Test Booklet Code & Serial No.
प्रश्नपत्रिका कोड व क्रमांक

D

Paper-II
LIFE SCIENCE

Signature and Name of Invigilator

1. (Signature) .....

(Name) .....

2. (Signature) .....

(Name) .....

Seat No. | | | | | | | |

(In figures as in Admit Card)

Seat No. .....

(In words)

OMR Sheet No. | | | | | | | |

(To be filled by the Candidate)

SEP - 34221

Time Allowed : 2 Hours] **[Maximum Marks : 200**

Number of Pages in this Booklet : **24** Number of Questions in this Booklet : **100**

Instructions for the Candidates

1. Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
2. This paper consists of **100** objective type questions. Each question will carry *two* marks. *All* questions of Paper II will be compulsory.
3. 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 :
   (*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.
   (*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 missing pages/questions or questions repeated or not in serial order or any other discrepancy 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 replaced nor any extra time will be given. The same may please be noted.
   (*iii*) After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
4. 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.
   Example : where (C) is the correct response.

   (A) (B) ● (D)

5. Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only.** If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done at the end of this booklet.
8. If you write your Name, Seat Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, you will render yourself liable to disqualification.
9. You have to return original OMR Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry the Test Booklet and duplicate copy of OMR Sheet on conclusion of examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table, etc., is prohibited.
12. There is no negative marking for incorrect answers.

विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

1. परीक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
2. सदर प्रश्नपत्रिकेत 100 बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास **दोन** गुण आहेत. या प्रश्नपत्रिकेतील **सर्व** प्रश्न सोडविणे अनिवार्य आहे.
3. परीक्षा सुरू झाल्यावर विद्यार्थ्याला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून पहाव्यात.
   (*i*) प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
   (*ii*) पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून पहावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चुकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.
   (*iii*) वरीलप्रमाणे सर्व पडताळून पाहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
4. प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.
   उदा. : जर (C) हे योग्य उत्तर असेल तर.

   (A) (B) ● (D)

5. या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे **ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत.** इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
6. आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
7. प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
8. जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरीक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूण केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमार्गाचा अवलंब केल्यास विद्यार्थ्याला परीक्षेस अपात्र ठरविण्यात येईल.
9. परीक्षा संपल्यानंतर विद्यार्थ्याने मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापि, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
10. फक्त निळ्या किंवा काळ्या बॉल पेनचाच वापर करावा.
11. कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.
12. चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.

Life Science
Paper II

Time Allowed : 120 Minutes] **[Maximum Marks : 200**

Note : This Paper contains **Hundred (100)** multiple choice questions. Each question carrying **Two (2)** marks. Attempt *All* questions.

1. A linear DNA is 100% labelled at one end and has 3 restriction sites for EcoRI. If it is digested by EcoRI so that possible fragments are produced, how many of these fragments will be labelled and how many non-labelled ?

   (A) 4 labelled and 6 unlabelled

   (B) 6 labelled and 4 unlabelled

   (C) 3 labelled and 5 unlabelled

   (D) 3 labelled and 3 unlabelled

2. Inclusive fitness is a measure of :

   (A) The selective advantage of group fitness

   (B) The reproductive fitness of an organism and its relatives

   (C) The selective advantage of assortative selection

   (D) The selective advantage of stabilizing selections

3. NMR is a very important technique for determination of biopolymer structure. NMR experiments are not limited to the study of protons only. Which of the following represents a correct group of isotopes used to obtain resonance signals ?

