by the pituitary
(A) Anti diuretic hormone, Melanocyte stimulating hormone, Follicle stimulating hormone
(B) Follicle stimulating hormone, Leutinizing hormone
(C) Prolactin, Thyroxin, Melanocyte stimulating hormone
(D) Thyroid stimulating hormone, Adrenocorticotrophic hormone, Anti diuretic hormone
45. Allometric species refers to
(A) Those occupying the same geographical area
(B) Those inhabiting completely different geographical areas
(C) Those living on large land masses
(D) Those which are widely distributed
46. Melatonin hormone is produced by the gland
(A) Pituitary (B) Thyroid
(C) Pancreas (D) Pineal
47. Acetylcholine inhibits the heart of
(A) Insects (B) Echinoderms
(C) Fishes (D) Molluscs
48. Oxygen-haemoglobin curve shifts to the right when
(A) O_2 concentration decreases
(B) CO_2 concentration decreases
(C) Chloride concentration decreases
(D) CO_2 concentration increases
49. During oogenesis, total number of polar bodies formed in the ovary are
(A) 2 (B) 3
(C) 4 (D) 5
50. Circadian rhythm in animals is controlled by
(A) Zeitgeber
(B) Cerebral cortex
(C) Medulla
(D) Pituitary gland



Total Number of Pages : 8

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Test Paper : III
Test Subject : LIFE SCIENCE
Test Subject Code : K-2815

Test Booklet Serial No. : _____

OMR Sheet No. : _____

Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Paper : III
Subject : LIFE SCIENCE

Time : 2 Hours 30 Minutes

Maximum Marks : 150

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 75

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಒಂದು ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲನೆಯ ಮುಖದಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆ ಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶವನ್ನು ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲ್‌ನ್ನು ಹರಿಯಿರಿ. ಸ್ಪಿಕ್ಟರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪುಸ್ತಕದಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೊಡಲಾಗುವುದಿಲ್ಲ. ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.
ಉದಾಹರಣೆ :

A	B	C	D
---	---	---	---

(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು, ಪತ್ರಿಕೆ III ಪುಸ್ತಕಿಯೊಳಗೆ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕಿಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲಿಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲಿಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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 the cover page. Do not accept a booklet without sticker seal or 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.
- 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 (C) is the correct response.
- Your responses to the question of Paper III are to be indicated in the **OMR Sheet kept inside the Booklet**. If you mark at any place other than in the ovals in OMR Answer Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
- Use only Blue/Black Ball point pen.**
- Use of any calculator or log table etc., is prohibited.**
- There is no negative marks for incorrect answers.**
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.**



LIFE SCIENCE
PAPER – III

Note : This paper contains **seventy-five (75)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. Association of a nucleotide base with a complementary one by the formation of specific hydrogen bonding is
(A) Peptide bond
(B) Base pairing
(C) Recombination
(D) Mismatching
2. _____ is a retroviral based transposon designed for mutagenesis in vertebrates.
(A) Frog princess
(B) LINES
(C) SINES
(D) Tn3
3. The number of chromosomes in a normal human sperm is
(A) 24
(B) 22
(C) 46
(D) 23
4. Two important functions of cell membrane
(A) Selective permeability and active transport
(B) Selective permeability and partial transport
(C) Active transport and permeability
(D) Passive transport and permeability
5. Cell cycle is controlled by
(A) Phosphatases
(B) Cyclins
(C) r-RNA genes
(D) Transferases
6. Strategy used for whole genome sequencing by Gaig ventor is
(A) Clone-contig method
(B) Piece by piece method
(C) Shot-gun method
(D) Microarray method



7. During splicing spliceosome component recognizes
- (A) 5' – AU – AG – 3'
 - (B) 5' – CU – AG – 3'
 - (C) 5' – TU – AG – 3'
 - (D) 5' – GU – AG – 3'
8. Which of the following statement is correct ?
- (A) In the presence of sry, all sexual differentiation follows the female pathway in humans
 - (B) In the absence of sry, all sexual differentiation follows the female pathway in humans
 - (C) In the absence of her – 1, all sexual differentiation follows the female pathway in humans
 - (D) In the absence of her – 1, all sexual differentiation follows the male pathway in humans
9. A logical sequence for research on any complex disease would be
- (A) Family studies, segregation analysis, linkage analysis, DNA sequence analysis
 - (B) Family studies, segregation studies, DNA sequence analysis, linkage analysis
 - (C) Family studies, linkage analysis, segregation analysis, DNA sequence analysis
 - (D) Family studies, DNA sequence analysis, segregation analysis, linkage analysis
10. Fragile X is formed by trinucleotide expansion of
- (A) CAA
 - (B) CGA
 - (C) CGG
 - (D) GAA
11. The inversion which includes centromere and marked by alter chromosome morphology is
- (A) Paracentric
 - (B) Pericentric
 - (C) Holocentric
 - (D) Telocentric
12. If an individual has the genotype AaBBDD, what fraction of the gametes produced will be AbD if the genes are unlinked ?
- (A) $\frac{1}{4}$
 - (B) $\frac{1}{2}$
 - (C) 0
 - (D) $\frac{1}{16}$



13. The surface of the body of an animal in _____ phylum has large number of minute openings.
- (A) Coelenterata
 - (B) Annelida
 - (C) Protozoa
 - (D) Porifera
14. The best method to determine the genotype of dominant parent is by crossing it with the hybrid
- (A) F_2 cross
 - (B) Test cross
 - (C) Selfing
 - (D) Cross fertilisation
15. Panmictic population is also called
- (A) Endemic population
 - (B) Inbreeding population
 - (C) Cosmopolitan population
 - (D) Random population
16. In the study of history of evolution the idea of "great chain of being" is proposed by
- (A) Aristotle
 - (B) Anaximander
 - (C) Linnaeus
 - (D) Buffon
17. Tertiary structure of trypsin and chymotrypsin suggests that, they had their origin from
- (A) Translocated genes
 - (B) Invested genes
 - (C) Duplicated genes
 - (D) Deleted genes
18. Homology search and screening is used for
- (A) DNA sequencing
 - (B) Gene isolation
 - (C) Gene therapy
 - (D) DNA finger printing
19. The first microorganism used in the production of recombinant proteins
- (A) Escherichia coli
 - (B) Agrobacterium tumifaceans
 - (C) Bacillus subtilis
 - (D) Plasmodium vivax



20. In _____ technique data retrieval is slow, map positions for not more than few markers will be obtained in a single experiment.
- (A) SNP
 - (B) Radiation hybrid
 - (C) FISH
 - (D) STS
21. RNA interference is used to
- (A) Interfere with specific transcription factors
 - (B) Knockout the expression of a specific gene
 - (C) Cause a mutation in specific gene
 - (D) Stimulates apoptosis
22. The DNA microarray technology that indicates, which genes are transcribed is called
- (A) DNA variation screening
 - (B) Microarray comparative genomic hybridization
 - (C) Gene expression profiling
 - (D) Antisense RNA screening
23. Molecular karyotype means
- (A) Pulse-field gel electrophoresis
 - (B) Polyacrylamide gel electrophoresis
 - (C) Agarose gel electrophoresis
 - (D) 2-D electrophoresis
24. Raphanobrassica is
- (A) Interspecific hybrid
 - (B) Intervarietal hybrid
 - (C) Intravarietal hybrid
 - (D) Inter-generic hybrid
25. The probes for DNA finger printing are
- (A) unknown single stranded labeled DNA
 - (B) unknown double stranded labeled DNA
 - (C) known single stranded labeled DNA
 - (D) known double stranded unlabeled DNA
26. Which of the following bacteria is highly resistant to ionizing radiations ?
- (A) Staphylococcus
 - (B) Deinococcus
 - (C) Streptococcus
 - (D) Pneumococcus



27. Which of the following is due to the defect in DNA repair enzymes ?

(A) Xeroderma pigmentosum

(B) Burkitt's lymphoma

(C) Myasthenia gravis

(D) Down's syndrome

28. Read the statement I & II and choose the correct answer :

Statement I : A given hormone may bind to multiple receptors and a given receptor may bind multiple hormones.

Statement II : Hormone receptors do not have the property of reversibility.

(A) Statement I and II are correct

(B) Statement I correct and II wrong

(C) Statement I and II are wrong

(D) Statement I wrong, II correct

29. Beetles belong to the order

(A) Deoptera

(B) Lepidoptera

(C) Hemiptera

(D) Coleoptera

30. Who got the nobel award in medicine for devising the MRI technique ?

(A) H. Temin and D. Baltimore

(B) R. Franklin and F. Crick

(C) P. Lauterber and P. Mansfield

(D) G. Binning and E. Southern

31. Methyl carbon of pyruvate was labeled with ^{14}C . If this pyruvate underwent gluconeogenesis, which carbon of glucose will be labelled ?

(A) 1

(B) 1 and 3

(C) 3

(D) All

32. The entropy of a thermodynamic system refers to

(A) Heat given off by the reaction

(B) Tendency of a system to randomness

(C) Maximum energy of the transition states

(D) Effect of temperature on the reaction velocities



33. Trypsin was formed to cleave the peptide
Asp – Ala – Leu – Phe – Arg – Asp – Val
The products will be
(A) Asp – Ala – Leu, Phe, Arg – Asp – Val
(B) Mixture of aminoacids
(C) Asp – Ala – Leu – Phe, Arg – Asp – Val
(D) Asp – Ala – Leu – Phe – Arg, Asp – Val
34. An enzyme formed 0.1% of the total protein in the homogenate. If this enzyme is to be purified to homogeneity, what is the fold purification that is required ?
(A) 100
(B) 1,000
(C) 10,000
(D) It can never be purified
35. The coronary arteries arise from the
(A) Superior vena cava
(B) Right atrium
(C) Pulmonary trunk
(D) Aorta
36. Which of the following are correct for positive correlation ?
I. Both variables increase
II. One variable increases, the other decreases
III. Both variable decrease
IV. One variable decreases, the other increases
(A) I and II correct
(B) I and III correct
(C) II and III are correct
(D) III and IV are correct
37. When a distribution is positively skewed
(A) The mean is higher than mode
(B) The mean is lower than mode
(C) The mean is equal to mode
(D) The mean is equal to median
38. Polytene chromosomes in Drosophila are formed during
(A) Telophase
(B) Metaphase
(C) Prophase
(D) Interphase



39. The standard deviation is a measure of _____ of a frequency distribution.
- (A) Central tendency
 - (B) Variability
 - (C) Similarity
 - (D) Normality
40. Read the statements A & B and choose the correct answer :
- Statement A :** The Down's syndrome (Mangolism) individuals have 47 chromosomes instead of 46.
- Statement B :** The Down's syndrome (Mangolism) individuals show sex chromosomes abnormality.
- (A) Both the statements are correct
 - (B) Both the statements are wrong
 - (C) Statement A is correct, B is wrong
 - (D) Statement B is correct, A is wrong
41. Which of the following is the causative agent of cerebral malaria ?
- (A) Plasmodium vivax
 - (B) Plasmodium Ovale
 - (C) Plasmodium malarial
 - (D) Plasmodium falciparum
42. Enzymes and intermediates of the Calvin cycle of photosynthesis are located in the
- (A) Thylakoid membrane
 - (B) Thylakoid lumen
 - (C) Inner chloroplast membrane
 - (D) Stroma
43. Which is the chromosome location of retinoblastoma gene (RB) in humans ?
- (A) 13q.14
 - (B) 9q.34
 - (C) 17p.13
 - (D) 17q.21
44. Pioneering work on viral carcinogenesis was done by
- I. Peyton Rous
 - II. Ellerman and Bang
 - III. Howard Temin
 - IV. Bittner
- (A) I, II, III correct
 - (B) I, II, IV correct
 - (C) II, III, IV correct
 - (D) I, III, IV correct



45. Which of the following is not true for adaptive immunity ?

- (A) Antigen specificity
- (B) Does not confer long lasting immunity to the host
- (C) Diversity
- (D) Immunologic memory

46. Read the following statements and choose the correct answer :

Statement I : Erythropoietin is a hormone required for the production of erythrocytes.

Statement II : It is produced by liver cells.

- (A) Statement I correct and II wrong
- (B) Statement I and II are correct
- (C) Statement I wrong and II correct
- (D) Statement I and II wrong

47. In the development of vertebrates, which of the following gives rise to vertebrae ?

- (A) Myotome
- (B) Dermatome
- (C) Sclerotome
- (D) Ectoderm

48. Which part of the brain is involved in spatial memory ?

- (A) Thalamus
- (B) Pineal gland
- (C) Hippocampus
- (D) Cerebellum

49. Phosphorylation cascades involving a series of protein kinases are useful for cellular signal transduction because

- (A) They are species specific
- (B) They always lead to the same cellular response
- (C) They amplify the original signal many fold
- (D) They counter the harmful effects of phosphatases

50. Bacterial quorum-sensing signal molecule contains

- (A) Manganese
- (B) Magnesium
- (C) Molybdenum
- (D) Boron



51. Most signal molecules

- (A) Easily diffuse the membrane and bind to receptor in the cytoplasm or nucleus
- (B) Bind to membrane receptors and transmit information across a membrane without transversing the membrane
- (C) Carryout functions in the nucleus after binding to a receptor in the cell membrane
- (D) A and C

52. In an oxygenic photosynthesis, the green and purple bacteria do not use which of the following as an electron source ?

- (A) H_2O
- (B) H_2
- (C) H_2S
- (D) Sulphur

53. Among the following which molecule till now not synthesized by mimicking the environment of pre-biotic environment ?

- (A) Pyrimidine
- (B) Purine
- (C) L-aminoacids
- (D) Ribose

54. Progeroid syndrome are group of rare genetic disorder that mimic physiological ageing. Which of the following are/is not a progeroid syndrome ?

- (A) Edward's syndrome
- (B) Werner syndrome
- (C) Cockayne syndrome
- (D) Bloom syndrome

55. Which of the following bacteria divides in three planes ?

- (A) Streptococcus
- (B) Staphylococcus
- (C) Sarcia
- (D) Rhizobium



56. Rhizophora mucronata is a

(A) Mangrove plant

(B) Terrestrial plant

(C) Freshwater plant

(D) Sea grass

57. Following bacteria significantly contribute for nitrogen fixation in paddy fields in India.

(A) Anabaena

(B) Azotobacter

(C) Frankia

(D) Clostridium

58. Birds of the following island provided clues to Darwin about speciation

(A) Hawaiian islands

(B) Andaman islands

(C) Galapagos islands

(D) Solomon islands

59. Dinosaurs were densely populated during

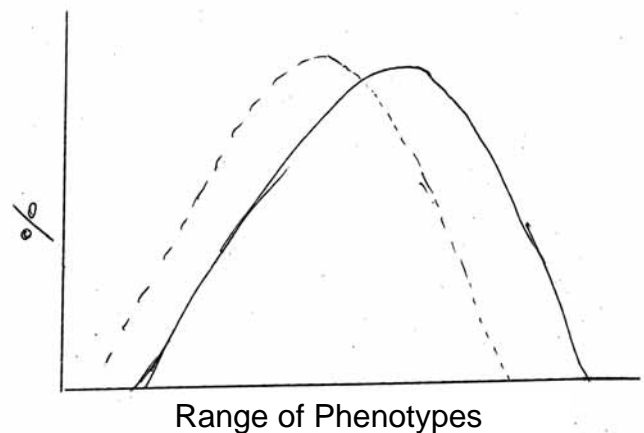
(A) Cretaceous era

(B) Paleozoic era

(C) Mesozoic era

(D) Cenozoic era

60.



