

LIFE SCIENCES

Name & Signature of the Invigilator

PAPER-II
DEC-19/04

OMR Answer Sheet No. :

Roll No. :

(in figures as in Hall Ticket)

Roll Number in words :

Time : 2 Hours

No. of Printed Pages : 26

[Maximum Marks : 200

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page.
2. This paper consists of one hundred (100) multiple choice type of questions. All questions are compulsory.
3. 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.
 - (iii) After this verification is over, the Test Booklet Number should be entered on the OMR Answer Sheet and the OMR Answer Sheet Number should be entered on this Test Booklet.
4. 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 (B) is the correct response.
5. Your responses to the items are to be indicated on the OMR Answer Sheet under Paper – II only. If you mark your response at any place other than in the oval in the OMR Answer Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number 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, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. You have to return the original OMR Answer 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 original question booklet and duplicate copy of OMR Answer Sheet on conclusion of examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or any electronic devices or log table etc., are prohibited.
12. There shall be no negative marking.
13. In case of any discrepancy in the English and Gujarati versions of questions, English version will be taken as final.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

1. આ પાનાની ટોચ પર દર્શાવેલી જગ્યામાં તમારો રોલ નંબર લખો.
2. આ પ્રશ્નપત્રમાં બહુવૈકલ્પિક ઉત્તરો ધરાવતા સૌ (૧૦૦) પ્રશ્નો આપેલા છે. બધા જ પ્રશ્નો ફરજિયાત છે.
3. પરીક્ષાની શરૂઆતમાં આપને પ્રશ્નપુસ્તિકા આપવામાં આવશે. પ્રથમ પાંચ (૫) મિનિટ દરમિયાન તમારે પ્રશ્નપુસ્તિકા ખોલી અને ફરજિયાતપણે નીચે મુજબ પરીક્ષણ કરવું :
 - (i) પ્રશ્નપુસ્તિકાનો વપરાશ કરવા માટે આ કવર પૂઠની ધાર પર આપેલ સીલ સ્ટીકર ફાડી નાખો. કોઈપણ સંજોગોમાં સીલ સ્ટીકર વગરની કે ખુલ્લી પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં.
 - (ii) કવરપૂઠ પર છપાયેલ નિર્દેશાનુસાર પ્રશ્નપુસ્તિકાના પ્રશ્નો, પૂઠો અને સંખ્યાને બરાબર ચકાસી લો. ખામીયુક્ત પ્રશ્નપુસ્તિકા કે જેમાં પ્રશ્નો/પૂઠો ઓછાં હોય, બે વાર છપાયા હોય, અનુક્રમમાં અથવા અન્ય કોઈ ફરક હોય અર્થાત કોઈપણ સંજોગોમાં ખામીયુક્ત પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં. અને જો ખામીયુક્ત પ્રશ્નપુસ્તિકા મળી હોય તો નિરીક્ષક પાસેથી તુરંત જ બીજી સારી પ્રશ્નપુસ્તિકા મેળવી લેવી. આ માટે ઉમેદવારને પાંચ (૫) મિનિટનો સમયગાળો આપવામાં આવશે. પછીથી, પ્રશ્નપુસ્તિકા બદલવામાં આવશે નહીં કે કોઈ વધારાનો સમયગાળો આપવામાં આવશે નહીં.
 - (iii) આ ચકાસણી સમાપ્ત થાય પછી, પ્રશ્નપુસ્તિકાનો નંબર OMR જવાબ પત્રક પર લખવો અને OMR જવાબ પત્રકનો નંબર પ્રશ્નપુસ્તિકા પર લખવો. પ્રત્યેક પ્રશ્ન માટે ચાર જવાબ વિકલ્પ (A), (B), (C) અને (D) આપવામાં આવેલ છે. તમારે સાચા જવાબના ઓવલ (oval) ને નીચે આપેલ ઉદાહરણ મુજબ પેનથી ભરીને સંપૂર્ણ કાળું કરવાનું રહેશે.
4. ઉદાહરણ : (A) (B) (C) (D) કે જ્યાં (B) સાચો જવાબ છે.
5. આ પ્રશ્નપુસ્તિકાના પ્રશ્નો ના જવાબ અલગથી આપવામાં આવેલ OMR જવાબ પત્રકમાં પેપર-II લખેલ વિભાગમાં જ અંકિત કરવા. જો આપ OMR જવાબ પત્રકમાં આપેલ ઓવલ (oval) સિવાય અન્ય સ્થાને જવાબ અંકિત કરશો તો તે જવાબનું મૂલ્યાંકન કરવામાં આવશે નહીં.
6. અંદર આપેલ સૂચનાઓ ધ્યાનપૂર્વક વાંચો.
7. કાંચું કામ (Rough Work) પ્રશ્નપુસ્તિકાના અન્તિમ પૂઠ પર કરવું.
8. જો આપ OMR જવાબ પત્રક નિયત જગ્યા સિવાય અન્ય કોઈપણ સ્થાને, આપનું નામ, રોલ નંબર, ફોન નંબર અથવા એવું કોઈ ચિહ્ન કે જેનાથી તમારી ઓળખ થઈ શકે, અંકિત કરશો અથવા અભદ્ર ભાષાનો પ્રયોગ કરો, અથવા અન્ય કોઈ અનુચિત સાધનોનો ઉપયોગ કરો, જેમ કે અંકિત કરી દીધેલ જવાબ ભૂંસી નાખવો કે સફેદ શાહીનો ઉપયોગ કરી બદલશો તો આપને પરીક્ષા માટે અધોગ્ય જાહેર થઈ શકો છો.
9. પરીક્ષા સમય પૂરો થઈ ગયા બાદ ઓરીજનલ OMR જવાબ પત્રક જે તે નિરીક્ષકને ફરજિયાત સોંપી દેવું અને કોઈ પણ સંજોગોમાં તે પરીક્ષાખંડની બહાર લઈ જવું નહીં. પરીક્ષા પૂર્ણ થયા બાદ ઉમેદવાર ઓરીજનલ પ્રશ્નપુસ્તિકા અને OMR જવાબ પત્રકની ડુપ્લિકેટ કોપી પોતાની સાથે લઈ જઈ શકે છે.
10. માત્ર કાળી/ભૂરી બોલ પોઈન્ટ પેન વાપરવી.
11. કેલ્ક્યુલેટર, લોગ ટેબલ અને અન્ય ઈલેક્ટ્રોનિક યંત્રોનો ઉપયોગ કરવાની મનાઈ છે.
12. ખોટા જવાબ માટે નકારાત્મક ગુણાંકન પ્રથા નથી.
13. પ્રશ્નપુસ્તિકાના કોઈ પ્રશ્નમાં અનુવાદ અંગે કોઈ વિવાદ/મતભેદ જણાય તો અંગ્રેજી વર્ઝન યોગ્ય ગણાશે.

