|   | प्रश्नपत्रिय<br><b>Pape</b>   | का कोड<br>e <b>r-II</b>   |  |   |   | D   |   |  |  |  |
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| LIFE SCIENCE  |   |   |  |   |   |   |   |  |  |  |
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|   | ne Allowed : 2½ Hours]  |   |  | [Maxi   |   |   |   |  |  |  |
| Number of Pages in this Booklet : <b>20</b>   |   |   | Number of Questions in this Booklet : <b>75</b>  |   |   |   |   |  |  |  |
| 1.<br>2.<br>3.  | <ul> <li>Instructions for the Candidates</li> <li>Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.</li> <li>This paper consists of 75 objective type questions. Each question will carry <i>two</i> marks. <i>All</i> questions of Paper-III will be compulsory, covering entire syllabus (including all electives, without options). At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :</li> <li>(<i>i</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 or open booklet.</li> <li>(<i>ii</i>) Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to missing pages/ questions or questions repeated or not in serial order or any other discreptacy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be given. The same may please be noted.</li> <li>(<i>iii</i>) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.</li> <li>Each question 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.</li> <li>Example : where (C) is the correct response.</li> </ul> | 1.<br>2.<br>3.  | विद्यार्थ्यांस्<br>परिक्षार्थांनी आपला आस-<br>तसेच आपणांस दिलेल्या उ<br>सदर प्रश्नपत्रिकेत 75 ब<br>आहेत. या प्रश्नपत्रिकेतित<br>हे या विषयाच्या संपूर्ण अ'<br>परीक्षा सुरू झाल्यावर विद्ध<br>मिनीटांमध्ये आपण सदर प्र<br>पहाव्यात.<br>(i) प्रश्नपत्रिका उम्प<br>ससेल नसलेली f<br>(ii) पहिल्या पृष्ठावः<br>तसेच प्रश्नपत्रिका अस<br>कम असलेली f<br>सुरुवातीच्या 5<br>प्रश्नपत्रिका म<br>मिळणार नाही त<br>विद्यार्थ्यांनी नोंग<br>(iii) वरीलप्रमाणे स्<br>ओ.एम.आर. उत्त<br>प्रत्येक प्रश्नासाठी (A), (E<br>आहेत. त्यातील योग्य उ<br>काळा/निळा करावा. | उत्तरपत्रिकेचा<br>(हुपर्यायी प्रश्<br>1 <b>सर्व</b> प्रश्न स<br>भ्यासक्रमावर<br>प्रार्थ्याला प्रश्न<br>प्रश्नपत्रिका उ<br>डण्यासाठी प्रश्<br>कवा सील उ<br>र <b>नमूद केल्य</b><br>केतील एकूप<br>लेली/कमी<br>विंवा इतर<br>मिनिटातच<br><b>1 स्वित विंक्</b><br><b>1 स्वित विंक्</b><br>विंवा इतर<br><b>3</b> , (C) आणि<br>तराचा रकान | पृष्ठावरील<br>। क्रमांक त<br>न आहेत.<br>ने आहेत<br>रे आधारित<br>रापत्रिका ति<br>उघडून खा<br>श्रमपत्रिका ति<br>उघडून खा<br>श्रमपत्रिका<br><b>ग प्रश्नांचं</b><br>प्र <b>श्न अस्<br/>तुटी अस</b><br>। <b>पर्यवेक्ष</b><br>वाढवून मि<br>न पहिल<br>बि सहात<br>(D) अश्<br>। खाली न | । वरच्या<br>त्याखाली<br>प्रत्येक<br>भनिवार्य<br>आहेत.<br>राजाईत.<br>देली जाई<br>लील बा<br>वर लावत<br>प्रश्नपत्रि<br>मुख्या<br>संख्या<br>संख्या<br>संख्या<br>तर प्रश्-<br>तर प्रश्न<br>काला प<br>तर प्रश्न<br>वानंतरच्<br>वा.<br>गी चार वि | लिहावा<br>प्रश्नास<br>आहे. सर<br>ल. सुरुव<br>बी अवश्<br>तेले सील<br>का स्विव्<br>केची एर<br>पडताळू<br>पडिताळू<br>पडिताळू<br>पतिका<br>नाही याच<br>व प्रश्नप<br>व प्रश्नप<br>व कल्प उ | दोन गुण<br>दरचे प्रश्न<br>ररचे प्रश्न<br>व तपासून<br>व तपासून<br>उघडावे.<br>हारू नये.<br>कूण पृष्ठे<br>न पहावी.<br>च चूकीचा<br>न दुसरी<br>ज्वदलून<br>श्री कृपया<br>गत्रिकेवर<br>त्तरे दिली |  |  |