Above image exhibits the range of phenotype of original populations (-----) and evolved populations (————). This type of selection is called

(A) Stabilizing selection

(B) Disruptive selection

(C) Group selection

(D) Directional selection

61. The term homeobox refers to

(A) A specific nucleotide sequence of some genes that regulate development

(B) A group of genes that determine polarity during development

(C) Glycoproteins that assist cells during morphogenetic movements

(D) Peptide sequence of aminoacids that turn other genes on or off



62. The hydrolytic enzymes which occur in lysosome work most effectively under condition of
- (A) Alkaline pH
 - (B) Acidic pH
 - (C) Neutral pH
 - (D) Salinity
63. The first vaccine developed from animal cell culture was
- (A) Hepatitis B vaccine
 - (B) Influenza vaccine
 - (C) Small pox vaccine
 - (D) Polio vaccine
64. Which fungus was used as a source of cellulase and pectinase by E.C. Cocking during protoplast isolation ?
- (A) Fusarium
 - (B) Mysothecium
 - (C) Trichoderma
 - (D) Polypore
65. Which of the following plants was used by Sipra Guha Mukherjee and Maheshwari to produce haploid plants ?
- (A) Tomato
 - (B) Potato
 - (C) Carrot
 - (D) Datura
66. A non directed physico-chemical interaction between heavy metal ions and microbial surface is called
- (A) Biotransformation
 - (B) Bioconversion
 - (C) Biosorption
 - (D) Biomining
67. Energy and nutrients enter a community by way of
- (A) Consumers
 - (B) Scavengers
 - (C) Detritivores
 - (D) Producers



68. Point out the mismatch in the following :

Organelle	Marker molecule
i. Mitochondria	Cytochrome oxidase
ii. Golgi complex	Inosine diphosphate
iii. Peroxisome	Permease
iv. Lysosome	Acid phosphatase

(A) ii

(B) i

(C) iii

(D) iv

69. Vinegar is obtained from molasses with the help of

(A) Penicillin

(B) Acetobacter

(C) Yeast

(D) Aspergillus

70. The exponential phase of growth, in cell cultures is called

(A) Lag phase

(B) Log phase

(C) Plateau phase

(D) Mitotic phase

71. Clones are identified by hybridizing them with

(A) Probe

(B) Vector

(C) Antibody

(D) Virus

72. Which of the following is tumor suppressor gene ?

(A) SrC

(B) abl

(C) sis

(D) p53

73. Which of the following is implicated in human cervical cancers ?

(A) Epstein-Barr virus

(B) Human papilloma virus

(C) Hepatitis c-virus

(D) Vaccinia virus

74. Inheritance of acquired characters was proposed by

(A) Lamarck

(B) Morgan

(C) Darwin

(D) Weisman

75. Radiations can be detected through

(A) ELISA reader

(B) Spectrophotometer

(C) Geiger Muller counter

(D) Maldi-Tof



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Test Paper : II
Test Subject : LIFE SCIENCE
Test Subject Code : K-2816

Test Booklet Serial No. : _____
OMR Sheet No. : _____
Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature : _____
Name : _____

Paper : II
Subject : LIFE SCIENCE

Time : 1 Hour 15 Minutes

Maximum Marks : 100

Number of Pages in this Booklet : 8

Number of Questions in this Booklet : 50

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಐವತ್ತು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ತರಬಹುದು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಕ್ಸರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕವಾಟಿಸಬೇಕು.
ಉದಾಹರಣೆ :

A	B	C	D
---	---	---	---

(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ರಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ II ಮತ್ತು ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ III ರಲ್ಲಿ ಇರುವ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದೆ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of fifty multiple-choice type of questions.
- 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 the cover page. Do not accept a booklet without sticker seal or 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.**
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
Example :

A	B	C	D
---	---	---	---

where (C) is the correct response.
- Your responses to the questions are to be indicated in the **OMR Sheet kept inside the Paper I Booklet only**. If you mark at any place other than in the circles in the OMR Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
- Use only Blue/Black Ball point pen.**
- Use of any calculator, Electronic gadgets or log table etc., is prohibited.**
- There is no negative marks for incorrect answers.**
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.**

**LIFE SCIENCE****Paper – II**

Note : This paper contains **fifty (50)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. Which of the following is not an oxygen transporting molecule ?
(A) Ceruloplasmin
(B) Hemocyanin
(C) Erythrocyruorin
(D) Hemerythrin
2. Which of the following compounds have both covalent and coordinate bonds ?
(A) NH_4Cl (B) Fe_3O_4
(C) MgCl_2 (D) H_2SO_4
3. Which is the exclusive component of mitochondrial membrane ?
(A) Cholesterol
(B) Phosphatidyl choline
(C) Spingomyelin
(D) Cardiolipin
4. Which of the following is strongest among weak forces of interactions ?
(A) Ionic
(B) Hydrogen bond
(C) Van der Waal's
(D) Dipole-dipole
5. Complete hydrolysis of ceramide will yield
(A) Sphingosine, Fatty acid, Choline
(B) Sphingosine, Fatty acid
(C) Sphingosine, Phosphate, Choline
(D) Sphingosine, Fatty acid, Phosphate
6. Which of the vectors has been most successful for the introduction of DNA into mammalian cells ?
(A) Bacteriophage
(B) Baculovirus
(C) Retrovirus
(D) Plasmid
7. Structure of trypsin and chymotrypsin suggests that they had origin from
(A) Duplicated genes
(B) Gene deletions
(C) Translocated genes
(D) Inversion of genes
8. Raphanobrassica is
(A) Interspecific hybrid
(B) Intergeneric hybrid
(C) Intravarietal hybrid
(D) Intervarietal hybrid



9. Beetles belongs to the order
(A) Coleoptera
(B) Hemiptera
(C) Lepidoptera
(D) Diptera
10. Conjugation between an F^+ and F^- bacterial cells usually results in
(A) Death of both conjugating cells
(B) Two F^- cells
(C) Two F^+ cells
(D) An F^+ and an F^- cell
11. In which part of human female reproductive tract, the fertilization usually takes place ?
(A) Ovary (B) Uterus
(C) Oviduct (D) Cervix
12. Phytochrome of the plants are responsible for which of the following functions ?
(A) Photosynthetic electron flow
(B) Shade avoidance
(C) Seed dormancy
(D) Stomatal dynamics
13. The virus that can trigger neoplastic transformation of cells
(A) T4 phage (B) Polio virus
(C) RSV (D) M13
14. The cancer caused by defect in repairing UV-induced DNA damage
(A) Retinoblastoma
(B) Xeroderma pigmentosum
(C) Chronic myelogenous leukemia
(D) Renal cell carcinoma
15. The following cause red tide in oceans
(A) Diatoms
(B) Foraminiferans
(C) Dinoflagellates
(D) Rhodophyta
16. One of the following is an example for microbial bioremediation
(A) Use of bacteria to treat sewage
(B) Use of bacteria to kill other bacteria
(C) Use of antibiotics produced by cultured bacteria
(D) Engineering bacteria to produce human protein
17. Which of the following best represents the hierarchy of levels of biological classification ?
(A) Phylum, kingdom, class, order, genus, species, family
(B) Kingdom, phylum, family, class, order, genus, species
(C) Kingdom, phylum, class, order, family, genus, species
(D) Class, order, kingdom, phylum, family, genus, species



18. Listing items like age, number of live organisms each year and life expectancy is known as
(A) Life table
(B) Survivorship table
(C) Rate table
(D) Mortality table
19. Which of the following phytohormones play a role in seed dormancy ?
(A) Gibberellin
(B) ABA
(C) Cytokinin
(D) Auxin
20. Which hormone allows seeds to ignore environmental condition and germinate ?
(A) Absciscic acid
(B) Cytokinins
(C) Auxins
(D) Gibberellins
21. Photochemical reaction occurs in
(A) Lumen of thylakoid
(B) Stroma of chloroplast
(C) Membrane of thylakoid
(D) Plant cell cytoplasm
22. Which of the following enzyme does not require a primer ?
(A) RNA dependent DNA polymerase
(B) DNA dependent DNA polymerase
(C) Terminal transferase
(D) Taq DNA polymerase
23. Chloramphenicol inhibits
(A) Cell wall synthesis in bacteria
(B) Protein synthesis in 70S ribosome
(C) Protein synthesis on 80S ribosomes
(D) DNA replication
24. Pathogenicity is
(A) Ability to cause disease
(B) Degree of disease
(C) Virulence
(D) Prevent disease
25. Cytotoxic T cell mediated killing of target cells occur by the release of
(A) Ubiquitin
(B) Lysozyme
(C) Cytokines
(D) Granzymes



26. In which of the following types of ovules do the micropyle and the funiculus come to lie in one straight line ?
- (A) Orthotropous
 - (B) Anatropous
 - (C) Hemianatropous
 - (D) Campylotropous
27. In Angiosperms, germinable adventive embryos develop from
- (A) Endosperm
 - (B) Nucellus
 - (C) Antipodal cells
 - (D) Synergids
28. Which hormone stimulates process of ovulation in mammals ?
- (A) Prolactin
 - (B) FSH
 - (C) LH
 - (D) Oxytocin
29. The correct sequence of process of development after fertilization and cleavage is
- (A) Gastrulation – organogenesis – growth
 - (B) Organogenesis – gastrulation – growth
 - (C) Gastrulation – blastulation – growth
 - (D) Organogenesis – morulation – blastulation
30. A series of mitotic cell divisions that changes zygote into multicellular embryo
- (A) Gastrulation
 - (B) Gametogenesis
 - (C) Blastulation
 - (D) Cleavage
31. Translesion DNA polymerases are capable of
- (A) Inducing DNA recombination
 - (B) Inducing DNA breaks
 - (C) Bypassing distorted DNA to polymerize deoxyribonucleotides
 - (D) Preventing nucleotide polymerization
32. With reference to chromosomal DNA, genetic code degeneracy means
- (A) a given triplet can code for more than one aminoacid
 - (B) there is no punctuation in the code sequence
 - (C) the genetic code has degraded from a larger codon
 - (D) a given aminoacid can be coded by more than one triplet
33. 'Biodiversity hotspot' is a region with significant levels of biodiversity that is
- (A) in abundance
 - (B) endemic and under threat
 - (C) located in areas of high temperature
 - (D) located in high altitudes



34. Ocean upwelling
(A) brings oxygen rich water to surface
(B) responsible for oceanic currents
(C) brings up coral reef communities
(D) brings nutrient rich water to surface
35. In addition to *Saccharomyces* which other organism can be used for alcohol production ?
(A) *Clostridium acetobutylicum*
(B) *Zymomonas mobilis*
(C) *Escherichia coli*
(D) *Pseudomonas aeruginosa*
36. Sequence of events in bacterial growth curve is
(A) Log phase, lag phase, stationary phase and death phase
(B) Stationary phase, lag phase, log phase and death phase
(C) Lag phase, log phase, stationary phase and death phase
(D) Stationary phase, log phase, lag phase and death phase
37. Bacteria that divide and perform function at low temperature are called
(A) Thermophilic
(B) Psychrophilic
(C) Basophilic
(D) Halophilic
38. If SKL is at the carboxy terminus of a protein, such protein is targeted to
(A) Endoplasmic reticulum
(B) Mitochondria
(C) Nucleus
(D) Peroxisome
39. If half life of a reaction is 30 min. How much time is required to complete 75% of the reaction ?
(A) 15 min.
(B) 30 min.
(C) 45 min.
(D) 60 min.
40. MRI is made possible by which of the following ?
(A) External magnet of high strength
(B) Gradient magnetic field
(C) Fourier transformation of the NMR signal
(D) Improved radio frequency detectors
41. Which of the following phenotypic ratios represent Hardy-Weinberg genetic equilibrium ?
(A) 0.09, 0.48, 0.64
(B) 0.09, 0.36, 0.04
(C) 0.04, 0.32, 0.64
(D) 0.16, 0.48, 0.49



42. Genetic relatedness between two workers in a honeybee colony is
(A) 0.25
(B) 0.50
(C) 0.75
(D) 1.00
43. Which of the following is not a type of extra nuclear inheritance ?
(A) Sexual segregation
(B) Vegetative segregation
(C) Uniparental inheritance
(D) Biparental inheritance
44. Which of the following organism's whole genome is chemically synthesized ?
(A) *Drosophila*
(B) *Rana pipiens*
(C) *Mycoplasma genitalium*
(D) Yeast
45. Scientist who patented genetically modified organism that degrade hydrocarbons
(A) Arthur Kornberg
(B) H.G. Khorana
(C) Anand Chakraborty
(D) James Watson
46. *Dictyostelium* morphogenesis requires
(A) GTP (B) ATP
(C) cAMP (D) CTP
47. Random changes in allelic frequency within a small population is known as
(A) Homeostasis
(B) Allelic mutation
(C) Genetic drift
(D) Heterosis
48. When autosomal genes are more readily expressed in one sex, it is known as
(A) Sex influenced trait
(B) Cytoplasmic inheritance
(C) Maternal effect
(D) Sex-linked inheritance
49. Using volunteers in a statistical study represents
(A) Truly random sample
(B) Purposive sample
(C) Stratified sample
(D) Non-random sample
50. Leaf sheath colouration, height, grain colour, aroma of rice are examples of
(A) Biological markers
(B) Morphological markers
(C) Cytological markers
(D) Biochemical markers



Total Number of Pages : 8

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Test Paper : III
Test Subject : LIFE SCIENCE
Test Subject Code : K-2816

Test Booklet Serial No. : _____

OMR Sheet No. : _____

Roll No. _____

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Paper : III

Subject : LIFE SCIENCE

Time : 2 Hours 30 Minutes

Maximum Marks : 150

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 75

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಅಂಕಿ ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪತ್ರಿಕೆಯನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗೆ ಪ್ರವೇಶವಾಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲ್‌ನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಕ್ಟರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪತ್ರಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪತ್ರಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪತ್ರಿಕೆಯನ್ನು ಕೂಡಲೇ ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪತ್ರಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.
ಉದಾಹರಣೆ : (A) (B) (C) (D)
(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆಗಳ ಉತ್ತರಗಳನ್ನು, ಪತ್ರಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಯೊಳಗೆ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮಾಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪತ್ರಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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 the cover page. Do not accept a booklet without sticker seal or 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.
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
Example : (A) (B) (C) (D)
where (C) is the correct response.
- Your responses to the question of Paper III are to be indicated in the OMR Sheet kept inside the Booklet. If you mark at any place other than in the circles in OMR Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator, Electronic gadgets or log table etc., is prohibited.
- There is no negative marks for incorrect answers.
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.



LIFE SCIENCE
Paper – III

Note : This paper contains **seventy five (75)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. The Z-DNA helix

(A) has fewer base pair per turn than B-DNA

(B) is favoured by alternate GC base pairs

(C) tends to be found at 3' ends of genes

(D) is the most common conformation of DNA

2. Which of the following chromosome aberration causes change in order of genes in the genetic map without altering its linkage group ?

(A) transposition

(B) translocation

(C) inversion

(D) recombination

3. Which of the following is the most appropriate answer regarding microtubule assembly and disassembly during cell division ?

(A) Kinetochore microtubules polymerize at their plus ends up to anaphase and then begin to depolymerize

(B) Kinetochore microtubules polymerize at their minus ends up to anaphase and then begin to depolymerize

(C) Once formed, kinetochore microtubules depolymerize at the plus ends throughout mitosis

(D) Once formed, kinetochore microtubules polymerize at the plus ends throughout mitosis



4. Which of the following statement on cell junctions is wrong ?

- (A) Adherens junctions are cell-cell anchoring junctions connecting actin filaments in one cell with that in the next cell
- (B) Gap junctions are channel forming junctions allowing passage of small water soluble molecules from cell to cell
- (C) Tight junctions are occluding junctions, which seal gap between two cells
- (D) Hemidesmosomes are cell-matrix anchoring junctions connecting intermediate filaments in one cell to extracellular matrix

5. The amino acid that can be synthesized directly by the incorporation of ammonia into oxalo acetic acid

- (A) Aspartic acid
- (B) Alanine
- (C) Glutamine
- (D) Proline

6. "Agent Orange" is a

- (A) Colour used in inflorescent lamp
- (B) Hazardous chemical used in plant
- (C) Natural insecticide
- (D) Dioxin containing weedicide

7. Origin of replication usually contains

- (A) AT rich sequence
- (B) GC rich sequence
- (C) Both AT and GC rich sequence
- (D) No particular sequence

8. Regulatory elements for expression of ribosomal RNA genes reside in the

- (A) non-transcribed spacer region
- (B) transcribed spacer region
- (C) internal regions within the genes
- (D) 5' flanking region of individual ribosomal RNA genes

9. In semi-conservative DNA replication, discontinuous fragments called Okazaki fragments are synthesised on the lagging strand. These fragments are synthesised into continuous DNA strand by which enzymes ?