LIFE SCIENCES

PAPER-II

Note : This paper contains **One Hundred (100)** multiple-choice, matching questions, each question carrying **TWO (2)** marks. Attempt **All** the questions.

1. Which of the following enzymes will have higher activity in most cancer cells ?
(A) DNA Polymerase-I (B) Telomerase
(C) RNA Polymerase (D) Reverse transcriptase
2. Which one of the following is *not* considered as primary pollutant ?
(A) Photochemical smog (B) Smoke
(C) CO₂ (D) pm 2.5
3. Earliest immunoglobulin to be synthesized by a foetus is :
(A) IgA (B) IgG
(C) IgE (D) IgM
4. Most of antidiuretic hormone (ADH) in plasma is circulated as :
(A) free form
(B) bound to plasma albumin
(C) bound to neuropepsin 1
(D) bound to neurophesin
5. Urea cycle in vertebrates occurs in :
(A) Liver (B) Spleen
(C) Intestine (D) Kidney

6. Which cellular organelle is most active in apoptosis ?
- (A) Mitochondria (B) Golgi body
(C) Nucleus (D) Ribosome
7. Measured diversity of a 1 m × 1 m area can be referred as :
- (A) β -diversity (B) α -diversity
(C) γ -diversity (D) Ω -diversity
8. Energy to drive hydrological cycle is coming from :
- (A) Tidal energy (B) Solar energy
(C) Wind energy (D) Cloud energy
9. Best practice for biodiversity conservation would be :
- (A) protecting keystone species
(B) protecting dominant species
(C) increasing species richness
(D) protecting the habitat
10. Protein separation in isoelectric focusing is based on :
- (A) density gradient (B) molecular weight gradient
(C) pH gradient (D) size gradient
11. Bcl-2 a human proto-oncogene is located on chromosome number :
- (A) 18 (B) 10
(C) 12 (D) 21