   (A) ^{1}H, ^{12}C, ^{15}N, ^{19}F

   (B) ^{1}H, ^{13}C, ^{14}N, ^{19}F

   (C) ^{1}H, ^{12}C, ^{14}N, ^{19}F

   (D) ^{1}H, ^{13}C, ^{15}N, ^{19}F

4. Cryopreservation is a process of :

   (A) ex situ in vitro conservation

   (B) ex situ ex vitro conservation

   (C) in situ in vitro conservation

   (D) in situ ex vitro conservation

5. Which of the following does not need an insect vector for transmission ?

(A) *Rickettsia* prowazekii

(B) *Rickettsia* rickettsi

(C) *Ehrlichia chaffeensis*

(D) *Coxiella burnetti*

6. Hepadnaviruses (e.g. Hepatitis B virus) differ from other DNA viruses as their genome replication involves :

(A) DNA-dependent DNA polymerase

(B) Reverse transcriptase

(C) RNase H

(D) RNA-dependent RNA polymerase

7. In fermentor, the top portion left without broth is called :

(A) Shaft

(B) Headspace

(C) Impeller

(D) Sparger

8. Which of the following organisms get energy only by fermentative metabolism ?

(A) *Lactobacillus bulgaricus*

(B) *Bacillus subtilis*

(C) *E. coli*

(D) *Pseudomonas putida*

9. In the fertilised egg, cortical granule reaction required for slow block polyspermy, is initiated by :

(A) Na^+

(B) Mg^{2+}

(C) K^+

(D) Ca^{2+}

10. When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained ?

(A) Hyperbolic curve

(B) Parabola

(C) Straight line with positive slope

(D) Straight line with negative slope

11. Anticancer drug, cyclophosphamide, is metabolised in the body by glutathionation reaction. What is the type of this reaction ?

(A) Reduction

(B) Glucuronidation

(C) Conjugation

(D) Oxidation

12. In non-competitive inhibition, ...

(A) Inhibitor binds to the active site of enzyme

(B) Inhibitor binds at a site other than active site and may bind to either E or ES complex

(C) Inhibitor binds to a site other than active site and binds only to the ES complex

(D) Inhibitor binds at a site other than active site and binds only to E

13. Mangrove swamps are found along .....

(A) Tropical and subtropical coast-lines

(B) Rocky coastlines

(C) Temperate coastlines

(D) Arctic coastlines

14. Indicate the ionic species that predominates at pH 4, 8 and 11 for ammonia :

(A) NH_4^+ at pH 4, NH_4^+ at pH 8 and NH_3 at pH 11

(B) NH_4^+ at pH 4, NH_3 at pH 8 and NH_4^+ at pH 11

(C) NH_3 at pH 4, NH_4^+ at pH 8 and NH_4^+ at pH 11

(D) NH_3 at pH 4, NH_4^+ at pH 8 and NH_3 at pH 11

15. Which of the following transcription factor act as positioning factor for RNA polymerase II and binds to the promoter ?

(A) TF II B

(B) TF II C

(C) TF II D

(D) TF II E

16. Ti plasmid used in genetic engineering is obtained from :

(A) *Bacillus thuringensis*

(B) *Agrobacterium shizogenes*

(C) *Thermus aquaticus*

(D) *Agrobacterium tumifaciens*

17. Which enzyme of the following is used as a marker for lysosomal fraction ?

(A) Pyruvate dehydrogenase

(B) Phospholipase

(C) Acid phosphatase

(D) Succinate dehydrogenase

18. The formation of Z ring in bacteria is important for :

(A) Septum formation

(B) Formation of pill

(C) Helpful in attachment

(D) Useful in movement

19. Which of the following is NOT true of Spermatogenesis ?

(A) Four gametes are formed per meiosis

(B) Sex chromosomes are excluded from recombination and transcription during the first meiotic prophase

(C) Meiosis occurs continuously in mitotically dividing stem cells

(D) Differentiation of the gamete occurs; while in diploid, during first meiotic prophase

20. A population of cells grown in adherent culture contains 0.4 mg protein per 10^6 cells. Actin comprises 4.5% of the total protein. Given the Mr of actin is 42000 daltons and Avogardo number is 6.02×10^{23}, which of the following equals the mean number of actin molecules per cell ?

(A) 2.58×10^{14} actin molecules

(B) 2.58×10^{11} actin molecules

(C) 2.58×10^{8} actin molecules

(D) 2.58×10^{10} actin molecules

21. Which of the following is a natural dye obtained from plant ?

(A) Acid fuchsin

(B) Haematoxylin

(C) Carmine

(D) Aniline blue

22. The groups which are evolved from more than one ancestor are known as :

(A) Monophyletic

(B) Paraphyletic

(C) Polyphyletic

(D) Heterophyletic

23. Which of the following is an example of a symmetrical animal ?

(A) Hydra

(B) Frog

(C) Sponges

(D) Sea Anemone

24. Which of the following chemical mutagens are incorporated into the genome by the DNA polymerase during genome replication ?