- (A) DNA Pol I and DNA ligase
- (B) DNA Pol III and DNA ligase
- (C) DNA Pol II and DNA ligase
- (D) DNA gyrase and DNA ligase



10. Sequence in TATA box is

- (A) ATGC
- (B) 3' -TATAT-5'
- (C) GCGCAT
- (D) 5'-TATAAA-3'

11. The consensus sequence of 5' and 3' splice junctions in eukaryotic mRNA contains

- (A) GU-GA
- (B) GU-AG
- (C) AG-GU
- (D) CG-AG

12. Choose the appropriate typical structure of a 5'→3' eukaryotic gene.

- (A) 5' UTR→Promoter→Exons→Introns→3' UTR
- (B) Promoter→3' UTR→Exons→Introns→5' UTR
- (C) 5' UTR→Exons→Introns→3' UTR→Promoter
- (D) Promoter→5' UTR→Exons→Introns→3' UTR

13. A device used for measuring arterial pressure

- (A) Electrocardiogram
- (B) Defibrillator
- (C) Otoscope
- (D) Sphygmomanometer

14. Choose the right match

Category – I

- i. IgA
- ii. IgE
- iii. IgG
- iv. IgM

Category – II

- 1. Basophils
- 2. δ heavy chain
- 3. Secretory component
- 4. Pentamer
- 5. Cross placenta

Which of the above is right match ?

- (A) i-3, ii-1, iii-5, iv-4
- (B) i-3, ii-5, iii-2, iv-1
- (C) i-2, ii-3, iii-5, iv-4
- (D) i-2, ii-1, iii-3, iv-5

15. Which of the following is the right sequence for the auditory pathway ?

- (A) External auditory canal, tympanic membrane, auditory ossicles, oval window, cochlea and spiral organ
- (B) Tympanic membrane, external auditory canal, auditory ossicles, cochlea, spiral organ and round window
- (C) Auditory ossicles, tympanic membrane, cochlea, round window, oval window and external auditory canal
- (D) Auricle, tympanic membrane, round window, cochlea, spiral organ and oval window



16. A cross is made between pure wild type males and brown eyed, curled wing females of *D. melanogaster*. The F_1 females were test crossed. The F_2 progeny obtained are

Wild type	200
Brown eyes, curled wings	150
Brown eyes, normal wings	30
Normal eyes, curled wings	20
Total	400

The genetic distance in cM between brown eye and curled wing loci is

- (A) 50
(B) 12.5
(C) 25
(D) 150
17. Seymour Benzer proposed the concept of Recon by studying recombination between
- (A) white eye mutants of *Drosophila melanogaster*
(B) lysis mutants of bacteriophage T4
(C) biochemical mutants of *Neurospora crassa*
(D) auxotrophic mutants of *Escherichia coli*

18. Upon studying a considerable number of different crosses in *Drosophila*, Morgan reached the conclusion that all the genes of this fly were clustered into four linked groups corresponding to the four pair of chromosomes. Further studies revealed that the linkage is not absolute and it is broken frequently. It is broken in the prophase by a process called

- (A) recombination
(B) mutation
(C) integration
(D) jumping of genes

19. Humans have 23 pairs of chromosomes, while our closest relatives, chimpanzees, have 24. Chromosome studies indicate that at some point early in human evolution, two chromosomes simultaneously broke into a large portion and a small portion. The large parts combined to form a large chromosome, and the small parts combined to form a much smaller chromosome which was subsequently lost. This event could be due to

- (A) nondisjunction followed by deletion
(B) translocation followed by deletion
(C) duplication followed by deletion
(D) translocation followed by inversion



20. Which is the least invasive method of the following used to detect genetic disorders before birth ?

- (A) Chorionic villi sampling
- (B) Amniocentesis
- (C) Ultrasound imaging
- (D) Fetoscopy

21. An autosomal recessive disorder has a population prevalence of 1 : 40 000. The carrier frequency is therefore

- (A) 1/400
- (B) 1/200
- (C) 1/100
- (D) 1/50

22. A couple has a female child with disease, and three unaffected children. Neither of the parents affected with this disease. What is the probable pattern of inheritance ?

- (A) X-linked recessive
- (B) Autosomal recessive
- (C) X-linked dominant
- (D) Autosomal dominant

23. The author of the monumental work "*On the Origin of Species by Means of Natural Selection or the 'Preservation of Favored Races in the Struggle for Life'*"

- (A) Alfred Russel Wallace
- (B) Charles Darwin
- (C) Charles Darwin and Alfred Russel Wallace
- (D) Charles Darwin and Charles Lyell

24. Which of the following is not contributing to genomic diversity among various species ?

- (A) Gene duplication
- (B) Gene transcription
- (C) Lateral gene transfer
- (D) Chromosomal rearrangements

25. Which of the following is an insectivorous plant ?

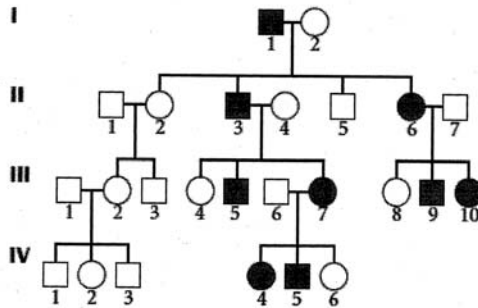
- (A) *Adiantum*
- (B) *Dionea*
- (C) *Nephrolepis*
- (D) *Nerium*



26. The CO_2 acceptor in C_3 plants is

- (A) PEP
- (B) PGA
- (C) RUDP
- (D) NADP

27. Identify the most likely mode of inheritance of the following pedigree.



- (A) X-linked recessive inheritance
- (B) X-linked dominant inheritance
- (C) Autosomal dominant inheritance
- (D) Autosomal recessive inheritance

28. Which among the following is not a thermodynamic system ?

- (A) Open system
- (B) Isolated system
- (C) Closed system
- (D) Surrounding

29. Inorganic element that serves as cofactor in Glutathione peroxidase is

- (A) Copper
- (B) Magnesium
- (C) Nickel
- (D) Selenium

30. Secondary structures of collagen contains

- (A) β -conformation
- (B) Triple helix
- (C) α -helix
- (D) β -helix

31. Which among the following statements is correct about urea cycle ?

- (A) Nitrogens of urea enter cycle as ammonia and alanine
- (B) Urinary urea is increased by diet rich in protein
- (C) Urea cycle occurs exclusively in cytosol
- (D) Urea is produced from hydrolysis of ornithine directly



32. Cadherin helps in

- (A) Cell-cell adhesion
- (B) Phagocytosis
- (C) Exocytosis
- (D) Apoptosis

33. Caspase 3 helps in

- (A) Activation of cells
- (B) Inhibition of cells
- (C) Apoptosis of cells
- (D) Division of cells

34. Petals are formed in the 2nd Whorl due to

- (A) Class A genes
- (B) Class A+B genes
- (C) Class B+C genes
- (D) Class C genes

35. Which of the following organisms has the highest repetitive sequence ?

- (A) *Rana pipiens*
- (B) *Escherichia. coli*
- (C) *Mus. musculus*
- (D) *Arabidopsis thaliana*

36. Consider the following statements.

Which of the following events in basic life cycle are in the right order ?

- i. Fertilization, cleavage
- ii. Adulthood, senescence
- iii. Gastrulation, Germ layer formation
- iv. Organogenesis, metamorphosis

Which of the statements given above are right ?

- A) i, ii, iii, iv
- (B) i, iii, iv, ii
- (C) i, iv, iii, ii
- (D) i, ii, iv, iii

37. Identify the technique that allow thousands of genes in different types of cells to be compared simultaneously

- (A) Microarray
- (B) In situ hybridization
- (C) RFLP
- (D) Restriction digestion

38. Each mammalian somatic cell, whether male or female, has only one functional X-chromosome. This phenomenon is called

- (A) X-chromosome Histone acetylation
- (B) Constitutive heterochromatin
- (C) X-chromosome activation
- (D) X-chromosome inactivation



39. Gene arrangement of cytotoxic T cells occurs primarily in the
- (A) Bone marrow
 - (B) Spleen
 - (C) Germinal centers
 - (D) Thymus
40. Asthma is a consequence of the release of histamine and heparin from
- (A) Mast cells, which induces oedema and broncho constriction
 - (B) Plasma cells, which induces antibody release
 - (C) Eosinophils, which induces proliferation of basophils
 - (D) Goblet cells, which induces hypersecretion
41. All the following belong to the conducting portion of the respiratory system, except
- (A) Trachea
 - (B) Bronchi
 - (C) Bronchioles
 - (D) Alveoli
42. In the β -cells of the pancreas, proinsulin is converted to insulin
- (A) In the blood stream
 - (B) In clathrin-coated vesicle
 - (C) In the golgi complex
 - (D) At the time of fusion of mature granula
43. The mechanism in which the rate of the solute movement increases by interaction of trans-membrane proteins is termed as
- (A) Endocytosis
 - (B) Simple diffusion
 - (C) Facilitated diffusion
 - (D) Active transport
44. Bulk of protein glycosylation takes place in
- (A) Golgi complex
 - (B) Peroxisomes
 - (C) Ribosomes
 - (D) Lysosomes



45. Which of the given enzyme is involved in packaging/supercoiling of DNA molecule ?

(A) Topoisomerase

(B) Ligase

(C) α -polymerase

(D) Helicase

46. Which of the following gene was engineered in the “Flavr-Savr” transgenic tomato variety ?

(A) 1-Amino cyclopropane-1-carboxylic acid synthase

(B) 1-Amino cyclopropane-1-carboxylic acid oxidase

(C) Expansin

(D) Polygalacturonase

47. A taxon is

(A) A group of related families

(B) A group of related species

(C) A type of living organisms

(D) A taxonomic group of any ranking

48. Consider the following statements.

(Assertion) (A) : Species is a genetically closed system

(Reason) (R) : Its members do not interbreed with member of different species

Which of the following is correct ?

(A) Both A and R are true, R is the right explanation of A

(B) Both A and R are true, R is wrong explanation of A

(C) A is true and R is false

(D) Both A and R are false

49. Presence of Chlorella within Paramecium is an example for _____ association.

(A) Parasitic

(B) Saprophytic

(C) Endosymbiotic

(D) Pathogenic

50. Which of the following is a autoimmune disorder ?

(A) Multiple sclerosis

(B) Blood cancer

(C) Huntington disease

(D) Cystic fibrosis



51. Consider the following statements.

The methods employed for the detection of viruses are

1. Detection of infectivity using cell cultures
2. Detection of virus nucleic acids
3. Detection of virus antigens
4. Detection of Ergosterols

Which of the above statements are right ?

(A) 1, 2 and 3 are right

(B) 1, 2 and 3 are wrong

(C) 2, 3 and 4 are right

(D) 1, 2 and 4 are right

52. Carbon source for cyanobacteria during dark reaction is

(A) Glucose

(B) CO_2

(C) Carbohydrate

(D) Hydrocarbon

53. Which of the following virulence factor protect bacteria from host immune response during phagocytosis ?

(A) Cytolytic toxins and capsule

(B) Pronase

(C) Antigenic Variation

(D) IgA protease

54. Which of the following spore of *Puccinia graminis* infect *Berberis vulgaris* ?

(A) Basidiospores

(B) Teliospores

(C) Urediniospores

(D) Aeciospores

55. Localized clusters of cambium-like cells in the callus is referred to as

(A) Cybrids

(B) Meristemoids

(C) Embryoids

(D) Lutoids



56. Rotavirus is a
- (A) Double-stranded DNA virus
 - (B) Single-stranded DNA virus
 - (C) Double-stranded RNA virus
 - (D) Single-stranded RNA virus
57. Typhoid is caused by
- (A) *Eschrichia*
 - (B) *Bacillus*
 - (C) *Mycobacterium*
 - (D) *Salmonella*
58. Identify the virus that has recently attracted strict quarantine measures, to avoid pandemic scare
- (A) HIV
 - (B) SARS
 - (C) Ebola
 - (D) Hepatitis
59. Heterothallism in fungi was reported for the first time by
- (A) Alexopoulos
 - (B) Landecker
 - (C) Blakeslee
 - (D) Mims
60. The fungus exploited as a source for mycoprotein "Quorn" is
- (A) *Fusarium salani*
 - (B) *Fusarium semitectum*
 - (C) *Fusarium graminearum*
 - (D) *Fusarium moniliformae*
61. According to the competitive exclusion principle, two species cannot continue to occupy the same
- (A) Habitat
 - (B) Niche
 - (C) Range
 - (D) Biome
62. Which of the following is a coagulant fixative ?
- (A) Formaldehyde
 - (B) Osmium tetroxide
 - (C) Acetic acid
 - (D) Ethanol



63. FMDV causes significant economic loss to which of the following industry ?

- (A) Dairy
- (B) Poultry
- (C) Fishery
- (D) Piggery

64. In island biogeography theory, if there are two islands and one is closer to the mainland, the closer would have

- (A) A lower rate of extinction than the distant island
- (B) Fewer species than the distant island
- (C) A higher rate of extinction than the distant island
- (D) A higher rate of immigration than the distant island

65. Ecologist interested in functional aspects of Ecosystem often use

- (A) Shannon Wiener index, Simpson index
- (B) Species evenness
- (C) Species richness
- (D) Cluster analysis

66. Which among the following is a buffer ?

- (A) Mixture of acid and base
- (B) Mixture of weak acid and strong base
- (C) Mixture of strong acid and weak base
- (D) A weak acid and its conjugate base

67. The functional genomics can be best studied with

- (A) PCR
- (B) DNA microchips
- (C) Dot blot
- (D) ELISA plate reader

68. What is the correlation coefficient value required for accepted positive correlation of calibration line ?

- (A) $R=1$
- (B) $R \geq 0.95$
- (C) $R=100$
- (D) $R=0.01$



69. A type I survivorship curve is characteristic of the species with a rapid increase in mortality in old age. This type curve is
- (A) typical of many invertebrates that produce a large number of offspring
 - (B) typical of humans and other large mammals
 - (C) almost never found in nature
 - (D) typical of all species
70. Sampling error in a small population leads to
- (A) Genetic load
 - (B) Genetic drift
 - (C) Heterosis
 - (D) Homeostasis
71. "Evolution by random walk" refers to
- (A) Any of the neutral mutations at random not retained in the gene pool or removed from the gene pool
 - (B) Any of the neutral mutations at random are retained in the gene pool or removed from the gene pool
 - (C) All the neutral mutations at random retained in the gene pool or removed from the gene pool
 - (D) None of the neutral mutations at random retained in the gene pool or removed from the gene pool
72. Which of the following repeated sequence includes an open reading frame for reverse transcriptase ?
- (A) LINE
 - (B) SINE
 - (C) Segmental duplication
 - (D) DNA transposon
73. Choose the labeling technique in which DNA polymerase I is used to replace some of the nucleotides of a DNA sequence with their labeled analogues to create a tagged DNA sequence.
- (A) End-labeling
 - (B) Random priming
 - (C) Nick translation
 - (D) Labeling by probe
74. How many genes are coded by the yeast genome ?
- (A) ~ 12000
 - (B) ~6000
 - (C) ~20000
 - (D) ~4000
75. Among the following which habitat is not covered in project tiger.
- (A) Sivalik-Terial Conservation Unit
 - (B) North East Conservation Unit
 - (C) Western Ghats Conservation Unit
 - (D) Eastern Ghats Conservation Unit