| <ol> <li>5.</li> <li>6.</li> <li>7.</li> <li>8.</li> <li>9.</li> <li>10.</li> <li>11.</li> <li>12.</li> </ol> | Your responses to the items are to be indicated in the <b>OMR</b><br><b>Sheet given inside the Booklet only.</b> If you mark at any place<br>other than in the circle in the OMR Sheet, it will not be evaluated.<br>Read instructions given inside carefully.<br>Rough Work is to be done at the end of this booklet.<br>If you write your Name, Seat Number, Phone Number or put<br>any mark on any part of the OMR Sheet, except for the space<br>allotted for the relevant entries, which may disclose your<br>identity, or use abusive language or employ any other unfair<br>means, you will render yourself liable to disqualification.<br>You have to return original OMR Sheet to the invigilator at the<br>end of the examination compulsorily and must not carry it with<br>you outside the Examination Hall. You are, however, allowed<br>to carry the Test Booklet and duplicate copy of OMR Sheet on<br>conclusion of examination.<br><b>Use only Blue/Black Ball point pen.</b><br><b>Use of any calculator or log table, etc., is prohibited.</b><br><b>There is no negative marking for incorrect answers.</b>   | <ol> <li>5.</li> <li>6.</li> <li>7.</li> <li>8.</li> <li>9.</li> <li>10.</li> <li>11.</li> <li>12.</li> </ol> | (A)<br>या प्रश्नपत्रिकेतील प्रश्नांच्<br>इतर ठिकाणी लिहीलेली उत्त<br>आत दिलेल्या सूचना काळ<br>प्रश्नपत्रिकेच्या शेवटी जो<br>जर आपण ओ.एम.आर.<br>नव, आसन क्रमांक, फो-<br>केलेली आढळून आल्यास<br>अवलंब केल्यास विद्यार्थ्य<br>परीक्षा संपल्यानंतर विद्यार्थ्य<br>परीक्षा संपल्यानंतर विद्यार्थ्य<br>परीक्षा संपल्यानंतर विद्यार्थ्य<br>परत करणे आवश्यक आहे.<br>द्वितीय प्रत आपल्याबरोबर<br>फक्त निळ्या किंवा काठ<br>कॅलक्युलेटर किंवा लॉग<br>चुकीच्या उत्तरासाठी गुण्   | B<br>ती उत्तरे ओ. ए.<br>रे तपासली जा<br>उजीपूर्वक वा-<br>डलेल्या कोन्ट<br>बर नमूद केल<br>त बर नमूद केल<br>त वापी, प्रश्न<br>र नेण्यास विद्व<br>ट्रा चेष्या सॉल पेन<br>प टेबल वाप  | म.आर. उ<br>णार नाहीत<br>चाव्यात.<br>या पानावर<br>तेल्या ठिक<br>ओळख प<br>य भाषेचा<br>अपात्र ठम<br>एम.आर. व<br>एम.आर. व<br>प्रम.आर. व<br>प्रम.आर. व<br>प्रम.आर. व<br>प्रम.आर. व<br>प्रम.आर. व<br>प्रत्रका व<br>प्राय्यास प्र  | च कच्चे<br>गणा व्या<br>पटेल आ<br>वापर कि<br>विण्यात<br>उत्तरपत्रि<br>अो.एम.<br>रवानगी<br><b>ापर कर</b><br><b>परवानग</b>   | काम क<br>तरीक्त इत<br>शी कोणल<br>वा इतर<br>येईल.<br>का पर्यवे<br>आर. उत्तर<br>आहे.<br><b>ावा</b> .  | रावे.<br>ार कोठेही<br>1ीही खूण<br>गैरमार्गांचा<br>क्षकांकडे  |  |  |