(A) Alkylating agents

(B) Base analogues

(C) Deaminating agents

(D) Intercalating agents

25. Progesterone :

(A) is synthesized in the hypothalamic neurons and stored in the posterior pituitary

(B) plays a major role in preparing the uterus for implantation

(C) is a protein hormone and solely responsible for the maintenance of secondary sex characteristics

(D) is exclusively responsible for stimulation of FSH production and follicle growth

26. When somatic cells of ovule directly form embryos, the phenomenon is called as .....

(A) Adventive embryony

(B) Diplospory

(C) Apospory

(D) Parthenogenesis

27. Globin synthesis in the absence of heme in RBC is regulated by the phosphorylation of this factor :

(A) EF1

(B) eIF2

(C) EFG

(D) eIF3

28. In anaerobic glycolysis, 2 moles of inorganic phosphate are used per mole of glucose consumed. Which of the following enzymes catalyzes the uptake of inorganic phosphate ?

(A) Hexokinase

(B) Phosphofructokinase

(C) Glyceraldehyde 3-phosphate dehydrogenase

(D) Pyruvate kinase

29. When oxygen reacts with rubisco enzyme the following products will be formed ?

(A) 3-phosphoglycerate and 2-phosphoglycolate

(B) Two molecules of 3-phosphoglycerate

(C) Two molecules of 2-phosphoglycolate

(D) Glyceraldehyde 3-phosphate and 2-phosphoglycolate

30. Which one of the following is a functional excretory unit of cephalochordata ?

(A) Nephridia

(B) Flame cell

(C) Solanocytes

(D) Nephron

31. Weismann proposed the theory of :

(A) Continuity of germplasm

(B) Continuity of protoplasm

(C) Continuity of plasma cells

(D) Continuity of cytoplasms

32. RAPD marker is :

(A) Recessive

(B) Co-dominant

(C) Dominant

(D) Partially dominant

33. Which of the following chromosomal aberration results in formation of dicentric and acentric chromosomes ?

(A) Paracentric inversion

(B) Pericentric inversion

(C) Reciprocal translocation

(D) Deletion

34. In a hypothetical diploid animal species, there is a locus with two alleles A and B. If A and B are co-dominant, then how many different phenotypes are possible in this species ?

(A) 1

(B) 2

(C) 3

(D) 4

35. If a woman having blood group A with |A|O genotype married a man having a blood group with |B|B genotype, the expected proportion of heterozygotes among their children is :

(A) 25%

(B) 50%

(C) 75%

(D) 100%

36. Type of migration where marine fishes migrate to freshwater for their reproduction is :

(A) Anadromus

(B) Catadromus

(C) Oceanodromus

(D) Potamodromus

37. The propeller twist in B-form of DNA is approximately :

(A) 30°

(B) –30°

(C) 36°

(D) –36°

38. The protein binding site in DNA can be identified by the following experiment :

(A) DNA footprinting

(B) Mobility shift assay

(C) Western blotting

(D) DNA fingerprinting

39. Noble laureate Barbara McClintock observed frequent breakage of maize chromosome 9 due to which of the following transposons ?

(A) IS (Insertion elements)

(B) Ac-Ds (Activator-Dissociator elements)

(C) Mu (Mutator)

(D) Spm/En (Suppressor-Mutator/ enhancer)

40. Red green colour blindness is an example of ..... genetic disorder.

(A) X-linked recessive

(B) X-linked dominant

(C) Y-linked recessive

(D) Y-linked dominant

41. Sodium Dodecyl Sulphate (SDS) is used while separating proteins by polyacrylamide gel electrophoresis because :

(A) it helps in solubilization of proteins making it easier to separate

(B) it binds to proteins and confers a uniform negative charge density thereby making them move during electrophoresis

(C) decreases surface tension of the buffer used for electrophoresis

(D) stabilizes the protein

42. Cytochalasin D inhibits the formation of microfilaments. Which of the following biological activities will *not* be hindered ?