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

<p>Test Paper : II</p> <p>Test Subject : LIFE SCIENCES</p> <p>Test Subject Code : K-2817</p>	<p>Test Booklet Serial No. : _____</p> <p>OMR Sheet No. : _____</p> <p>Roll No. (Figures as per admission card)</p>
<p>Name & Signature of Invigilator/s</p> <p>Signature : _____</p> <p>Name : _____</p> <p>Paper : II</p> <p>Subject : LIFE SCIENCES</p> <p>Time : 1 Hour 15 Minutes Maximum Marks : 100</p>	
<p>Number of Pages in this Booklet : 8 Number of Questions in this Booklet : 50</p>	
<p style="text-align: center;">ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು</p> <ol style="list-style-type: none"> ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ. ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಐವತ್ತು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ. ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ. <ol style="list-style-type: none"> ಪ್ರಶ್ನೆ ಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಚ್ಚರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ. ಪುಸ್ತಕಿಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೂಡಲೇ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ. ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕವಾಗಿಸಬೇಕು. ಉದಾಹರಣೆ: A B C D (C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ರಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ಮತ್ತು ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ II ರಲ್ಲಿ ಇರುವ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು OMR ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದೆ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮಾಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ. ಎಲ್ಲಾ ಕೆರೆಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕಿಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ. ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು. ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು. ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್‌ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ. ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ. ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ. ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲಿಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳ ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲಿಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು. 	<p style="text-align: center;">Instructions for the Candidates</p> <ol style="list-style-type: none"> Write your roll number in the space provided on the top of this page. This paper consists of fifty multiple-choice type of questions. 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 : <ol style="list-style-type: none"> To have access to the Question Booklet, tear off the paper seal on the edge of the cover page. Do not accept a booklet without sticker seal or open booklet. 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. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item. Example : A B C D where (C) is the correct response. Your responses to the questions are to be indicated in the OMR Sheet kept inside the Paper I Booklet only. If you mark at any place other than in the circles in the OMR Sheet, it will not be evaluated. Read the instructions given in OMR carefully. Rough Work is to be done in the end of this booklet. If you write your name 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, you will render yourself liable to disqualification. You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall. You can take away question booklet and carbon copy of OMR Answer Sheet after the examination. Use only Blue/Black Ball point pen. Use of any calculator, Electronic gadgets or log table etc., is prohibited. There is no negative marks for incorrect answers. In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.
<p>K-2817 ಪು.ತಿ.ನೋ./P.T.O.</p>	

**LIFE SCIENCES**
Paper – II

Note : This paper contains **fifty (50)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. A process by which reproductive isolation occurs among groups of individuals within a continuous inbreeding population is called
(A) Sympatric speciation
(B) Allopatric speciation
(C) Parapatric speciation
(D) Quantum speciation
2. In which of the following techniques there is no electrophoretic step ?
(A) Dot Blot (B) Western Blot
(C) Northern Blot (D) Southern Blot
3. Bicoid mRNA is localised in the _____ region of Drosophila egg.
(A) Anterior (B) Posterior
(C) Dorsal (D) Ventral
4. Which of the following is an example of mobile genetic element in Humans ?
(A) P-element (B) IS-element
(C) LINES (D) ARS
5. The requirement of long day length or low temperature treatment for flowering can be substituted by
(A) Gibberellins (B) Coumarins
(C) 2, 4 – D (D) Morphactins
6. Why do fats give more energy than carbohydrates ?
(A) Fats have carboxyl group
(B) Fats are more reduced than carbohydrates
(C) Fats are larger than carbohydrates
(D) Fats have more number of bonds than carbohydrates
7. Choose the right arrangement in the increasing order of energy.
(A) erg < calorie < joule
(B) joule < calorie < erg
(C) erg < joule < calorie
(D) calorie < erg < joule
8. All are sequence alignment tools except
(A) Rasmol (B) BLAST
(C) FASTA (D) Clustal w
9. When you eat vegetables, you are a
(A) Tertiary consumer
(B) Secondary consumer
(C) Primary consumer
(D) Primary producer



10. Extraction of metals from ore bearing rocks is known as
- (A) Biofiltration
(B) Biotransformation
(C) Bioleaching
(D) Bioremediation
11. Membrane around the vacuole is
- (A) Tonoplast (B) Amyloplast
(C) Cytoplasm (D) Elipoplast
12. Passer domesticus (Linnaeus, 1758) where Linnaeus in parentheses indicates that
- a) Genus of the species has been changed
b) Linnaeus is the second authority
c) Linnaeus is the first authority
d) Linnaeus is not the authority
- (A) a) and b) (B) b) and c)
(C) c) and d) (D) a) and c)
13. Leghemoglobin in legume root nodules regulates
- (A) Oxygen supply
(B) Nodule growth
(C) Dinitrogenase activity
(D) Expression of 'nif' genes
14. Identify the correct statement with reference to "Apoptosis".
- (A) It does not lead to the elimination of cells
(B) Its a process of programmed cell death that occurs in multicellular organisms
(C) The process of apoptosis is not blocked in cancer cells
(D) It occurs only in animal cells
15. The set of hormones produced by the Pancreas is
- (A) Insulin and secretin
(B) Insulin and gastrin
(C) Insulin and glucagon
(D) Glucagon and cholecystokinin
16. Identify the correct statement with reference to "Commensalism".
- (A) Both organisms benefit from each other
(B) One is harmed and the other is unaffected
(C) One is benefited from the other without affecting it
(D) One is benefited while the other is harmed
17. Epinephrine is made from
- (A) Tryptophan (B) Threonine
(C) Tyrosine (D) Aspartic acid



18. Arrest of replication fork at 'Ter' site requires the action of
(A) RNA polymerase
(B) DNA polymerase
(C) Tus protein
(D) Ori "C" protein
19. Heterosis is
(A) Appearance of spontaneous mutations
(B) Induction of mutations
(C) Mixture of two or more traits
(D) Superiority of hybrids over their parents
20. The size of human mitochondrial DNA is
(A) 30 Kb (B) 10 Mb
(C) 16 Kb (D) 20 Kb
21. Which one of the following is dominated by evergreen trees ?
(A) Tropical rain forest
(B) Thundra
(C) Deciduous forest
(D) Shrub jungle
22. Which experiment proved that DNA strands are antiparallel ?
(A) Messelson and Stahl experiment
(B) Okazaki fragments
(C) Nearest neighbour base frequency analysis
(D) Hershey and Chase experiment
23. The sphere of relatively nondescript cells that result from a rapid series of mitotic divisions of the zygote is called a
(A) Determination (B) Gastrulation
(C) Blastula (D) Morphogenesis
24. Toll-like receptors are involved in
(A) Antigen processing of B-cells
(B) Maturation of B-cells
(C) Antigen processing by Dendritic cells
(D) Damage associated molecular pattern recognition
25. In Poisson's distribution
(A) Mean is greater than variance
(B) Mean is less than variance
(C) Mean is equal to variance
(D) Mean is greater than standard deviation
26. 'CITES' is
(A) Conservation of International Trade in Endangered Species of wildlife fauna and flora
(B) Convention on International Trade in Endangered Species of wildlife fauna and flora
(C) Conservation of Internal Trade in Ecology of fauna and flora
(D) Convention on International Trend in Endangered Species of fauna and flora



27. The alpha fetoprotein (AFP) test in pregnant women helps in detecting _____ in the child to be born.
(A) Spina bifida
(B) Polio attack
(C) Cholera attack
(D) Autism spectrum
28. A point mutation that results in premature termination of translation of the corresponding mRNA is called _____ mutation.
(A) Missense (B) Tautomeric shift
(C) Frame shift (D) Nonsense
29. Electrochemical biosensors are normally based on
(A) Radiowaves
(B) β Rays
(C) Transducers
(D) Enzymatic analysis
30. Which respiratory pigment is blue when bound to oxygen and colourless without oxygen ?
(A) Hemerythrin (B) Hemocyanin
(C) Hemoglobin (D) Chlorocruorin
31. Which of the following is a product of Aldolase reaction ?
(A) 3-Phosphoglycerate
(B) 2-Phosphoglycerate
(C) Glyceraldehyde 3-phosphate
(D) Glyceraldehyde 2-phosphate
32. Which of the following enzymes will carry out "Abortive cycling" ?
(A) Ribozyme
(B) RNA polymerase II
(C) DNA polymerase III
(D) Topoisomerase I
33. Mosquitoes belonging to the order
(A) Lepidoptera
(B) Coleoptera
(C) Diptera
(D) Hymenoptera
34. Identify the Factor III involved in hemostasis.
(A) Proaccelerin
(B) Prothrombin
(C) Fibrinogen
(D) Tissue thromboplastin
35. _____ is a method of genetic analysis that can be used to estimate evolutionary rates and time scales using data from DNA or proteins.
(A) RAPD
(B) SSLP
(C) SNP
(D) Molecular clock



36. Which of the following statements are true for Insulin Receptor ?

- i) They are G-protein coupled receptors
- ii) They share many features with IGF – 1 receptor
- iii) Insulin receptor has Tyr-kinase domain in its β chain
- iv) They exist as dimers

(A) i, ii and iii

(B) ii, iii and iv

(C) i and ii

(D) iii and iv

37. The total biomass of a micro-organism will be determined by the nutrient that is present at lowest concentration relative to the organism's requirement. This is governed by

(A) Liebig's law

(B) Shelford's law of tolerance

(C) The second law of thermodynamics

(D) Heisenberg's principle of uncertainty

38. Gamma diversity represents

(A) Diversity of a site

(B) Diversity among sites

(C) Diversity of the entire landscape

(D) Diversity between sites

39. The most abundant enzyme on the earth is

(A) PEP carboxylase

(B) Nitrogenase

(C) Rubisco

(D) Nitrite reductase

40. Which is the most prevalent neurotransmitter of the human brain ?

(A) Serotonin

(B) Glutamate

(C) γ -aminobutyric Acid

(D) Dopamine

41. K_M is defined as

(A) Substrate concentration at half maximal velocity

(B) Half substrate concentration at maximal velocity

(C) Half maximal substrate concentration

(D) Half maximal velocity

42. According to biological species concept, Horse and Donkey are not considered in the same species because

(A) They are unable to mate

(B) They do not produce fertile offspring

(C) They look different

(D) They live in different habitats



43. The compound which is not a member of the electron transport chain is
(A) NAD (B) Cytochrome C
(C) Ubiquinone (D) Carnitine
44. Which nucleus is used in the determination of Magnetic Resonance Imaging ?
(A) ^1H of water
(B) ^{13}C of protein
(C) ^{31}P of phosphate
(D) ^{19}F of probe molecule
45. When a bacteriophage genome has integrated into the host bacterium DNA, it is called
(A) Prophage
(B) Lambda phage
(C) Temperate phage
(D) Helper phage
46. Pronuclear injection is a technique which involves
(A) Injection of DNA fragments into the pronuclei of the newly fertilised egg
(B) Transfer of DNA fragment into maternal and paternal pronuclei
(C) Transfer of embryonic stem cell nucleus into an enucleated egg
(D) Injection of RNA fragments into pronuclei of the newly fertilized egg
47. The exogenous agents which causes abnormalities are called
(A) Toxicants
(B) Teratogens
(C) Mitogens
(D) Antigens
48. Taenia solium is a parasite of
(A) Man
(B) Frog
(C) Fish
(D) Snake
49. Identify the correct statement with reference to "Homologous recombination".
(A) Nucleotide sequences are exchanged between two similar or identical molecules of DNA
(B) It is not used by cells to repair harmful breaks that occur on both strands of DNA
(C) It is not seen in Eukaryotes
(D) It is not useful in Genetic Engineering
50. Which region of the brain mainly involved in learning of spatial memory ?
(A) Cerebellum
(B) Cerebral cortex
(C) Hypothalamus
(D) Hippocampus



Total Number of Pages : 8

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Test Paper : III
Test Subject : LIFE SCIENCES
Test Subject Code : K-2817

Test Booklet Serial No. : _____
OMR Sheet No. : _____
Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature : _____
Name : _____

Paper : III
Subject : LIFE SCIENCES

Time : 2 Hours 30 Minutes

Maximum Marks : 150

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 75

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಒಂದು ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲನೆಯ ಮುಖದಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
(i) ಪ್ರಶ್ನೆ ಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶವಾಗುವ ಪದ್ಧತಿಯು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲ್ಭಾಗದ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಪಿಕ್ಟರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
(ii) ಪುಸ್ತಕದಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೊಡಲೇ ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ ಸಂವಿಧಾನದಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.
ಉದಾಹರಣೆ: (A) (B) (C) (D)
(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆಗಳ ಉತ್ತರಗಳನ್ನು, ಪತ್ರಿಕೆ III ಪುಸ್ತಕವೊಳಗೆ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕವು ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದ ನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವಿಧಾನದಿಂದ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲಿಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲಿಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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 the cover page. Do not accept a booklet without sticker seal or 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.
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
Example : (A) (B) (C) (D)
where (C) is the correct response.
- Your responses to the question of Paper III are to be indicated in the OMR Sheet kept inside the Booklet. If you mark at any place other than in the circles in OMR Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator, Electronic gadgets or log table etc., is prohibited.
- There is no negative marks for incorrect answers.
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.



LIFE SCIENCES

PAPER – III

Note : This paper contains **seventy-five (75)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. Transgenic animals are those wherein
 - (A) Foreign genes in some cells
 - (B) Foreign genes in all cells
 - (C) Foreign genes in single cell expressing proteins
 - (D) Foreign gene in a group of cells expressing a single protein
2. Vinblastin and Vincristine are used as anticancer drugs. They act as inhibitors of
 - (A) RNA biosynthesis
 - (B) DNA replication
 - (C) Telomerase
 - (D) Microtubules
3. Arrest of replication fork at Ter site requires action of
 - (A) RNA polymerase
 - (B) DNA polymerase
 - (C) Tus protein
 - (D) Ori "c" protein
4. Which of the following denaturing reagent is used in Sanger's method of DNA sequencing ?
 - (A) 8 M Urea
 - (B) 2 N NaOH
 - (C) 5% SDS
 - (D) 2 M Guonadine hydrochloride
5. Apo B100 is a 4536 amino acid protein and Apo B48 is a 2152 amino acid protein made from the same gene. This is made possible by
 - (A) Nonsense mutation of the gene of Apo B100 resulting in Apo B48
 - (B) Modifying the gene of Apo B100 in the intestine to give Apo B48
 - (C) RNA editing of the transcript from c→u resulting in a stop codon at codon 2153
 - (D) Two separate copies of the genes for Apo B100 and Apo B48 by gene duplication



6. Nothing in biology makes sense except in the light of evolution framed by
(A) Charles Darwin
(B) Thomas H. Morgan
(C) Theodosius Dobzhansky
(D) Sewall Wright
7. Protostele occurs in
(A) Bryophytes (B) Pteridophytes
(C) Gymnosperms (D) Angiosperms
8. The phenomenon in which genes on the same chromosome are separated from each other during Meiosis and new combination of genes are formed is known as
(A) Non disjunction
(B) Phenocopy
(C) Linkage
(D) Recombination
9. Selection that favors an extreme phenotype, thus shifting the population mean in one or the other direction is called _____ selection.
(A) Stabilizing selection
(B) Balancing selection
(C) Disruptive selection
(D) Directional selection
10. In gene expression, the least accurate step is protein synthesis. How does the cell minimize errors in this process ?
i) Ribosomes carry out proof reading
ii) Amino acyl tRNA synthetase ensures correct addition of tRNA and amino acid
iii) If a wrong amino acid is inserted, the protein synthesis is aborted
iv) Speed of synthesis is reduced to minimize errors
(A) ii) and iii)
(B) ii) and iv)
(C) i) and iii)
(D) i), ii) and iii)
11. Inheritance of acquired characters and struggle for existence are proposed by _____ and _____ respectively.
(A) Darwin and Lamarck
(B) Lamarck and Darwin
(C) Lamarck and Morgan
(D) Darwin and Morgan



12. Identify the correct statement with regard to the Embryonic Stem cells (ES).

- (A) They are not derived from inner cell mass of Blastocyst
- (B) Cannot proliferate into different cell types
- (C) They can generate primitive ectoderm
- (D) They are not pluripotent cells

13. If a mother with blood group B has a child with blood group O. What would be the genotype of the father ?

- 1) $I^A I^B$ [Father] and $I^A I^O$ (Mother)
 - 2) $I^A I^B$ [Father] and $I^B I^O$ (Mother)
 - 3) $I^A I^O$ [Father] and $I^B I^O$ (Mother)
 - 4) $I^B I^O$ [Father] and $I^B I^O$ (Mother)
- (A) 1 and 2
- (B) 3 and 4
- (C) 2 and 4
- (D) 1 and 3

14. In a biolistic application, DNA was coated on a gold nanoparticle and shot into a cell. If the particle ends up in the matrix of the mitochondria. How many membranes did it pass through ?