12. Kinases and phosphatases can make a protein active or inactive through :
- (A) phosphorylation only
 - (B) dephosphorylation only
 - (C) phosphorylation and carboxylation
 - (D) phosphorylation and dephosphorylation
13. Raising atmospheric CO_2 levels comparatively favours photosynthetic activity of :
- (A) C_3 plants only
 - (B) Both C_3 and C_4 plants
 - (C) C_4 plants only
 - (D) CAM plants only
14. Under unfavourable conditions plants increase the production of :
- (A) Auxin
 - (B) Auxin and Absciscic Acid
 - (C) Absciscic acid and Ethylene
 - (D) Ethylene and Gibberelin
15. Which one of the following sets of organisms are capable of synthesizing all the amino acids for protein synthesis ?
- (A) Plants and mammals
 - (B) Plants and bacteria
 - (C) Mammals and bacteria
 - (D) Plants and humans
16. In a polypeptide chain, which one of the following amino acids has the ability to form another covalent bond ?
- (A) Valine
 - (B) Alanine
 - (C) Leucine
 - (D) Cysteine

17. Side chains of most of the amino acids present in a native protein are :
- (A) Polar and charged
 - (B) Non-polar
 - (C) Polar and positively charged
 - (D) Polar and uncharged
18. For the development of different tissues in plant, programmed cell death is essential for :
- (A) collenchyma
 - (B) xylem
 - (C) ground tissue
 - (D) epidermis
19. Major distinction in the growth and development of plants and animals is :
- (A) Animals follow fixed pattern and plants follow modular pattern
 - (B) Animals follow modular pattern and plants follow fixed pattern
 - (C) Plants follow fixed pattern and animals follow infinite pattern
 - (D) Animals follow inconsistent pattern and plants follow fixed pattern
20. Acetyl CoA can be produced by the breakdown of :
- (A) Carbohydrates, DNA and Fatty acids
 - (B) Carbohydrates, Amino acids and RNA
 - (C) Carbohydrates, Amino acids and Fatty acids
 - (D) Amino acids, nitrogen bases and proteins

21. Expression of characters under polygenic control are :
- (A) Height and skin colour of humans
 - (B) Flower colour and height of pea plant
 - (C) Height of humans and flower colour of snapdragon
 - (D) Flower colour pea plant and skin colour of humans
22. Food web complexity shows maximum deviation between :
- (A) Desert ecosystem and tropical moist forest ecosystem
 - (B) Desert ecosystem and grassland ecosystem
 - (C) Grassland ecosystem and tropical deciduous forest ecosystem
 - (D) Grassland ecosystem and alpine ecosystem
23. Which one of the following combinations of nutrients follow sedimentary pattern of biogeochemical cycling ?
- (A) Carbon and Sulphur
 - (B) Sulphur and Phosphorus
 - (C) Phosphorus and Nitrogen
 - (D) Nitrogen and Carbon
24. Functioning of phytochrome is regulated by :
- (A) Red light only
 - (B) Blue light only
 - (C) Both red light and blue light
 - (D) Both red and far-red light

25. The most appropriate reason for a species becoming as invasive in a new environment is :
- (A) Species natality rate is high
 - (B) Species mortality rate is minimum
 - (C) Local species have stable natality
 - (D) There is no governing mechanism regulating the invasive species in the new environment
26. Gibberelic acid comes from the pathway of :
- (A) Flavonoid biosynthesis
 - (B) Carbohydrate biosynthesis
 - (C) Terpenoid biosynthesis
 - (D) Phenolics biosynthesis
27. Species 'A' produces many seeds smaller in size, while species 'B' produces few seeds bigger in size. Selection method followed by species 'A' and 'B' is respectively :
- (A) r - and k -selection
 - (B) k - and r -selection
 - (C) r - and s -selection
 - (D) j - and k -selection
28. Which one of the following statistical methods is ideal to validate experimental data of Mendel's work ?
- (A) t-test
 - (B) ANOVA
 - (C) Chi-square test
 - (D) Bootstrap analysis
29. A researcher found that all the three measures of central tendency of a generated data are the same. Distribution pattern shown by the said data would be :
- (A) Normal
 - (B) Poisson
 - (C) Binomial
 - (D) Skewed

30. Which of the following plant tissues show embolism when drought sets in :
- (A) parenchyma (B) xylem
(C) phloem (D) stone cells
31. One of these is said to be having maximum contribution towards the loss of biodiversity over terrestrial ecosystem :
- (A) Excessive usage of fertilizers
(B) Raising atmospheric CO₂ level
(C) Climate change
(D) Habitat fragmentation
32. Ubiquitin is necessary for the degradation of :
- (A) Carbohydrate (B) Protein
(C) Nucleic acid (D) Lipid
33. One to one relationship developed between dosage of pesticide and number of insects survived is :
- (A) Positive regression
(B) Negative regression
(C) Positive curvilinear regression
(D) Depend on the type of insects studied