# Life Science Paper III

# Time Allowed : 2½ Hours][Maximum Marks : 150Note : This paper contains Seventy Five (75) multiple choice questions. Each<br/>question carries Two (2) marks. Attempt All questions.

|    |  |    | 5 10 4 days                         |
|----|--|----|-------------------------------------|
|    | (C) Potassium hydroxide                |    | 3 to 4 days                         |
|    |  |    | staphylococcal food poisoning is    |
|    |  |    | (C) Incubation time for             |
|    | (B) Potassium permanganate             |    | stalle enterotoxin in food          |
|    |  |    | grow in food and produce heat-      |
|    | (A) Potassium ferrocyanate             |    | short because the organisms         |
|    |  |    | lococcal food poisoning is very     |
|    | A. niger ?                             |    | (B) Incubation time for staphy-     |
|    | 4                                      |    | (A) S. aureus is Gram negative      |
|    | molasses for citric acid production by |    | regarding this pathogen ?           |
|    |  |    | statements is most appropriate      |
|    | remove excess metal ions from          |    | India. Which of the following       |
| 1. |  |    | responsible for food-poisoning in   |
|    |  |    | important food-borne pathogen       |
| 1. | Which of the following is used to      | 2. | Staphylococcus aureus is one of the |

- 3. A living microbe with reduced virulence that is used for vaccination is considered :
  - (A) Dormant
  - (B) Virulent
  - (C) Attenuated
  - (D) Denatured
- 4. The percentage of human peripheral blood T cells bearing a gamma delta T cell receptor is :
  (A) 30-80%
  (B) 1-5%
  (C) 100%
  - (D) 0%

5. The follwing are some of the characteristic features of enzyme inhibitors. Which of the following are true with respect to competitive inhibitors ?

Select the *correct* answer from the options given below it :

- (i) Competitive inhibition can be overcome by a sufficiently high concentration of substrate.
- (*ii*) A competitive inhibitor diminishes the rate of catalysis by reducing the proportion of enzyme molecules bound to a substrate.
- (iii) The competitive inhibitor binds only to the enzyme substrate complex
- (iv) Competitive inhibitor can be used as drugs.
- (A) (*i*), (*ii*), (*iii*), (*iv*)
- (B) (*i*), (*ii*), (*iii*)
- (C) (*ii*), (*iii*), (*iv*)
- (D) (*i*), (*ii*), (*iv*)

8. In plants and some microorganisms, Among the following three forms of 6. a metabolic pathway is operated DNA, which one has deeper major that allows the conversion of acetyl groove ? CoA generated from fat stores into glucose. Which of the following is (A) A-Form that pathway ? (B) B-Form (A) Citric acid cycle (B)  $\beta$  oxidation (C) Z-Form (C) Glyoxylate cycle (D) Both A and Z forms (D) Urea cycle Thylakoid 7. membranes of Maple syrup disease is caused due 9. chloroplasts are rich in : to defect in : (A) the degradation of Tyrosine (A) gangliosides and cerebrosides (B) urea synthesis (B) sphingolipids and galactolipids (C) formation of Tyrosine (C) sulfolipids and sphingolipids (D) the degradation of branched chain amino acids (D) galactolipids and sulfolipids

- 10. The amount of energy that must be added to break a bond is exactly equal to the amount that is released upon formation of the bond. Which law of thermodynamics among the following is applicable to this situation ?
  - (A) First
  - $(B) \ Second$
  - (C) Third
  - (D) Fourth
- 11. Dam methylase show strand discrimination by :
  - (A) Methylation of Cytosine
  - (B) Methylation of Thymine
  - (C) Methylation of Guanine
  - (D) Methylation of Adenine