- (A) 2
- (B) 3
- (C) 4
- (D) 6

15. The sequence alignment tool provided by NCBI is

- (A) Chime
- (B) BLAST
- (C) Rasmol
- (D) Clustal W

16. The microbial process in which the soil contaminates are removed is termed as

- (A) Decomposition
- (B) Biodegradation
- (C) Bioremediation
- (D) Biomagnification

17. Which of the following is a State bird of Karnataka ?

- (A) House Sparrow
- (B) Peacock
- (C) Indian Roller
- (D) Parakeet



18. The hormone responsible for moulting in insects is

- (A) Brain hormone
- (B) Diapause hormone
- (C) Ecdysone
- (D) Juvenile hormone

19. Which of the following reactions takes place in the $3' \rightarrow 5'$ direction ?

- (A) mRNA synthesis
- (B) DNA replication
- (C) RNA editing
- (D) All the above processes

20. Which of the following is accompanied by redness, swelling, heat and pain ?

- (A) B cell mediated immune response
- (B) Humoral immune response
- (C) Complement cascade
- (D) Inflammation

21. Which of the following statements are True with reference to Hemoglobin ?

- i) One hemoglobin molecule can bind to four molecules of oxygen
- ii) Carbon monoxide has a higher affinity to hemoglobin than oxygen
- iii) Binding of oxygen to hemoglobin shows hyperbolic kinetics
- iv) Myoglobin is a better oxygen carrier than hemoglobin

(A) i) and ii)

(B) iii) and iv)

(C) i) and iii)

(D) ii) and iv)

22. Most abundant immunoglobulin of the serum is

- (A) IgM
- (B) IgG
- (C) IgD
- (D) IgE



23. Atrial Natriuretic Factor (ANF) is a hormone produced by
(A) Heart
(B) Kidney
(C) Spleen
(D) Liver
24. ECORI cuts the sequence GAATTC. Assuming random sequence of DNA, what will be the size of the fragments generated ?
(A) 1096
(B) 2048
(C) 4096
(D) 6048
25. E.coli cells were grown for several generation on ^{14}N enriched media. The cells were then transformed to ^{15}N enriched media and allowed to grow exactly for two generations. What will be the ratio of heavy and light DNA strands ?
(A) L : H = 1 : 1
(B) L : H = 1 : 2
(C) L : H = 1 : 3
(D) L : H = 1 : 4
26. The pKa of acetic acid is 4.76. If a buffer is prepared using acetic acid sodium acetate, and the pH of the solution is 5.76, what will be the ratio of acetic acid concentration to sodium acetate concentration ?
(A) 1 : 1
(B) 1 : 10
(C) 10 : 1
(D) 1 : 100
27. Acrosome present on sperm head is derived from
(A) Golgi
(B) Nucleus
(C) Endoplasmic reticulum
(D) Mitochondria
28. Domesticated plants that have escaped and maintained themselves in wild without human intervention are known as
(A) Rare plants
(B) Rage plants
(C) Wild plants
(D) Feral plants



29. Which of the following statements are True about GPI anchored proteins ?

- i) Amino terminal end of the GPI anchored protein binds to Mannose
- ii) The core tetrasaccharide of the GPI anchor is attached to inositol of phosphatidyl inositol
- iii) GPI anchored proteins have phosphatidyl ethanolamine attached to the protein
- iv) GPI anchored proteins will always appear on the inner bilayer of the plasma membrane

(A) i), ii) and iii)

(B) ii) and iii)

(C) i), iii) and iv)

(D) ii), iii) and iv)

30. Species where males being homogametic is observed in

(A) Moths

(B) Bees

(C) Bugs

(D) Flies

31. In the Marker Assisted Selection (MAS), the most critical aspect for consideration is

(A) Their inherent repeatability

(B) Direct selection

(C) Linkage with economically important traits

(D) Linkage with nucleosomes

32. A person with phenylketonuria cannot convert

(A) Phenyl alanine to tyrosine

(B) Phenyl alanine to isoleucine

(C) Phenol into ketones

(D) Phenyl alanine to lysine

33. Which of the following is not a Indian mammal ?

(A) Rhinoceros

(B) Panda

(C) Squirrel

(D) Panther

34. Alpha diversity refers to

(A) Species diversity

(B) Genetic diversity

(C) Community and ecosystem diversity

(D) Plant diversity



35. The Indian roller bird Coracias benghalensis has been chosen as the State bird by

- (A) West Bengal and Jammu and Kashmir
- (B) Karnataka and Odisha
- (C) Himachal Pradesh and Kerala
- (D) Sikkim and Nagaland

36. Which of the following are the essential requirements for Mitchell's chemiosmotic hypothesis to work ?

- i) The inner mitochondrial membrane should be intact
- ii) There should be a proton gradient between inside and outside the mitochondrial membrane
- iii) The inner mitochondrial membrane can be permeable to OH^- , Cl^- , K^+ and Na^+ ions
- iv) The pH outside the inner mitochondrial membrane will be the same as that on the inside.

- (A) i), ii) and iii)
- (B) i), iii) and iv)
- (C) i) and ii)
- (D) iii) and iv)

37. Inversions in a chromosome leads to

- (A) Aneuploidy
- (B) Endoduplication
- (C) Formation of Isochromosomes
- (D) Cross over suppressor

38. The coding strand of DNA has the following sequence

5' – ATGCAATTGCCT.....3'.

What will be the sequence of the mRNA

- (A) 5' – UAC GUU AAC GGU ... 3'
- (B) 5' – AGG CAA UUG CAU ... 3'
- (C) 5' – TAC GTT AAC GGA ... 3'
- (D) 5' – AUG CAA UUG CCU ...3'

39. A population of 1000 individuals are in Hardy-Weinberg genetic equilibrium. If the frequency of one allele is 0.2. What will be the number of Heterozygous individuals ?

- (A) 200
- (B) 320
- (C) 400
- (D) 640



40. Which of the following are endemic species of India ?
- Asiatic lion
 - Sangai deer
 - Lion Tailed Macaque
 - Polar bear
- (A) a, b and c
(B) a, b and d
(C) b, c and d
(D) a, c and d
41. The characteristic pigment of phaeophycean algae is
- (A) Phycocyanin
(B) Fucoxanthin
(C) Phycoerythrin
(D) Haematochrome
42. Photosystem I (PS I) is a fast photosystem whereas photosystem II (PS II) is a slow photosystem. How does the cell ensure continuous flow of electrons through the photosystems ?
- (A) Electron transfer does not take place continuously
(B) Grana containing PS II are stacked ensuring more number of PS II to provide electrons to PS I
(C) Electrons are given to PS I from splitting water
(D) PS I is made to function at a slower rate
43. Wings of Drosophila are attached to _____ segment.
- (A) Prothorax
(B) Mesothorax
(C) Metathorax
(D) Abdomen
44. Sequencing of genomic DNA is studied under
- (A) Structural genomics
(B) Proteomics
(C) Gene library
(D) Functional genomics
45. Transducin regulates
- (A) cGMP phosphodiesterase
(B) Adenyl cyclase
(C) Phospholipase C
(D) Phosphatidyl inositol 3-kinase
46. Biomass pyramid is inverted in which ecosystem ?
- (A) Grassland
(B) Desert
(C) Forest
(D) Pond



47. The correct sequence of photo-induced electron transfer between PS I and PS II in photosynthesis is
- (A) Plastoquinone – Plastocyanin – Cytochrome b6 – Cytochrome f
 - (B) Plastocyanin – Plastoquinone – Cytochrome b6 – Cytochrome f
 - (C) Cytochrome b6 – Cytochrome f – Plastoquinone – Plastocyanin
 - (D) Cytochrome b6 – Cytochrome f – Plastocyanin – Plastoquinone
48. Homologous recombination takes place in _____ chromosomes.
- (A) Bivalent
 - (B) Univalent
 - (C) Polyvalent
 - (D) Monovalent
49. “Simpson index” is used to measure
- (A) Population dynamics of species
 - (B) Diversity of species
 - (C) Richness of species
 - (D) Abundance of species
50. Flowers that will never open are called
- (A) Chasmogamous flowers
 - (B) Homogamous flowers
 - (C) Cleistogamous flowers
 - (D) Allogamous flowers
51. In crassulacean acid metabolism, the plant get carbon dioxide for photosynthesis during day time from
- (A) Malic acid
 - (B) Oxaloacetic acid
 - (C) Oxalic acid
 - (D) Pyruvic acid
52. GFP is used as a _____ protein in Drosophila.
- (A) Reporter
 - (B) Inhibitor
 - (C) Activator
 - (D) Enhancer
53. Cytotoxic T-cells kill their target cells by releasing to the target cells
- (A) Interleukens
 - (B) $\text{TNF } \alpha$
 - (C) Perforin
 - (D) Chymotrypsin



54. Shine-Dalgarno sequence is

- (A) 5' – AGG AG GU – 3'
- (B) 5' – ACC AU GG – 3'
- (C) 5' – AAA GG CC – 3'
- (D) 5' – GGA AC CA – 3'

55. Identify the correct eukaryotic cell cycle.

- (A) G_1 to S to G_2 to M to cytokinesis
- (B) G_1 to G_2 to M to G_1 to cytokinesis
- (C) G_2 to M to S to G_1 to cytokinesis
- (D) G_1 to G_2 to S to M to karyokinesis

56. Which of the following is a disease of mitochondrial inheritance ?

- (A) Muscular dystrophy
- (B) Cystic fibrosis
- (C) Hemophilia
- (D) LHON

57. Somatic hybridization is achieved through

- (A) Recombinant DNA technology
- (B) Protoplast fusion
- (C) Conjugation
- (D) Grafting

58. The process in which undifferentiated cells are assigned developmental fates is called

- (A) Blastula
- (B) Gastrula
- (C) Determination
- (D) Morphogenesis

59. Cholera toxin stimulates α_s of heterotrimeric G-protein in the intestine by

- (A) Phosphorylation
- (B) ADP-ribosylation
- (C) Glycosylation
- (D) Prenylation

60. Lipid rafts and caveolae are examples of

- (A) Synthetic membrane
- (B) Membrane microdomain
- (C) Lipid vesicles
- (D) Sub cellular membrane

61. Which of the following statements is true about microRNA ?

- i) They are approximately 22 nt long
 - ii) They are double stranded
 - iii) Enzyme involved in its production is Drosha
 - iv) When bound to RNA they always cause cleavage of RNA
- (A) i) and ii)
 - (B) i) and iii)
 - (C) ii) and iv)
 - (D) iii) and iv)



62. "Bicoid" mRNA is localised in the _____ region of Drosophila egg.
- (A) Anterior
- (B) Posterior
- (C) Dorsal
- (D) Ventral
63. A gene is cloned in a plasmid vector between two restriction sites, ECOR I and BamH I. If the gene containing plasmid is subjected to double digestion, how many fragments of DNA will be obtained ?
- (A) 2
- (B) 3
- (C) 4
- (D) None
64. In some species, one female will reproduce in a group where the other females have stopped reproduction to assist the reproductive female. This is an example of
- (A) Reciprocal altruism
- (B) Sexual selection
- (C) Kin selection
- (D) Group selection
65. The copper containing protein that links electron transfer between PS II and PS I is
- (A) Plastoquinone
- (B) Cytochrome a₃
- (C) Cytochrome b
- (D) Plastocyanin
66. The enzyme 'Carbonic anhydrase' is related to
- (A) Ornithine cycle
- (B) Krebs's cycle
- (C) Bohr effect
- (D) HMP-shunt
67. Of all the taxa the only one that exists as a biological unit in nature is
- (A) Family
- (B) Kingdom
- (C) Species
- (D) Genus



68. Which one is not included in Nilgiri

Biosphere Reserve ?

(A) Mudumalai and Mukurthi

(B) Bannerghatta National Park

(C) Wayanad

(D) Bandipur National Park

69. Hamilton's rule is

(A) $b + c = 1$

(B) $b/c > 1/r$

(C) $b - c > 1/r$

(D) $b/c < 0$

70. The correlation coefficient 'r' ranges from

(A) -1 to $+10$

(B) -1 to $+1$

(C) 0 to $+1$

(D) $-\infty$ to $+\infty$

71. The fatty acid desaturases among plants and animals differ in one important mechanism.

(A) Plants desaturate fatty acids towards the carboxyl end whereas animals desaturate towards the ω -end.

(B) Plants desaturate fatty acids towards the ω -end whereas animals desaturate towards the carboxyl end

(C) Plants desaturate fatty acids in the middle of the chain whereas animals desaturate at the ω -and carboxyl ends

(D) Plants desaturate fatty acids at the ω -and carboxyl end whereas animals desaturate in the middle of the chain

72. In Kingfisher birds, father often retains his son to help the father to produce more young ones, while the father has an advantage in being able to reproduce more offspring. What is the advantage to the son ?

(A) Son is obliged to the father and hence he helps

(B) Son not sure of raising a family

(C) This is an innate behaviour

(D) Sibling or offspring have the same genetic relatedness and hence they are of equal advantage



73. The total number of species in an area indicates

- (A) Species abundance
- (B) Species evenness
- (C) Species richness
- (D) Species diversity

74. Two parents are heterozygous to two genes A and B (AaBb). When they are crossed, what is the probability that among the offspring an individual will show both dominant traits (A – B –)

- (A) 1/16
- (B) 3/16
- (C) 9/16
- (D) 15/16

75. Nitrate reductase contains

- (A) Zinc
- (B) Molybdenum
- (C) Iron
- (D) Copper



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

Test Paper : II

Test Subject : LIFE SCIENCES

Test Subject Code : K-2818

Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

OMR Sheet No. : _____

TEST BOOKLET SERIAL NO.

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Time : 2 Hours

Maximum Marks : 200

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 100

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಸೂರು (100) ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆ ಪುಸ್ತಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಿಕೆಯನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
 - ಪ್ರಶ್ನೆಪುಸ್ತಿಕೆಗೆ ಪ್ರವೇಶಾಪಕಾರ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಕ್ಟ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
 - ಪುಸ್ತಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ಪರಿಶೀಲಿಸಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಿಕೆಯನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.

ಉದಾಹರಣೆ : (A) (B) (C) (D)

(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯು ಜೊತೆಯಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಿಲ್ಲದ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮಾಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMRನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಯಾವ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of Hundred multiple-choice type of questions.
- 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 :
 - To have access to the Question Booklet, tear off the paper seal on the edge of the cover page. Do not accept a booklet without sticker seal or open booklet.
 - 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.
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.

Example : (A) (B) (C) (D)

where (C) is the correct response.
- Your responses to the questions are to be indicated in the OMR Sheet kept inside this Booklet. If you mark at any place other than in the circles in the OMR Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator, electronic gadgets or log table etc., is prohibited.
- There is no negative marks for incorrect answers.
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.