(A) Muscle contraction

(B) Cytosolic transport of vesicles

(C) Amoeboid movement of phagocytic cells

(D) Formation of cleavage furrow following telophase of mitosis

43. Which of the following statements for 'Genetic drift' is *FALSE* ?

(A) Genetic drift can cause allele frequencies to change at random

(B) Genetic drift can lead to richness of genetic variation within populations

(C) Genetic drift can cause harmful alleles to become fixed

(D) Genetic drift affects allele frequencies stronger in small populations

44. According to Oparin, which of the following was not present in the primitive atmosphere of the earth ?

(A) methane

(B) hydrogen

(C) water

(D) oxygen

45. Life is said to have originated as coacervates that were formed by :

(A) DNA

(B) Radiations

(C) Polymerization and aggregation

(D) Heat

46. When a taxon is restricted to a particular geographical region, then it is called :

(A) Endemic

(B) Low risk

(C) Threatened

(D) Critically endangered

47. Severe combined immuno deficiency (SCID) mice do not have :

(A) B & T cells

(B) Eosinophils

(C) Basophils

(D) Neutrophils

48. The lichen *Roccella* is source of :

(A) Condiment

(B) Dye

(C) Antibiotic

(D) Therapeutic compounds

49. Seasonal activity of cambium leads to :

(A) Ring porous wood

(B) Both ring porous and diffuse porous wood

(C) diffuse porous wood

(D) Heteroporous wood

50. Cytoplasmic male sterility occurs as a result of interaction of :

(A) Nucleus and plastid

(B) Mitochondria and plastid

(C) Nucleus and Golgi

(D) Nucleus and mitochondria

51. The enzyme acetyl CoA carboxylase belongs to which class of enzyme ?

(A) Transferases

(B) Hydrolases

(C) Lyases

(D) Ligases

52. According to Vavilov, mango, nobel canes, rice and brinjal are some of the crop plants originated in :

(A) Hindustan centre

(B) Abyssynian centre

(C) Asia minor centre

(D) China centre

53. Which of the following technique is best for determining the precise location of the radioactive isotope located in a specimen ?

(A) Ultracentrifugation

(B) Atomic force microscope

(C) Autoradiography

(D) Fluorescence microscope

54. In bacterial glucose phospho-transferase system, glucose is converted to glucose 6-phosphate. What is the source of phosphate ?

(A) ATP

(B) Inorganic phosphate

(C) Phosphoenol pyruvate

(D) Creatine phosphate

55. The end product of adenosine mono-phosphate (AMP) and guanosine monophosphate (GMP) catabolism in normal humans is :

(A) Urea

(B) Creatinine

(C) Xanthine

(D) Uric acid

56. Which of the following bonds in proteins have a partial double bond character ?

(A) Cα – C

(B) Cα – Cβ

(C) Cα – N

(D) C – N

57. When bacteria growing at 20ºC are transferred to 40ºC, they are most likely to synthesize membrane lipids with more :

(A) Short chain saturated fatty acids

(B) Long chain saturated fatty acids

(C) Short chain unsaturated fatty acids

(D) Long chain unsaturated fatty acids

58. The type of microscopy we would use to examine bacteria that are stained by gram staining procedure is :

(A) Bright field microscope

(B) Fluorescence microscopy

(C) Dark field microscopy

(D) Transmission electron microscopy

59. Mesenteries are found in :

(A) Diploblastic animals

(B) Triploblastic animals

(C) Friploblastic animals

(D) Pseudocoelomates

60. In a DNA sequence, if nucleotide A is replaced by nucleotide G, the resulting mutation will be a ..... mutation.

(A) Transversion

(B) Frameshift

(C) Missense

(D) Transition

61. Which one of the following is *correct* for Na-K ATPase ?

(A) Na^+ and K^+ bind on the extracellular side, while ATP and ouabain bind on the intracellular side

(B) Na^+ and K^+ bind on the intracellular side, while ATP and ouabain bind on the extracellular side

(C) K^+ and ATP bind on the intracellular side, while Na^+ and ouabain bind on the extracellular side

(D) Na^+ and ATP bind on the intracellular side, while K^+ and ouabain bind on the extracellular side

62. The sequencing of ..... helped investigators conclude that all living things can be classified into three domains.

(A) DNA

(B) Cytochrome C

(C) *r*RNA

(D) Haemoglobin

63. Mark the *correct* statement :

(A) In active transport molecules move from higher to lower concentration

(B) Carrier protein is involved in both active transport and facilitated diffusion