- 12. tRNA having an anticodon AAA will interact with one of the following amino acids during protein synthesis.
  - (A) phenylalanine
  - (B) Lysine
  - (C) Glycine
  - (D) Methionine
- 13. Rapid amplification of cDNA ends(RACE) is used :
  - (A) to obtain full length sequenceof a transcript
  - (B) to detect a gene
  - (C) to detect protein DNA interaction
  - (D) to measure protein RNA interaction

- 14. DNA methylation at CpG island can be detected by :
  - (A) Regular sequencing
  - (B) Bisulphite sequencing
  - (C) Deep sequencing
  - (D) Single nucleotide polymorphism study
- 15. cDNA is used to express mammalian proteins in bacteria rather than genomic DNA. Which one of the following is the best explanation ?
  - (A) It is easier to done cDNA than genomic DNA of comparable size.
  - (B) It is easier to clone RNA than DNA.
  - (C) It is not possible to clone entire coding region of the gene.
  - (D) Most eukaryotic genes have introns that cannot be removed in bacteria.

- 16. The main principle behind Sanger's method of DNA sequencing.
  - (A) use of reverse transcriptase enzyme.
  - (B) use of thymidine dimers
  - (C) use of di-deoxy nucleotide analogues.
  - (D) use of ATP
- 17. Hallmark of Apoptosis is :
  - (A) DNA synthesis
  - (B) Nuclear fragmentation
  - (C) Nuclear division
  - (D) Fat deposition
- 18. Which of the following types of protein could be coded by a tumoursuppressor gene ?
  - (A) A protein that forms part of a growth factor signaling pathway
  - (B) A protein that codes for a DNA repair enzyme
  - (C) A protein that helps prevent apoptosis
  - (D) A protein that controls progression through the cell cycle.

- 19. A virus that kills its host is said tobe :
  - (A) Lysogenic
  - (B) Temperate
  - (C) Lytic
  - (D) Lytic or Lysogenic but not temperate
- 20. The green fluorescent protein reporter construct transfection can be used to monitor :
  - (A) Cell size
  - (B) Intracellular gene expression
  - $(C) \ DNA \ content$
  - (D) Cell granularity
- 21. Somatic embryos obtained from cotyledonary explant of a diploid plant will be :
  - (A) Diploid
  - (B) Haploid
  - (C) Triploid
  - (D) Tetraploid

- 22. During the growth of animal cells in culture it is noticed that the cells do not look very healthy. After an investigation it was found that there is a lot of lactic acid in the culture medium. What is possibly *wrong* with this culture ?
  - (A) The cells have too much oxygen
  - (B) Ethyl alcohol is being produced in cxcess
  - (C) Glycolysis is being investigated
  - (D) The cells do not have enough oxygen
- 23. Cystic fibrosis is caused by a mutation in the gene for a transporter protein, cystic fibrosis transmembrane conductance regulator (CFTR). CFTR is an ion channel in the plasma membrane of epithelial cells. Which of the following channels does CFTR belong to ?
  - (A) Sodium channel
  - (B) Potassium channel
  - (C) Chloride channel
  - (D) Acetylcholine receptor channel

- 24. The main difference between active transport and facilitated diffusion is :
  - (A) in active transport the molecules move from areas of low concentration to areas of high concentration without spending energy.
  - (B) in diffusion the molecules move from areas of low concentration to areas of high concentration without spending energy.
  - (C) in active transport energy is consumed to move molecules againt a concentration gradient.
  - (D) although a carrier molecule may not be needed in active transport, diffusion cannot take place without a carrier molecule.

- 25. In fluorescence microscopy, the function of exciter filter is to remove all colours, but it allows only ...... to pass through.
  - $(A) \ Green \ colour$
  - (B) White colour
  - (C) Yellow colour
  - $(D) \ Blue \ colour$
- 26. What is the purpose of the fluidics system of a flow cytometer ?
  - (A) To serve as a buffer for cell maintenance.
  - (B) To dilute the concentration for the sample.
  - (C) To deliver sample appropriately to the interrogation point for the measurement.
  - (D) To provide a cushion to prevent cell death following excitation.