**LIFE SCIENCES**
Paper – II

Note : This paper contains **Hundred (100)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. An open reading frame contains 333 nucleotides. The number of amino acids in the protein synthesized from this ORF will be
(A) 111 (B) 110
(C) 109 (D) 333
2. Plant movement that takes place in response to touch stimulus is called as
(A) Thigmotrophic movement
(B) Chemotrophic movement
(C) Hydrotrophic movement
(D) Osmotrophic movement
3. Color blindness is an X-linked recessive disorder. If a child is born to a normal father and carrier mother, what will be the probability that the child is color blind ?
(A) 3/4 (B) 2/4
(C) 1/4 (D) 4/4
4. Which techniques are used to study the transcription process in the cell ?
(A) Northern and Western blot analysis
(B) PCR and Restriction digestion
(C) Northern blot and *In-situ* hybridization
(D) Southern blot and ELISA
5. Radioactive Sulphur (S^{35}) was used to label the T_4 phage coat protein. When the phage was infected to equalize cells and the cells were precipitated by centrifugation. S^{35} labelled protein was found with
(A) Cell precipitate
(B) Cell supernatant
(C) Cell lysate
(D) *E.coli* proteins
6. Metagenomics deals with
(A) Isolation of soil bacteria
(B) Study of gene expression during metabolism
(C) Gene expression
(D) Culture independent analysis of biodiversity
7. Bats belong to which phylum ?
(A) Reptilia (B) Amphibia
(C) Aves (D) Mammalia
8. Which element is replaced by Strontium 90 in bones ?
(A) Potassium
(B) Sodium
(C) Calcium
(D) Selenium



9. Ergosterol is specific to
(A) Plants
(B) Animals
(C) Bacteria
(D) Filamentous fungi
10. Identify the right sequence of Ig gene segment joining that results in the production of functional heavy chain of immunoglobulin.
(A) VJC (B) CVJ
(C) CDJV (D) VDJC
11. Almost all major animal body plans seen today are found in which of the earliest fossils ?
(A) Cambrian
(B) Carboniferous
(C) Cretaceous
(D) Jurassic
12. Trisomy of chromosome 18 in human results in
(A) Down's syndrome
(B) Burkitt's lymphoma
(C) Spontaneous abortion
(D) Edward's syndrome
13. During abiotic stress, plants accumulate
(A) Acetyl salicylate
(B) Proline
(C) Oxalate
(D) Malate
14. Which of the following is NOT a living fossil ?
(A) Coelacanth
(B) Horseshoe crab
(C) Crocodile
(D) Archeopterix
15. Digger wasp will immobilize a prey, drag it to the hole in the ground, enter the hole, inspect it, place the prey in the hole and lay an egg on the prey and close the hole. If during this cycle of events, any one of the actions get interrupted, it will go through the entire sequence once again. This is an example of
(A) Innate behaviour
(B) Imprinting
(C) Learnt behaviour
(D) Trial and error behaviour
16. During bacterial conjugation, the directional transfer of DNA from donor to recipient occurs when
(A) Both conjugating cells are F^+ and F^-
(B) F factor is integrated into donor chromosome
(C) Both conjugating cells are F^- and F^-
(D) The conjugating cells are under nutritional stress



17. Flow cytometry is generally used
- (A) To study localization of protein in the cell
 - (B) To study biomolecular interactions
 - (C) For identification of cell organelles
 - (D) For identification of cell types
18. Which one of these animal groups have the following characteristics ?
- i. A body with trunk and tail and
 - ii. Notochord extending from rostrum to tail
- Choose the right phylum with above characteristics :
- (A) Cephalochordata
 - (B) Hemichordata
 - (C) Echinodermata
 - (D) Urochordata
19. Which one of the following cells do NOT contain nuclei ?
- (A) Liver cells
 - (B) Platelet cells
 - (C) Sperm cells
 - (D) Ovarian cells
20. Naturally occurring phosphoprotein is
- (A) Serum albumin
 - (B) Lacto globulin
 - (C) Casein
 - (D) Hemoglobin
21. Which of the following is NOT a component of MAP kinase pathway ?
- (A) MAPKKK
 - (B) ERK
 - (C) MEK
 - (D) JNK
22. Transducin is a G-protein involved in which of the following biological processes ?
- (A) Olfaction
 - (B) Taste
 - (C) Vision
 - (D) Touch
23. In which of the following model organism gene mapping can be made by tetrad analysis ?
- (A) *Arabidopsis thaliana*
 - (B) *Escherichia coli*
 - (C) *Caenorabditis elegans*
 - (D) *Neurospora crassa*
24. Ions can move from one cell to another directly passing through
- (A) Desmosomes
 - (B) Gap junctions
 - (C) Phagosomes
 - (D) Intermediate filaments
25. Which one of the following is an example for genomic variation ?
- (A) Copy number variation
 - (B) RAPD
 - (C) Restriction mapping
 - (D) Fluorescence *in-situ* hybridization
26. Animal cell culture is quite popular in producing
- (A) Lipids
 - (B) Enzymes
 - (C) Amino acids
 - (D) Vaccines



27. Beadle and Tatum showed that each kind of mutant bread mold lacked a specific enzyme. These experiments demonstrated that
- (A) Genes carry information for making proteins
 - (B) Mutations are changes in genetic information
 - (C) Genes are made of DNA
 - (D) Enzymes are required to repair damaged DNA information
28. If bacteria doubles in 5 minutes, what would be the number of bacteria at the end of 25 minutes, if you start with 50 bacteria ?
- (A) 250
 - (B) 2500
 - (C) 800
 - (D) 1600
29. During which stage of development, an embryo becomes triptoblastic ?
- (A) Organogenesis
 - (B) Fertilization
 - (C) Gastrulation
 - (D) Blastulation
30. Ecological footprint of a land is an estimation of
- (A) Carrying capacity of a land
 - (B) Available ecological capacity of a land
 - (C) Area of land per capita to meet actual demand on resources
 - (D) The relationship between the size of population and resources
31. Unlimited population growth is often prevented when death rates increase as population density increases, it is an example of
- (A) Negative feedback
 - (B) Allelic effect
 - (C) r-selection
 - (D) Positive feedback
32. Which one of the following bacteria perform mixed acid fermentation ?
- (A) *Staphylococcus aureus*
 - (B) *Clostridium perfringens*
 - (C) *Escherichia coli*
 - (D) *Streptococcus faecalis*
33. Hydroxy lysine and hydroxy proline in collagen are
- (A) The results of post translational modification of lysine and proline
 - (B) Added during translation in certain eukaryotes
 - (C) Added during translation in certain archaeobacteria
 - (D) Coded in the genome
34. A substance that mimics the cellular effects of a natural compound is known as
- (A) Antagonist
 - (B) Agonist
 - (C) Activator
 - (D) Promoter



35. Lichens are combinations of
(A) Algae and Fungi
(B) Algae and Bacteria
(C) Algae and Protozoa
(D) Algae and Cyanobacteria
36. What would be the most likely confirmation of the following peptide ?
Gly-Leu-Pro-Met-Asp-Phe-Pro-Lys-Ala
(A) Alpha helix (B) Beta Sheet
(C) 3_{10} helix (D) Random coil
37. Obligate anaerobes means
(A) Use oxygen as final electron acceptor
(B) Do not use oxygen as final electron acceptor
(C) Tolerate presence of oxygen
(D) Grow under anaerobic and aerobic conditions
38. The plant viruses that multiply within their insect vector are called
(A) Persistent (B) Non-persistent
(C) Propogative (D) Circulative
39. Neuron response after an immediate shock is an example of
(A) Paracrine signaling
(B) Endocrine signaling
(C) Synaptic signaling
(D) Direct touch signaling
40. Which of the following functions is NOT concerned with chorio-allantosis of mammals ?
(A) Excretion
(B) Respiration
(C) Nutrition
(D) Locomotion
41. Late blight of potato is caused by
(A) *Phytophthora infestans*
(B) *Endothia parasitica*
(C) *Puccinia graminis*
(D) *Ustilago maydis*
42. What would be the phenotype of *Drosophila*, when the X chromosomal : Autosomal set ratio (X : A ratio) is 0.67 ?
(A) Male
(B) Intersex
(C) Metamale
(D) Metafemale
43. The classical four wings mutant fly *Drosophila melanogaster* resulted from
(A) Over expression of ultrabithorax protein
(B) Homozygous for three mutant alleles of the ultrabithorax gene
(C) Loss of abdominal A gene products
(D) Over expression of abdominal A gene products



44. Kohler and Milstein are associated with one of the following technique
(A) Southern Blotting
(B) Chromatography
(C) Electrophoresis
(D) Hybridoma
45. High yielding and photosynthetically efficient plants are usually
(A) Diploids (B) Polyploids
(C) Haploids (D) Aneuploids
46. Which of the following method can be used to enumerate the deer population in a forest ?
(A) Capture-recapture
(B) Line transect
(C) Collar banding
(D) Pit-trap
47. Yeast is an
(A) Anaerobe
(B) Aerobe
(C) Anaerobe and aerobe
(D) Chemotroph
48. Frankenstein foods are the products
(A) From GMOs
(B) Enriched in quality proteins and fats
(C) Enriched in essential mineral nutrients and fats
(D) Enriched in carbohydrate contents
49. A dense bacterial population caught in a tangled web of fibers sticking to a surface describes
(A) Biofilm
(B) Coagulation
(C) Biodisc
(D) Membrane filter
50. Which of the following processes occur exclusively in the cytosol of an eukaryotic cell ?
(A) Glycolysis and TCA cycle
(B) Glycolysis and fatty acid biosynthesis
(C) Fatty acid biosynthesis and beta oxidation
(D) TCA cycle and beta oxidation
51. Bohr effect is
(A) Effect of pH on oxygen binding to hemoglobin
(B) Effect of pH on substrate binding to the enzyme
(C) Effect of competition between substrate and inhibitor binding to enzymes
(D) Effect of temperature on the substrate binding to enzyme
52. Sarcolemma is plasma membrane of
(A) Stem cells
(B) Sarcoma cells
(C) Muscle fiber cells
(D) All types of cancer of cells



53. Cancer arising from epithelial cells is called
(A) Sarcoma
(B) Leukemia
(C) Adenoma
(D) Carcinoma
54. Historically which was the first genetically modified plant for antibiotic resistance and was produced in 1982 ?
(A) Potato
(B) Corn
(C) Tobacco
(D) Soybean
55. A gene was cloned in tet^R locus of pBR322 plasmid. The plasmid was then introduced to *E.coli* and grown. Which of the following statements are TRUE ?
i. *E.coli* will grow in medium containing ampicillin but not tetracycline.
ii. *E.coli* will grow in a medium containing tetracycline but not ampicillin.
iii. The colonies that grow on tetracycline containing medium have the inserted genes.
iv. The colonies that grow in ampicillin but not on tetracycline have the inserted gene.
(A) i and iii are true
(B) ii and iii are true
(C) i and iv are true
(D) ii and iv are true
56. 15 microgram of amylase (mol. wt. 150 kDa) acts on starch to produce maltose. If at maximal velocity, the enzyme released 6.84 mg of maltose (mol. wt. 342) per min, what is the turnover number ?
(A) 2×10^5 per min
(B) 2×10^4 per min
(C) 0.2×10^3 per min
(D) 2×10^6 per min
57. Ground feeding squirrels have one squirrel to stand as a sentinel (guard) to give alarm call if any predator is sighted. This action would put the life of the sentinel at risk. Yet the squirrels do it. This is explained on the basis of
(A) Altruistic behavior
(B) Reciprocal altruism
(C) Group selection
(D) Kin selection
58. Pollinating insects and flowering plants depend on each other. The evolution of these two is explained on the basis of
(A) Survival of the fittest
(B) Neutral evolution
(C) Adaptive radiation
(D) Co-evolution



59. In the DNA replication experiments by Okazaki, although he interpreted its results to support semi discontinuous synthesis of DNA, there were objections to this interpretation. Which of the objections was valid requiring further experimentation ?
- (A) Both strands are made in short pieces
 - (B) Both are made in long pieces, but while isolating some break into short pieces
 - (C) After first strand is completely made, the second strand is started. Hence the small pieces
 - (D) Uridine is incorporated in place of thymidine. Removal of uridine leads to strand breaks
60. Which one of the following statements is INCORRECT to define "Mutation" ?
- (A) A mutation may or may not produce discernible phenotype
 - (B) A mutation can induce damaging effects on normal gene sequence
 - (C) Mutations are important players during evolution
 - (D) Chemical mutagenesis can be used to produce transgenic animals
61. The Maturation Promoting Factor (MPF) of cell cycle is
- (A) A defective protein
 - (B) An energy yielding molecule
 - (C) Cyclin dependent kinase complex
 - (D) A protein that arrests cell division
62. Which of the following phylum has metameric segmentation ?
- (A) Platyhelminthes
 - (B) Nematode
 - (C) Annelida
 - (D) Mollusca
63. Which of the following transgenic animal was first developed for producing alpha 1 antitrypsin (AAT) in the milk ?
- (A) Goat
 - (B) Sheep
 - (C) Cow
 - (D) Buffalo
64. Which of the following compounds form chitin, the exoskeleton of insects ?
- (A) Polypeptide chain rich in sulphur
 - (B) Nitrogen containing polysaccharide
 - (C) Polypeptide chain with mineral salts
 - (D) Lipids with calcium salts
65. RNA editing is post transcriptional modification that includes addition, deletion or replacement of nucleotides in the mature RNA. Which of the following molecules play a role in mediating this process ?
- (A) Small interfering RNA
 - (B) Nucleolar RNA
 - (C) Messenger RNA
 - (D) Guide RNA



66. Three dimensional structure of living cells/tissues can be viewed in
(A) Phase contrast microscope
(B) Fluorescence microscope
(C) Differential interference contrast microscope
(D) Stereo microscope
67. Which of the following is NOT a mating system ?
(A) Polyandry
(B) Polygyny
(C) Polygamy
(D) Sexual selection
68. Neem based biopesticide, Azadirachtin does not directly kill pest, but alters the life processing behavior in such a manner that the insect can no longer feed, breed or undergo metamorphosis. Azadirachtin interferes with the metabolism of
(A) Carbohydrates
(B) Ecdysone
(C) Cholesterol
(D) Estrogen
69. Which one of the following methods is used to detect the distribution of specific mRNAs within a cell ?
(A) RNase protection assay
(B) *In-situ* hybridization
(C) Northern Blot analysis
(D) Site Mapping
70. Trees may be damaged by animals which rub against them, wearing a strip of bark right around the tree trunk and exposing the xylem. The tree will then
(A) Die quickly because the leaves are deprived of food and water
(B) Die quickly because fungi enter the trunk through the wounds
(C) Continue to grow because bark always regrows to cover a wound
(D) It does not affect the tree
71. The mechanism of signal transduction by steroid hormone differs from amine and peptide hormone because
(A) Steroids use small, water soluble second messengers
(B) Steroid hormones act directly without the requirement of any receptor
(C) They bind to cytoplasmic or nuclear receptors and affect gene expression
(D) They all act through G proteins
72. Which one of the following feature is not associated with grasses ?
(A) Aleurone tissue
(B) Scutellum
(C) Cellular endosperm
(D) Three celled pollen



73. Apoptosis, a process of cell death in living organism occurs
- (A) In HIV infected cells
 - (B) Naturally as a part of normal cellular development
 - (C) In carcinogenic cells
 - (D) Due to malnutrition
74. The major amphibolic pathway in almost all living organism is
- (A) Glycolytic pathway
 - (B) Beta oxidation pathway
 - (C) Photosynthetic pathway
 - (D) Citric acid cycle pathway
75. Student's t-test is used for the comparison of
- (A) Two sample means
 - (B) An independent variable with a dependent variable
 - (C) Three sample means
 - (D) Two independent variables and a number of dependent variables
76. Precursor for ethylene biosynthesis is
- (A) Methionine
 - (B) Isopentane pyrophosphate
 - (C) Tyrosine
 - (D) Alpha ketoglutarate
77. Leydig cells secrete
- (A) Growth hormone
 - (B) Estrogens
 - (C) Androgens
 - (D) Gonadotropins
78. Almost all the terpenoids are made up of
- (A) Acetyl groups
 - (B) Isoprene units
 - (C) Farnesyl pyrophosphate
 - (D) TCA cycle intermediates
79. Which one of the following is NOT an example of extrachromosomal inheritance ?
- (A) Yeast – Petite
 - (B) *Drosophila* – Bar eye
 - (C) *Neurospora* – Poky
 - (D) Snail – Shell coiling
80. Which of the following cloning vectors can be used to clone 3 kb and 300 kb DNA fragments ? Choose the correct order and vectors.
- (A) Phasmid and Plasmid
 - (B) YAC and Cosmid
 - (C) Plasmid and Phage
 - (D) Plasmid and YAC



81. During maturation of B cells, the immunoglobulin gene rearrangements occur due to

- (A) Meiotic recombination
- (B) Sister chromatid exchange
- (C) Site specific recombination
- (D) Site directed mutagenesis

82. ABO blood group in man is an example for

- (A) Pleiotropic effects
- (B) Multiple alleles and co-dominance
- (C) Sex linked and sex limited inheritance
- (D) Polygenic inheritance