(C) Energy is consumed to move molecules against a concentration gradient in active transport only

(D) In active transport, only water molecules are transported with consuming energy

64. Hybrid zone is a region where :

(A) Hybrids can develop

(B) Genetically distinct populations meet and interbreed to some extent

(C) Genetically similar populations meet but cannot interbreed

(D) Populations of the same geographic region meet and exchange genes

65. The sedimentation coefficient increases with :

(A) Increase in solvent density

(B) Increase in friction

(C) Decrease in mass of the particle

(D) Decrease in partial specific volume

66. Peptide antigens assemble with class I MHC, aided by :

(A) Chaperone molecules

(B) Immunoglobulins

(C) T cell receptor

(D) Cytokines

67. Type II glycogen storage disease i.e. Pompe disease is a genetic disorder in which the defective enzyme is :

(A) $\alpha - 1, 4 \rightarrow \alpha - 1, 6$ branching enzyme

(B) $\alpha - 1, 6$ Glucosidase

(C) $\alpha - 1, 4$ Glucosidase

(D) Phosphorylase Kinase

68. Which one of the following is an example of an autoimmune disease ?

(A) Parkinson's

(B) Alzheimer's

(C) Spasticity

(D) Myesthenia Gravis

69. Which of the following statements about LEAFY (LFY), a regulatory gene in *Arabidopsis thaliana* is *correct* ?

(A) LFY is involved in floral meristem identity

(B) LFY is involved in leaf expansion

(C) LFY is involved in root meristem identity

(D) LFY is involved in shoot differentiation

70. Binomial nomenclature include name of the plant in two words that designate .....

(A) Family and generic name

(B) Generic name and species name

(C) Generic name and specific epithet

(D) Species name and varietal epithet

71. The causal organism for rice blast disease is .....

(A) *Xanthomonas oryzae*

(B) *Magnaporthe grisea*

(C) *Rhizoctonia solani*

(D) *Helminthosporium oryzae*

72. The centre of origin of Patato is :

(A) India

(B) Brazil

(C) Australia

(D) Peru

73. *Helicobacter pylori* uses urease to counteract a chemical defense in the human organ in which it lives. This chemical defense is :

(A) Lysozyme

(B) Hydrochloric acid

(C) Superoxide radicals

(D) Sebum

74. Which of the following pair of sugars is of non-reducing nature ?

(A) glucose and galactose

(B) sucrose and trehalose

(C) trehalose and glucose

(D) sucrose and heptulose

75. The enzyme involved in the following reaction is.....

Amino acid + ATP + *t*RNA $\rightleftharpoons$ aminoacyl *t*RNA + AMP + PPi

(A) Aminoacyl *t*RNA transferase

(B) Aminoacyl *t*RNA synthetase

(C) Peptidyl transferase

(D) RNA polymerase

76. The resting membrane potential is determined by :

(A) the K^+ gradient

(B) the Na^+ gradient

(C) the Ca^{2+} gradient

(D) the Cl^- gradient

77. When a robin eats an earthworm, the following happens ?

(A) Detrital food webs can contribute energy to grazing food webs

(B) Grazing food webs can contribute energy to detrital food webs

(C) Transition of energy from primary producers to primary consumers occurs

(D) Transition of energy from primary consumers to secondary consumers takes place

78. Which of the following is known as the sedimentary cycle because its reservoir is sedimentary rock ?

(A) Carbon cycle

(B) Hydrologic cycle

(C) Nitrogen cycle

(D) Phosphorus cycle

79. Which of the following proteins binds to calcium during excitation-contraction coupling ?

(A) Tropomyosin

(B) Actin

(C) Myosin

(D) Troponin

80. Both the substrates A and B must be present at the enzyme active site simultaneously is a characteristic feature of .....

(A) All bisubstrate reactions

(B) Double displacement reactions

(C) Single displacement reactions

(D) Both (B) and (C)

81. Number of nuclear pores depend on the .....

(A) Surface volume of nuclear membrane

(B) Transcription activity of the cell

(C) DNA content of the cell

(D) Size of the nucleus

82. How many different linear tripeptides can be made from three different L-α neutral amino acids, using each amino acid only once in the chain ?