- 27. High performance liquid chromatography achieves better purification because of :
  - (A) High retention time
  - (B) High volumetric phase ratio
  - (C) Increased number of partition plates
  - (D) High pressure
- 28. Free radical content in a sample can be detected using spectroscopic technique :
  - (A) ESR
  - (B) NMR
  - (C) Fluorescence
  - (D) UV-visible absorption

- 29. One nanometer is equal to :
  - (A)  $0.1 \ \mu m$
  - $(B) 0.01 \ \mu m$
  - (C) 0.001 µm
  - $(D) 0.0001 \ \mu m$
- 30. For-UV CD spectra of proteins give infromation on :
  - (A) Primary structure
  - (B) Secondary structure
  - (C) Tertiary structure
  - (D) Quarternary structure
- 31. Half life of radioactive  $I^{131}$  is 8 days. If you have 200 micromoles of this isotope at one instant, how many micromoles will remain at the end of thirty two days ? (A) 12.5
  - (B) 25

(D) 100

- (C) 50

|     | 1                                     | 1   | [P.T.O.                                       |
|-----|---------------------------------------|-----|---|
|     | (D) Chromium release assay            |     | (D) square root of np                         |
|     | (C) ELISA                             |     | (C) square root of npq                        |
|     | (B) Chemotaxis assay                  |     | (B) square root of $pq$                       |
|     | (A) Thymidine uptake assay            |     | (A) square root of $p$                        |
|     | measured by :                         |     | by :  |
| 33. | Cell proliferation is generally       |     | standard deviation is determined              |
|     |                                       |     | where $n > 10$ and $p$ is $\approx 0.5$ , the |
|     | (D) Fungi                             | 35. | In binomial distribution of a sample          |
|     | (C) Viruses                           |     | (D) Positrons                                 |
|     | (B) Spore-forming bacteria            |     | (C) γ-rays                                    |
|     | (A) Thermotolerant bacteria           |     | (B) β-rays                                    |
|     | ionizing radiations ?                 |     | (A) α-rays                                    |
|     | following groups is most resistant to |     | in biology emit :                             |
| 32. | In general, which among the           | 34. | Most commonly used radioisotopes              |
|     |                                       |     |   |

- 36. Tautonyms are not accepted in :
  - (A) Botanical nomenclature
  - (B) Zoological nomenclature
  - (C) Virus nomenclature
  - (D) Bacteriological nomenclature
- 37. Linnaeus gave a system of nomenclature called as :
  - (A) Binomial
  - (B) Bimodal
  - (C) Biphasic
  - (D) Binary
- 38. The disappearance of tradition division of flowering plants into monocots and dicots is the major outcome of ...... system of classification.
  - (A) Bentham and Hooker's
  - $(B) \ APG$
  - (C) Engler and Prantl's
  - (D) Armen Takhtajan's

- 39. Trypsin was used to digest a protein,before its amino acid sequencing.The cleavage occurs at :
  - (A) Carboxyl side of lysine and arginine residues
  - (B) Carboxyl side of methionine residues
  - (C) Carboxyl side of aspartate and glutamate residues
  - (D) Carboxyl side of Phenylalanine Isoleucine and Valine residues
- 40. The structure which produces male gametes in prothallus are :
  - (A) Gametophytes
  - (B) Sporophytes
  - (C) Antheridia
  - (D) Archegonia

- 41. Presence of elators in the sporangium is a characteristic feature of .....
  - $(A) \ Equisetum$
  - (B) Ceratopteris
  - (C) Marsilea
  - (D) Actinopteris
- 42. In mature coconuts the liquid endosperm becomes milky and ......
  - (A) it does not contain free nuclei or cells
  - (B) it contains free nuclei only
  - (C) it contains cells only
  - (D) it contains free nuclei or cells.
- 43. In family *Rutaceae*, fruits are mainly :
  - (A) Schizocarp
  - (B) Capsule
  - (C) Hesperidium
  - (D) Siliqua