83. Goodness of Fit is carried out by using

- (A) Chi square test
- (B) Student's t-test
- (C) ANOVA
- (D) PCA

84. What is meant by the word "Whorl" in discussing floral meristem ?

- (A) When leaf primordia first arise, they arise in a pattern described as "Whorl"
- (B) Flowers consist of four different types of organs which occur in concentric rings called "Whorl"
- (C) The floral meristem has to spin around during flower formation, the process is named "Whorl"
- (D) The six stamens in a dicot flower like that of *Arabidopsis* form a ring that is called the flower's "Whorl"

85. Match the following :

Category 1	Category 2
a. <i>Yersinia pestis</i>	1. Hansen's disease
b. <i>Mycobacterium leprae</i>	2. Mumps
c. Rubulavirus	3. Measles
d. Morbillivirus	4. Black plague

(A) a – 4, b – 1, c – 2, d – 3

(B) a – 1, b – 4, c – 3, d – 2

(C) a – 2, b – 3, c – 1, d – 4

(D) a – 3, b – 2, c – 4, d – 1

86. The following is absolutely essential for the functioning of an ecosystem

- (A) Producers and herbivores
- (B) Decomposers
- (C) Producers, herbivores and carnivores

(D) Producers and decomposers

87. Which of the following is the right sequence of spermatogenesis ?

- (A) Spermatocytes, spermatids, spermatozoa, spermatogonia
- (B) Spermatids, spermatozoa, spermatogonia, spermatocytes
- (C) Spermatozoa, Spermatids, spermatocytes, spermatogonia,
- (D) Spermatogonia, spermatocytes, spermatids, spermatozoa



88. Plasmodesmata in plants are similar to which one of the following structures of the animal cells ?

(A) Peroxisome

(B) Gap junction

(C) Extracellular matrix

(D) Cell cytoskeleton

89. Prokaryotic organisms have been divided into two domains, bacteria and archaea. This division is based on

i. Differences in cell wall composition

ii. Differences in cell membrane composition

iii. Presence or absence of introns

iv. Presence or absence of amino acids

(A) i and iii are correct

(B) i, ii and iii are correct

(C) ii and iv are correct

(D) ii, iii and iv are correct

90. Match the following :

Category 1

Category 2

a. Protozoa

1. Cell wall made up of Cellulose

b. Eubacteria

2. Cell wall made up of Chitin

c. Fungi

3. Cell wall made up of Murein

d. Algae

4. Cell wall without Murein

5. Cell wall is absent

(A) a – 5, b – 3, c – 2, d – 1

(B) a – 5, b – 1, c – 2, d – 3

(C) a – 3, b – 2, c – 1, d – 4

(D) a – 5, b – 2, c – 1, d – 4

91. Leucoplast are

(A) A form of blood cells

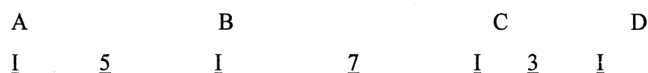
(B) Plastids present in plant cells without pigments

(C) White blood cells

(D) Insect blood cells



92. The map of four genes on chromosome are as follows with map distance indicated.



Between which two genes would you expect highest frequency of recombination ?

- (A) Between B and C
- (B) Between A and D
- (C) Between A and C
- (D) Between B and D
93. International Kyoto Protocol (1997) of United Nations Framework Convention on the Climate Changes (UNFCCC) which came into implementation in 2005 mainly deals with
- (A) Usage of chemical fertilizers
- (B) Usage of pesticides in agriculture
- (C) Reduction of greenhouse gases
- (D) Safety of GM foods

94. Match the following :

Category 1	Category 2
a. Fungi	1. Leishmaniasis
b. Bacteria	2. Foot and mouth disease
c. Protozoa	3. Alzheimer's disease
d. Virus	4. Cholera
	5. Rice blast

- (A) a – 5, b – 4, c – 1, d – 2
- (B) a – 2, b – 4, c – 1, d – 5
- (C) a – 3, b – 4, c – 1, d – 5
- (D) a – 2, b – 3, c – 5, d – 1

95. Match the following :

Category 1	Category 2
a. Nanos	1. Gap gene
b. Bicoid	2. Formation of anterior structures of embryo
c. Kruppel	3. Segment polarity gene
d. Engrailed	4. Formation of posterior structures of embryo

- (A) a – 2, b – 4, c – 3, d – 1
- (B) a – 4, b – 2, c – 1, d – 3
- (C) a – 3, b – 1, c – 2, d – 4
- (D) a – 1, b – 3, c – 4, d – 2



96. Which one of the following mutagenic agents causes thymidine dimer in DNA ?

- (A) UV radiation
- (B) Sodium azide
- (C) Beta rays
- (D) Microwaves

97. Which one of the following plants is the source for Vinblastine and Vincristine, highly valued drugs in cancer chemotherapy ?

- (A) *Camptotheca acuminata*
- (B) *Atropa belladonna*
- (C) *Catharanthus roseus*
- (D) *Digitalis lanata*

98. Which of the following sequence correctly represents the phases of a cell cycle ?

- (A) G_1 , G_2 , S, G_0 , Mitosis
- (B) G_0 , G_1 , S, G_2 , Mitosis
- (C) S, G_1 , G_2 , G_0 , Mitosis
- (D) Mitosis, G_1 , S, G_2 , G_0

99. Which of the following statements are CORRECT, with reference to ruminants ?

- i. Use micro-organisms to digest cellulose
- ii. Have a teeth adapted for mastication
- iii. Get their nutrition from digested plant material
- iv. Eat their faeces to replenish nutrients

(A) i, ii and iv

(B) i, ii and iii

(C) ii, iii and iv

(D) i, iii and iv

100. Kinetin is a type of cytokinin that was first isolated from

- (A) Herring sperm
- (B) Ovary of fish
- (C) Endosperm of seed
- (D) Pollen grains



Total Number of Pages : 16

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work



Paper : II
 Subject : LIFE SCIENCES
 Subject Code : 28

Roll No.

--	--	--	--	--	--	--	--

(Figures as per admission card)

OMR Sheet No. : _____

BOOKLET SERIAL NO.

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Time : 2 Hours

Maximum Marks : 200

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 100

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರ್‌ನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ನೂರು (100) ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪುಸ್ತಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಿಕೆಯನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
 - ಪ್ರಶ್ನೆಪುಸ್ತಿಕೆಗೆ ಪ್ರವೇಶವಾಹಕ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಕ್ಚರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
 - ಪುಸ್ತಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ಹಾಕಿ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿದ್ದು ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಿಕೆಯನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿರಿಸಬೇಕು.

ಉದಾಹರಣೆ : (A) (B) (C) (D)

(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಜೊತೆಯಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಿಲ್ಲದ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮಾಲ್ಮಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMRನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್, ಎದ್ದುನಾಣ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಯಾವ ಅಂಕ ಇರುವುದಿಲ್ಲ.
- ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of Hundred multiple-choice type of questions.
- 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 :
 - To have access to the Question Booklet, tear off the paper seal on the edge of the cover page. Do not accept a booklet without sticker seal or open booklet.
 - 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.
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.

Example : (A) (B) (C) (D)

where (C) is the correct response.
- Your responses to the questions are to be indicated in the OMR Sheet kept inside this Booklet. If you mark at any place other than in the circles in the OMR Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name 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, you will render yourself liable to disqualification.
- You have to return the OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
- Use only Blue/Black Ball point pen.
- Use of any calculator, electronic gadgets or log table etc., is prohibited.
- There is no negative marks for incorrect answers.
- In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.

**LIFE SCIENCES****Paper – II**

Note : This paper contains **Hundred (100)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. The constituent monosaccharide in chitin is

- (A) D-Glucose
- (B) D-Xylose
- (C) N-acetyl D-glucosamine
- (D) D-Galactose

2. An example for aromatic amino acid is

- (A) Methionine
- (B) Valine
- (C) Alanine
- (D) Tyrosine

3. Which functional group is never found in alpha amino acids ?

- (A) NH_2
- (B) COOH
- (C) CHO
- (D) S-CH_3

4. Ramachandran plot displays

- (A) Allowed angles of Phi and Psi for polypeptide backbone
- (B) Preferred amino acids in a helix
- (C) The hydropathy of amino acids
- (D) Angles of rotation of R-group of amino acids

5. Left-handed helix is found in

- (A) B-DNA
- (B) A-DNA
- (C) C-DNA
- (D) Z-DNA

6. $\text{pH} = \text{pK}$, when

- (A) $[\text{Proton acceptor}] = 1/2[\text{Proton donor}]$
- (B) $[\text{Proton acceptor}] = [\text{Proton donor}]$
- (C) $[\text{Proton acceptor}] = 2[\text{Proton donor}]$
- (D) $2[\text{Proton acceptor}] = [\text{Proton donor}]$

7. Match the following with reference to protein structure and modifying reagents.

Column A**Column B**

- | | |
|-----------------------------|----------------------|
| i. Mercapto ethanol | a. Peptide bond |
| ii. Guanidine hydrochloride | b. Disulphide bridge |
| iii. Urea | c. Hydrogen bond |
| iv. Dithiothreitol | d. Ionic bond |

(A) i - a, ii - d, iii - b, iv - c

(B) i - b, ii - c, iii - c, iv - b

(C) i - c, ii - b, iii - a, iv - d

(D) i - d, ii - a, iii - c, iv - a



8. Match the Column A consisting of different vitamins with their names in Column B

Column A**Column B**

- | | |
|---------------------------|-----------------|
| a. Vitamin D | i. Tocopherol |
| b. Vitamin E | ii. Thiamine |
| c. Vitamin B ₆ | iii. Pyridoxine |
| d. Vitamin B ₁ | iv. Calciferol |

(A) a - (i), b - (ii), c - (iii), d - (iv)

(B) a - (i), b - (ii), c - (iv), d - (iii)

(C) a - (iv), b - (i), c - (iii), d - (ii)

(D) a - (iv), b - (i), c - (ii), d - (iii)

9. Where are the ion carriers located in a cell ?

(A) Cell membranes

(B) Intercellular spaces

(C) Cell wall

(D) Nucleus

10. Which of the following cell organelle contain DNA ?

(A) Golgi complex

(B) Endoplasmic reticulum

(C) Ribosome

(D) Mitochondria

11. In which of the following organelles β -oxidation of long chain fatty acids is initiated with an object of shortening the chain length ?

(A) Lysosomes

(B) Peroxisomes

(C) Microsomes

(D) Golgi

12. The cell division, which consists of nuclear division (mitosis) followed by cytoplasmic division (cytokinesis) occurs during

(A) G₁ phase (B) S phase

(C) G₂ phase (D) M phase

13. Which of the following pair matches with membrane transport process and its primary function ?

(A) Exocytosis – the movement of macromolecules into the cell

(B) Pinocytosis – the uptake of water and solutes into the cell

(C) Osmosis – passive diffusion of small solutes

(D) Phagocytosis - secretion of large particles from the cell

14. The core of the nucleosome consists of

(A) H₁, H₂A, H₂B, H₄

(B) H₂A, H₂B, H₃, H₄

(C) H₁, H₂A, H₂B, H₃

(D) H₁, H₂A, H₃, H₄

15. The concept of pH homeostasis is

(A) The ability of the microbe to control its internal pH

(B) The ability of the microbe to control its external pH

(C) The ability of the microbe to grow on acidic pH

(D) The ability of the microbe to grow on alkaline pH



16. A metabolic pathway that involves part of the Krebs's cycle plus two unique enzymes, malate synthetase and isocitrate lyase is
(A) Glyoxylate cycle
(B) Glycolate pathway
(C) Calvin cycle
(D) TCA cycle
17. The maximum coiling of the chromosomes is observed during
(A) Pachytene of meiosis
(B) Metaphase of mitosis
(C) Anaphase of meiosis I
(D) Telophase of meiosis II
18. During replication, the long strands of DNA in a cell's nucleus get tangled making it harder for a cell to read genes. But _____ enzyme can prevent tangling.
(A) DNA ligase
(B) DNA replicase
(C) DNA topoisomerase
(D) DNA isomerase
19. Which of the following are the non-coding RNAs ?
(A) rRNA, miRNA and mRNA
(B) rRNA, tRNA and mRNA
(C) miRNA, tRNA and mRNA
(D) rRNA, miRNA and tRNA
20. In the final step of protein synthesis, the folding of many proteins is made more efficient by a special class of protein called
(A) Gag-Pol fusion protein
(B) Protease
(C) Chaperone
(D) Ubiquitin
21. Which of the following process takes place in the 3' – 5' direction ?
(A) RNA editing
(B) RNA replication
(C) DNA replication
(D) RNA splicing
22. In eukaryotic cells, the tRNA genes 5s, rRNA genes, some snRNA genes and genes for other small RNAs are transcribed by
(A) RNA polymerase I
(B) RNA polymerase II
(C) RNA polymerase III
(D) Reverse Transcriptase
23. The role of gRNA is
(A) Chemical modification of rRNA
(B) Self splicing
(C) Polyadenylation
(D) RNA editing



24. DNA repair pathway that can repair the damage caused by large change in the structure of the DNA double helix is called
- (A) Mismatch repair
(B) Base excision repair
(C) DNA interstand cross-link repair
(D) Nucleotide excision repair
25. Fermentation of one molecule of glucose to ethanol and CO_2 require _____ O_2 molecule(s).
- (A) 36 (B) 24
(C) 0 (D) 1
26. Which of the following signalling molecule does NOT bind to nuclear receptor ?
- (A) Cortisol
(B) Acetyl choline
(C) Testosterone
(D) Vitamin D_3
27. Which of the following describes cell-cell junction ?
- (A) Occluding and claudin mediate cell-cell contact
(B) Adherence junctions occur as continuous bands
(C) Occluding junctions are abundant in cell under stress
(D) Inorganic ions are able to pass through anchoring junction to permit cell coupling
28. Gram-negative bacteria produces which of the following as their signalling molecule in quorum sensing ?
- (A) N-acyl homoserine lactones (AHL)
(B) Autoinducing peptide (AIP)
(C) Salicylic acid
(D) Histidine kinase
29. Which of the following is the tumour suppressor gene ?
- (A) Neuroblastoma
(B) p53
(C) SRY
(D) Retinoblastoma
30. Rous sarcoma virus was first discovered in
- (A) Monkey (B) Rat
(C) Rabbit (D) Chicken
31. MHC molecule on antigen-presenting cells which presents foreign peptides to helper cells is
- (A) Class I MHC molecule
(B) Class II MHC molecule
(C) Class III MHC molecule
(D) Class I and Class III MHC molecule
32. The correct sequence of events in producing an antibody response to an antigen is
- (A) Antigen \rightarrow APC \rightarrow Th \rightarrow B \rightarrow Plasma cell \rightarrow Ab
(B) Antigen \rightarrow Th \rightarrow APC \rightarrow B \rightarrow Plasma cell \rightarrow Ab
(C) Antigen \rightarrow B \rightarrow Th \rightarrow Plasma cell \rightarrow APC \rightarrow Ab
(D) Antigen \rightarrow APC \rightarrow Th \rightarrow B \rightarrow Cytokine \rightarrow Ab



33. A living microbe whose virulence is destroyed and used for vaccination is considered

- (A) A toxoid (B) A toxin
(C) Virulent (D) Attenuated

34. Which of the following is an autoimmune disease ?

- (A) Cystic fibrosis
(B) Multiple sclerosis
(C) Sickle cell anaemia
(D) Dyslexia

35. Which of the following is not the portal of entry for bacterial pathogens in the plant host ?

- (A) Stomata
(B) Hydathode
(C) Lenticel
(D) Plasmodesmata

36. Choose the correct match :

Category I

Category II

- | | |
|----------|-------------------------|
| i. IgA | 1. Basophils |
| ii. IgE | 2. δ heavy chain |
| iii. IgG | 3. Secretory component |
| iv. IgM | 4. Pentamer |
| | 5. Cross placenta |

- (A) i - 2, ii - 1, iii - 3, iv - 5
(B) i - 3, ii - 5, iii - 2, iv - 1
(C) i - 2, ii - 3, iii - 5, iv - 4
(D) i - 3, ii - 1, iii - 5, iv - 4

37. During morphogenesis, the formation of anterior structure in the *Drosophila* embryo requires the product of _____ gene.