(A) 3

(B) 6

(C) 12

(D) 27

83. The characteristics of organisms involved in symbiotic relationships have developed :

(A) by chance

(B) through co-evolution

(C) by character displacement

(D) through resource partitioning

84. M-STr | PES is associated with one of the following :

(A) Captive breeding of wild fauna

(B) Indigenous satellite navigation system

(C) Security of national highways

(D) Maintenance of tigers

85. Which of the following is *not* a method of enzyme immobilization ?

(A) Entrapment

(B) Adsorption

(C) Absorption

(D) Cross-linking

86. As part of the circadian clock, transfer of phosphate groups from adenosine triphosphate (ATP) to PER is required. This is achieved by one of the following :

(A) Caesin kinase 1

(B) Caesin kinase 2

(C) Tyrosine kinase 1

(D) Tyrosine kinase 2

87. In lake succession, the stages are observed in the following order :

(A) Oligotrophic-Mesotrophic-Eutrophic

(B) Oligotrophic-Eutrophic-Mesotrophic

(C) Mesotrophic-Oligotrophic-Eutrophic

(D) Eutrophic-Mesotrophic-Oligotrophic

88. The carrying capacity of a population is determined by its :

(A) Gross primary production

(B) Net energy

(C) Net production

(D) Gross usage

89. Chlorophyll-*b* is distinguished from chlorophyll-*a* by having a ..... group in place of a ..... group.

(A) Acetyl, formyl

(B) Methyl, formyl

(C) Formyl, methyl

(D) Formyl, acetone

90. The proteins that are sorted to mitochondrial matrix are ..... in nature.

(A) hydrophobic

(B) hydrophilic

(C) amphipathic

(D) amphoteric

91. Normal RBCs are :

(A) Biconcave in humans and in frogs

(B) Nucleated in camels and enucleated in humans

(C) Biconcave in camels and in frogs

(D) Enucleated in humans and in camels

92. Which one of the following pairs execute their functions by binding with cytoplasmic receptors ?

(A) Estrogen and noradrenaline

(B) Growth hormone and progesterone

(C) Growth hormone and GABA

(D) Estrogen and progesterone

93. Artificial ripening of banana can be induced by :

(A) Auxin

(B) Cytokinin

(C) Ethylene

(D) Polyamines

94. Diplospory and parthenogenesis leads to development of :

(A) Haploid embryo

(B) Diploid embryo

(C) Viviparous embryo

(D) Adventive embryo

95. Which one of the following is a true combination for Kala-azar disease ?

(A) Sand fly and *Leishmania*

(B) Glossina fly and *Trypanosoma*

(C) Mosquito and *Plasmodium*

(D) Mosquito and Micro-filarial worm

96. Match the following and choose the *correct* combination :

(*a*)	Sulphur	(1)	Chlorophyll
(*b*)	Zinc	(2)	Nitrogenase
(*c*)	Magnesium	(3)	Methionine
(*d*)	Molybdenum	(4)	Auxin

(A) *a* – 1, *b* – 2, *c* – 3, *d* – 4

(B) *a* – 3, *b* – 4, *c* – 1, *d* – 2

(C) *a* – 3, *b* – 1, *c* – 2, *d* – 4

(D) *a* – 2, *b* – 4, *c* – 1, *d* – 3

97. ..... are the simplest transposable element that contain inverted repeat sequences at each end and a gene encoding transposase.

(A) Composite transposon

(B) Insertion element

(C) Virus

(D) Prion

98. The common feature of the following bacteriophages $\phi \times 174$, OB, N4 and P1 is :

(A) Single stranded DNA genome

(B) RNA genome

(C) Circular genome

(D) All infect *E. coli*

99. Protein synthesis in eukaryotees is inhibited by :

(A) Chloramphenicol

(B) Streptomycin

(C) Cephalosporin C

(D) Cycloheximide

100. With reference to plants, gynogenesis refers to :

(A) Initiation of gynoecium

(B) Development of gynoecium

(C) Development of haploid plants from the egg cell of unfertilized female gametophyte *in vitro*

(D) Development of an ovary

ROUGH WORK