- 44. Regeneration of plants avoiding fertilization is known as :
  - (A) Apogamy
  - $(B) \ A pospory$
  - (C) Diplospory
  - (D) Syngamy
- 45. A pentacarpellary, pentalocular ovary has 2 ovules per locule. It develops into parthenocarpic fruit. The number of seeds in the fruit will be :
  - (A) 20
  - (B) 10
  - (C) 40
  - (D) 00
- 46. Common bread wheat *Triticum aestivum* is :
  - (A) Diploid
  - (B) Tetraploid
  - (C) Hexaploid
  - (D) Octoploid

- 47. In plants stomatal closure is induced by :
  - (A) High  $K^+$  concentration
  - (B) Low  $CO_2$  concentration
  - (C) Low pH
  - $(D) \ ABA$
- 48. The major ureide compounds that are used to transport nitrogen from sites where their deamination will provide nitrogen for amino acid and nucleoside synthesis are .....
  - (A) oxaloacetic acid, tyrosine and allantoin.
  - (B) allantoic acid, allantoin and citrulline.
  - (C) Citrulline, pyruvic acid and glutamate
  - (D) allantoic acid, methionine and oxaloacetic acid

- 49. In which of the following photosynthetic pigments, the central magnesium has been replaced by two hydrogens ?
  - (A) phycocyanin
  - (B) chlorophyll-b
  - (C) phaeophytin
  - (D) chlorophyll-a
- 50. Stomata remains open for  $CO_2$ absorption in CAM plants during :
  - (A) Night time
  - (B) Early morning
  - (C) Day time
  - (D) Noon

- 51. A flash of ..... light during the dark period induces flowering in a long-day plant and the effect is reversed by a flash of ..... light.
  - (A) red, far-red
  - (B) far-red, red
  - (C) blue, red
  - $(D) \ red, \ blue$
- 52. Which of the following is electromagnetic radiations that are used in mutation breeding ?
  - (A)  $\gamma$ -rays
  - (B) α-rays
  - (C)  $\beta$ -rays
  - (D) UV-rays

- 53. Typically the insect leg consists of six segments :
  - (i) coxa,
  - (ii) femur,
  - (iii) pretarsus,
  - (iv) tarsus,
  - (v) tibia, and
  - (vi) trochanter.

Their *correct* proximal to distal sequence is :

- (A)  $(ii) \rightarrow (vi) \rightarrow (i) \rightarrow (v) \rightarrow (iii) \rightarrow (iv)$
- (B)  $(ii) \rightarrow (ii) \rightarrow (vi) \rightarrow (iii) \rightarrow (iv) \rightarrow (v)$
- (C)  $(i) \rightarrow (vi) \rightarrow (ii) \rightarrow (v) \rightarrow (iv) \rightarrow (iii)$
- (D)  $(i) \rightarrow (ii) \rightarrow (iii) \rightarrow (iv) \rightarrow (v) \rightarrow (vi)$
- 54. The coelom of animals belonging to the phyla ..... develops by the process of schizocoele.
  - (A) Porifera, coelenterata,Platyhelminthes
  - (B) Annelida, Arthropoda, Mollusca
  - (C) Pogonophora, Nematoda, Chaetognatha
  - (D) Echinodermata, Chordata

- 55. Urochordates show resemblance to invertebrates like Molluscs except in :
  - (A) Presence of cartilage
  - (B) Presence of pericardium and pancreatic tissue
  - (C) Presence of radula
  - (D) Ammonia as excretory product
- 56. Which of the following fishes is not a dipnoan ?
  - (A) Neoceratodus
  - (B) Notopterus
  - (C) Lepidosiren
  - (D) Protopterus
- 57. ..... is the outermost connective cover of a skeletal muscle.
  - (A) Myomysium
  - (B) Endomysium
  - (C) Perimysium
  - (D) Epimysium