- (A) *Hunchback* (B) *Pax-6*
(C) *Bicoid* (D) *Nanos*

38. During microsporogenesis the tapetum is formed from

- (A) Sporogenous cells
(B) Parietal cells
(C) Epithelial cells
(D) Endogenous cells

39. Floral development in *Arabidopsis* and *Antirrhinum* is under genetic control of _____ genes.

- (A) *Gurke* (B) *Homeotic*
(C) *Hobbit* (D) *Fackel*

40. Which of the following is the master gene involved in sex determination in *Drosophila* ?

- (A) *Sxl* (B) *Sdc*
(C) *Xol* (D) *Nanos*

41. Products of maternal genome molecules that are placed in the *Drosophila* egg are

- (A) DNA (B) Proteins
(C) RNA (D) Enzymes



42. Shinya Yamanaka received his Nobel Prize for discovery of
(A) Induced pluripotent stem cells
(B) Oncogene
(C) Okazaki fragments
(D) Cancer stem cells
43. Caspases are involved in the process of
(A) DNA replication
(B) Recombination
(C) Apoptosis
(D) Antibody synthesis
44. Q cycle occurs in the mitochondria as well as in the chloroplast. Its main function is
(A) Coupling $2e^-$ transfer with $1e^-$ transfer
(B) It is a part of complex III in the respiratory chain as well as in Z scheme of photosynthetic electron transfer
(C) It acts a buffer of protons
(D) It is involved in thermogenesis in animals and in plants growing in low temperatures
45. C_4 plants are photosynthetically more efficient than that of C_3 plants, because of the absence of _____ in C_4 plants.
(A) Cyclic electron transport
(B) Non-cyclic electron transport
(C) Photorespiration
(D) Photoperiodism
46. Which of the following is not a plant growth hormone ?
(A) Jasmonic acid
(B) Gibberellin
(C) Auxin
(D) Ethylene
47. The fixation of CO_2 in C_4 cycle takes place by
(A) α -Ketoglutarate
(B) Oxaloacetate
(C) Phospho-phenol pyruvate
(D) Dihydroxy acetone phosphate
48. Which of the following bacteria is a non-heterocystous and non-symbiotic nitrogen fixing bacteria ?
(A) *Anabaena*
(B) *Rhizobium*
(C) *E. coli*
(D) *Azotobacter*
49. During electron transport, the extra energy carried by the electron is utilized in the formation of
(A) ATP (B) ADP
(C) NADP (D) $NADPH_2$
50. Which of the following is not a secondary metabolite ?
(A) Alkaloids
(B) Phenols
(C) Flavonoids
(D) α -Ketoglutaric acid



51. Number of ATP molecules required to fix one molecule of N_2 is

- (A) 12 (B) 16
(C) 20 (D) 24

52. Hair cells are components of _____ sensory organ.

- (A) Vision (B) Taste
(C) Smell (D) Hearing

53. Match the hormones to the glands producing them.

Group A

Group B

- | | |
|-----------------|--------------|
| i. Oxytocin | 1. Ovary |
| ii. Insulin | 2. Pituitary |
| iii. Calcitonin | 3. Pineal |
| iv. Estrogen | 4. Pancreas |
| | 5. Thyroid |

- (A) i - 5, ii - 4, iii - 2, iv - 1
(B) i - 4, ii - 2, iii - 5, iv - 3
(C) i - 2, ii - 4, iii - 5, iv - 1
(D) i - 1, ii - 4, iii - 2, iv - 3

54. Myogenic heart contraction is initiated by

- (A) Myocytes
(B) Endothelial cells
(C) Purkinje cells
(D) Transitional cells

55. Blood pressure is the pressure of blood on the walls of

- (A) Arteries
(B) Veins
(C) Myocardium
(D) Ventricle

56. Which one of the following nerve centre is NOT involved in the regulation of excreting urine from the urinary bladder (Micturition) ?

- (A) Spinal cord
(B) Brain stem
(C) Cerebral cortex
(D) Dura matter

57. Which of the following organ regulates the ionic balance in man ?

- (A) Liver (B) Kidney
(C) Heart (D) Pancreas

58. The pituitary gland stimulates the adrenal glands to make cortisol. Cortisol is increased during all of the following situation except

- (A) Morning hours
(B) Stress
(C) Illness
(D) Night time



59. Which of the following is the functional unit of vertebrate excretory system ?

- (A) Kidney
- (B) Henle's loop
- (C) Neuron
- (D) Nephron

60. A couple has a female child with disease and two unaffected children. Neither parent nor any of the four biological grandparents of the affected child has had this disease. Which one of the following is the most likely genetic explanation?

- (A) Autosomal recessive
- (B) X-linked dominant
- (C) X-linked recessive
- (D) Autosomal dominant

61. Which one of the following is correct for the linkage in *Drosophila* ?

- (A) Complete in both males and females
- (B) Incomplete in both males and females
- (C) Complete in males and incomplete in females
- (D) Complete in females and incomplete in males

62. Match the following definition and their nomenclature.

Definition	Nomenclature
a. Normal appearance of genetically controlled traits in the phenotype	i. Pleiotropy
b. Genes having more than one primary effect	ii. Codominance
c. Phenotype produced by environmental effect is same as the phenotype produced by a genotype	iii. Phenocopy
d. Both alleles of a gene express themselves in the heterozygotes	iv. Penetrance
	v. Expressivity

(A) a - iv, b - i, c - iii, d - ii

(B) a - v, b - iii, c - i, d - iv

(C) a - iii, b - iv, c - ii, d - v

(D) a - i, b - v, c - iv, d - iii

63. Which of the following combination is the components of genetic variance ?

- (A) Additive genetic variance + Recessive variance + Interaction variance
- (B) Additive genetic variance + Dominance variance + Interaction variance
- (C) Additive genetic variance + Dominance variance + Inversion variance
- (D) Additive genetic variance + Dominance variance + Independent



64. A unit of distance in linkage map is

- (A) Nano meter
- (B) Milli micron
- (C) Centimorgan
- (D) Milli meter

65. Which of the following is the value of lod score for two-point mapping in human system ?

- (A) + 3 and - 2
- (B) - 3 and + 2
- (C) + 3 and - 3
- (D) - 3 and + 3

66. Which of the following chromosomal aberration is crossing over suppressor ?

- (A) Translocation
- (B) Inversion
- (C) Deletion
- (D) Duplication

67. The gene is the basic unit of

- (A) function, mutation and coding
- (B) function, recombination and coding
- (C) function, mutation and noncoding
- (D) function, recombination and mutation

68. Match the following processes with their nomenclature :

Processes	Nomenclature
a. Genes are transferred by cell to cell contact	i. Transformation
b. Genes are transferred inside virus particles	ii. Transduction
c. Genes are transferred into cells as free molecules	iii. Sexduction
d. Bacterial cell gains access to foreign DNA through modified F-factor	iv. Conjugation

- (A) a - iv, b - iii, c - ii, d - i
- (B) a - iv, b - i, c - iii, d - ii
- (C) a - iv, b - ii, c - i, d - iii
- (D) a - iii, b - iv, c - i, d - ii

69. Classification system for prokaryotic species based on the 16s rRNA was proposed by

- (A) Carl Woese
- (B) John Hutchinson
- (C) Alexopoulos and Mims
- (D) Kary Mullis



70. Which of the following is NOT a phylogenetic system of plant classification ?
(A) Takhtajan's system
(B) Hutchinson's system
(C) Engler and Prantl's system
(D) Bentham and Hooker's system
71. In taxonomic hierarchy, the "Phylum" was introduced by
(A) Linnaeus
(B) Haeckel
(C) Fabricius
(D) John Ray
72. Which one of the following organisms belong to Kingdom Protista ?
(A) Slime molds
(B) Blue Green Bacteria
(C) Mosses
(D) Sponges
73. _____ does NOT belong to Gram positive Bacteria.
(A) *Lactobacillus*
(B) *Azotobacter*
(C) *Staphylococcus*
(D) *Bacillus*
74. Cell walls of prokaryotes are rigid and contain _____ as the main strengthening compound.
(A) Chitin
(B) Gelatine
(C) Murein
(D) Lignin
75. Goblet cells are found interspersed in the _____ epithelial tissue.
(A) Columnar
(B) Cuboidal
(C) Squamous
(D) Ciliated
76. _____ is the example for "Dead-end Phylum".
(A) Porifera
(B) Cnidaria
(C) Annelida
(D) Nematoda
77. Which of the following is the State bird of Karnataka ?
(A) House Sparrow
(B) Indian Roller
(C) Koel
(D) Peacock



78. Biodiversity-rich Western Ghats traverse through how many States in India ?
(A) 5 (B) 4
(C) 6 (D) 7
79. In an ecosystem, the number of deer was counted as 2500 in one year. In the following year, the number increased to 2750. If the birth rate of the deer is 0.3 what will be the death rate ?
(A) 0.5 (B) 0.3
(C) 0.2 (D) 0.1
80. In an ecosystem, there was a large lake with plenty of fish. A human settlement grew in the vicinity of the lake and the fish population began to decline. Identify the possible sequence of events leading to the decline in fish population
(A) Increased human population – increased light pollution – fish unable to breed – decline in fish population
(B) Lake polluted with sewage – algal bloom – decline in dissolved oxygen – increased fish death
(C) Increase in human population – increased use of lake water – fish spawn decrease
(D) Increased human population – environmental pollution – acid rain – decrease in lake pH – fish died
81. A psychrotrophic bacteria can grow at a temperature range of
(A) 60 – 80°C (B) 40 – 50°C
(C) 30 – 40°C (D) – 20 – 10°C
82. A situation of ecological niche where similar species can exist in the same area but use resources at different times is
(A) Competitive exclusion
(B) Resource partitioning
(C) Fundamental niche
(D) Interspecies competition
83. The artificial chromosome is used to clone _____ DNA segment.
(A) 1 kb
(B) 10 kb
(C) 20 kb
(D) 200 kb and above
84. _____ is an area that acts as a boundary or a transition between two ecosystems.
(A) Ecocline
(B) Ecotone
(C) Edge effect
(D) Ecological niche
85. Which of the following statement about *K*-selected species is FALSE ?
(A) minimal parental care
(B) fewer offspring
(C) large body size
(D) long life expectancy



86. Miller's experiment on abiotic synthesis showed that
- (A) Life can be created in the lab
 - (B) If all the components of life are provided, a primordial cell will be formed in the lab
 - (C) Simple molecules can give rise to complex molecules
 - (D) Atoms can combine to give molecules
87. FISH technique is used for the localization of _____ on a chromosome.
- (A) Protein
 - (B) Gene
 - (C) Enzyme
 - (D) Haplotype
88. In a population, the frequencies of genes 'A' and 'a' have reached a steady state. Which of the following frequencies indicate that the population is in Hardy-Weinberg equilibrium ?
- (A) 0.064, 0.48, 0.09
 - (B) 0.49, 0.42, 0.09
 - (C) 0.36, 0.36, 0.09
 - (D) 0.49, 0.48, 0.36
89. A random change in the frequencies of alleles within a small population is
- (A) Genetic load
 - (B) Heterosis
 - (C) Genetic drift
 - (D) Homeostasis
90. In the evolutionary time scale, monkeys, apes and other mammals evolved during _____ period.
- (A) Quaternary
 - (B) Tertiary
 - (C) Cambrian
 - (D) Cretaceous
91. Existence of two or more genotypes for a given trait in a population is called
- (A) Pleiotropism
 - (B) Monomorphism
 - (C) Mutualism
 - (D) Polymorphism
92. Female wasps have a choice of being a single foundress, she builds a nest and lays eggs. Alternately she can join a colony of wasps and help in the colony activities, but cannot breed. Although there is no "Fitness" advantage for the wasp, this behaviour has evolved as an evolutionarily stable strategy. Which of the following is probably one of the reasons for this ?
- (A) She is taken care off in the colony
 - (B) She has a chance of taking over as the queen and then breed
 - (C) She can lay her eggs in the colony even though she is not supposed to do so
 - (D) She has less work to do since other members share the work



93. Which one of the following is responsible for evolution of multigene families ?

- (A) Gene duplication and Inversion
- (B) Unequal crossing-over and Translocation
- (C) Random mutation and Deletion
- (D) Both Duplication and Unequal crossing

94. Who proposed the “Great chain of being” in the field of evolution ?

- (A) Wallace
- (B) Linnaeus
- (C) Aristotle
- (D) Anaximander

95. Which part of the brain is mainly involved in special memory ?

- (A) Amygdala
- (B) Hippocampus
- (C) Cerebellum
- (D) Temporal lobe

96. Of the several methods used for construction of phylogenetic tree which one of the following uses character-based method ?

- (A) Bootstrap method
- (B) Neighbour joining
- (C) Maximum likelihood
- (D) Linkage

Read the following passage and answer the questions (97-100) based on the passage:

Humans share the planet with as many as 8.7 ± 1.3 million different forms of life. Linnaeus, in his day, was confident he had captured the entire world of living things. He named about 10,000 species, most of which were confined to Europe. Current estimates range from 3 million(m) to 100 m. Many of those species will be extinct before scientists have even registered their presence.

Researchers who have analysed the hierarchical categorisation of life on earth to estimate how many undiscovered species exist, say the diversity of life is not equally divided between land and ocean. Three-quarters of the 8.7 m species – the majority of which are insects – are on land; only one-quarter, 2.2 m are in the deep, even though 70% of the earth’s surface is water. We know we are losing species because of human activity, but we can’t really appreciate the magnitude of species lost until we know what species are there. An astonishing 86% of all plants and animals on land and 91% of those in the seas have yet to be named and catalogued.

The Swedish biologist devised a hierarchical, tree-like structure where each individual species was classed in a series of progressively larger groups, culminating at the kingdom level. Thus, a single species of hermit crab is classified in the order Decapoda, which belongs to the subphylum of Crustacea, phylum of Arthropoda, and finally the animal kingdom.



The scientists, in their analysis of existing data on 1.2 m species, detected patterns between those hierarchical groupings which they could use to infer the existence of missing species that have not yet been described. They estimate that the various forms of life on the planet included 7.8 million species of animal, 298,000 species of plant and 611,000 species of mushrooms, mould and other fungi along with 36,400 species of Protozoa, single-celled organisms and 27,500 species of algae. The researchers did not venture to put an estimate on the number of bacteria.

In 1979, Terry Erwin, a beetle expert at the Smithsonian Institution in Washington, went out into the jungles of Panama, rolled some sheeting on the ground and sprayed several trees with pesticide. He discovered the bodies of more than 1,100 new species of beetle from the canopy of a single type of tree. There could be as many as 30 m species of insects in tropical rain forests alone, calculated Erwin. The scientists note that identifying and describing new life forms is expensive and slow, especially when set against the magnitude of species yet to be found or catalogued.

Barely 14% of creatures on earth have been logged in central databases – just 9% of those are in the seas, the study noted. Most of those species waiting to be discovered will be small and they are likely to be concentrated in remote areas or the ocean depths.

97. How did researchers estimate the number of undiscovered species ?

- (A) Researchers estimated the bacterial species from the DNA data
- (B) Infer existence of missing species from existing data on 1.2 million species
- (C) By constructing hierarchical tree-like structure where each individual species was classed in a series of progressively larger groups, culminating at the kingdom
- (D) A beetle expert calculated the insect species based on his experiment of collecting 1100 new species of beetle from a single type of tree in the forest of Panama

98. The number of species on planet earth have been estimated by different methods. Which of the following is NOT the total number of estimated species ?

- (A) 8.7 ± 1.3 million
- (B) 3 to 100 million
- (C) 1.2 million
- (D) 7.8 million animal species

99. What is the estimated number of mushrooms, moulds and other fungi ?

- (A) 36,400
- (B) 611,000
- (C) 298,000
- (D) 27,500

100. _____ percent of organisms have been entered in the central data base.

- (A) 14%
- (B) 91%
- (C) 86%
- (D) 9%



Total Number of Pages : 16

Space for Rough Work