- 58. The arteries are thicker-walled as compared to that of the veins. This helps in :
  - (A) increased force of contraction of the veins as compared to by the arteries.
  - (B) the arteries can exert more force of contraction than that of the veins.
  - (C)  $O_2$  diffusion can take place better in the arteries than in the veins.
  - (D)  $CO_2$  diffusion can take place better in the veins than in the arteries.
- 59. In birds and reptiles the primordial germ cells originate in the :
  - (A) Epiblast
  - (B) Hypoblast
  - (C) Germinal crescent
  - (D) Embryonic allantois

- 60. Which of the following are responsible for prevention of polyspermy ?
  - (A) Change in the mambranepotential of egg plasmamembrane
  - (B) Cortical granule exocytosis/ cortical reaction
  - (C) Both (A) and (B)
  - (D) Molecular changes in the zona pellucida proteins
- 61. Damage of one of the following structure(s) resulted in loss of a Circadian rhythm. The structure is most likely to be :
  - (A) Liver
  - (B) Eyes
  - (C) Pituitary
  - (D) Suprachiasmatic nucleus.

- 62. When birds such as great tit are removed from their territory :
  - (A) they tend to be replaced by the same number of birds.
  - (B) the territories are left vacant
  - (C) they are replaced by the local birds to the exclusion of new members
  - (D) They are replaced by a greater number of birds
- 63. To overcome intracellular Leishmania infection host should preferably mount a :

(A) TH 1 response

- (B) TH 2 response
- (C) Mucosal immune response
- $(D) \ T \ cell-independent \ response$

- 64. Which one of the following insects is used for the biological control of the weed *Lantana camara* ?
  - (A) Shoot fly
  - (B) Aphid
  - (C) Lantana bug
  - (D) Lantana weevil
- 65. In order to cover one hectare of an agricultural land, which type of sprayers among the following will require the lowest volume of spray solution ?
  - (A) hand sprayer
  - (B) foot sprayer
  - (C) knaspack sprayer
  - (D) power sprayer

- 66. The genome of which of the following virus obeys Chargaff's rule ?
  - (A) TMV
  - (B) Mu phage
  - $(C) \phi x 174$
  - (D) Adenovirus
- 67. The DNA protein ratio in chromatin in general is :
  - (A) 3:1
  - (B) 2:1
  - (C) 1 : 2
  - (D) 4:1
- 68. Binding of epinephrine to a Gprotein-linked receptor causes adenyl cyclase to produce large amounts of :
  - (A) Inositol triphosphate
  - (B) cAMP
  - (C) cGMP
  - (D) G Protein

- 69. The limiting factor for productivity in an aquatic ecosystem is :
  (A) Temperature (B) Wind (C)
  - (C) Light
  - (D) Water mass movement
- 70. Which one of the following groups of fishes is considered to be 'living fossil' ?
  - (A) Holocephali
  - (B) Coelocanths
  - (C) Elasmobranchs
  - (D) Dipnoi
- 71. Which animal of the following list is also called as white socks ?
  - (A) Rhinoceros
  - (B) Slender Loris
  - (C) Indian Gaur
  - (D) Pangolin

- In the lakes the top consumer must be : (A) fishes that eat phytoplankton (B) fishes that consume detritus (C) fishes that are piscivores (D) fishes that eat zooplankton 73. The neuromasts present in the lateral line organ of fish serve as : (A) chemoreceptor (B) rheoreceptor (C) gustoreceptor (D) alfactoreceptor 74. During conjugation, if the F factor is attached to the bacterial genome, the donor is called as : (A) F+ (B) F++ (C) Hfr
  - (D) F+ super strain
  - 75. Epstein-Barr Virus (EBV) is not associated with :
    - (A) Infectious Mononucleosis
    - (B) Kaposis Sarcoma
    - (C) Burkitt's Lymphoma
    - (D) Nasopharyngeal carcinoma

**ROUGH WORK**