34. Which culture technique is used for the development of haploid plants ?
- (A) Anther (B) Organ
(C) Somatic cells (D) Embryo
35. Xenobiotics are :
- (A) any chemical that contains carbon
(B) products used for the biological control of pests
(C) special soil amendment used in organic farming
(D) synthetic organic compounds not found in nature
36. FISH analysis is useful for determining the :
- (A) chromosomal location of a gene
(B) order of DNA fragments in a YAC
(C) pattern of expression of a cloned gene
(D) map order of closely linked genes
37. "Gap junctions" are :
- (A) two juxtaposed living cells with the extracellular space filled with a thin film of matrix.
(B) formed by specific hemi-channels in each cell membrane of juxtaposed cells through which selected molecules get exchanged between cells.
(C) primarily for exchange of solvents to maintain cellular osmotic pressure.
(D) primarily for exchange of extracellular proteins to maintain cellular osmotic pressure.

38. Protein targeting to one of the following organelles is because of TICs and TOCs associated with the organelle membranes :
- (A) Mitochondria (B) Chloroplast
(C) Nucleus (D) ER
39. Individuals of a cohort population study belong to :
- (A) same year of birth
(B) different years of birth
(C) different age groups
(D) different generations
40. Which one of the following sets of transport requires energy ?
- (A) Active transport, Endocytosis and Exocytosis.
(B) Active transport, Osmosis and Diffusion.
(C) Osmosis, Diffusion and Endocytosis.
(D) Exocytosis, Diffusion and Carrier mediated transport.
41. Which one of the following pairs of molecules execute their functions by binding with cytoplasmic receptors ?
- (A) Noradrenalin and Estrogen.
(B) Growth hormone and Progesterone.
(C) Estrogen and Progesterone.
(D) GABA and Growth hormone.

42. Which one of the following is a tumor suppressor gene ?
- (A) p⁵³ (B) ALK
(C) AKT-2 (D) RAS
43. The chloride shift in animal cells involves :
- (A) K⁺ accompanying each bicarbonate that leaves the erythrocyte.
(B) carbonic acid leaving the erythrocyte.
(C) bicarbonate leaving the erythrocyte in exchange for chloride.
(D) proton leaving the erythrocyte for each carbon dioxide that enters.
44. Duchenne Muscular Dystrophy disease is an :
- (A) X-linked recessive (B) X-linked dominant
(C) an autosomal dominant (D) an autosomal recessive
45. Alcohol intake increases frequency of urine because :
- (A) more liquid enters the body.
(B) density of alcohol is lesser than water.
(C) it reduces the retention time of the bladder.
(D) it inhibits release of antidiuretic hormone.
46. Histamine is known to be released from :
- (A) kidney and mast-cells.
(B) mast- and hepatic-cells.
(C) mast-cells and neurons.
(D) neurons and hepatic-cells.

47. Energy movement in an Ecological Energy Flow Model is :
- (A) Input energy equals output energy
 - (B) Input energy is always greater than output energy
 - (C) Output energy is always higher
 - (D) There is no exchange of energy
48. The most classical symptom in ataxia is :
- (A) vision deficiency in one eye.
 - (B) failure of muscular coordination.
 - (C) inability to name objects.
 - (D) difficulty in waking from asleep.
49. High dose of atropine may cause :
- (A) increased heart rate
 - (B) pupillary constriction
 - (C) decreased heart rate
 - (D) gastrointestinal smooth muscle cramps
50. The molecule that has the highest rate of diffusion across a phospholipid bilayer is :
- (A) ATP
 - (B) O_2
 - (C) Lysine
 - (D) K^+
51. In which of the following types enzyme activity decreases with increased substrate concentration :
- (A) Non-competitive
 - (B) Competitive
 - (C) Uncompetitive
 - (D) Irreversible

52. Melatonin is synthesized by :
- (A) Coenocytes (B) Melanocytes
(C) Pinealocytes (D) Oligodendrocytes
53. Neurons are formed from precursor cells in proneural region due to :
- (A) relatively low level of notch activity
(B) relatively high level of notch activity
(C) inactivation/knock-out of notch molecule
(D) over-activation/knock-in of delta molecule
54. Which one of the following sets is an *odd* combination ?
- (A) nucleus and plasma membrane
(B) desmosomes, plasmodesmata and tight junctions
(C) tight junctions and gap junctions
(D) gap junctions and plasmodesmata
55. Noradrenergic and dopaminergic neurons must express :
- (A) Tyrosine hydroxylase
(B) Acetylcholinesterase
(C) Histidine decarboxylase
(D) Cholineacetyl transferase

56. In a cell, the primary reason for transmembrane potential is :
- (A) cells are nucleated
 - (B) differential distribution of ions across the membrane
 - (C) cells respire and produce carbon dioxide
 - (D) metabolism causes changes in pH
57. In osmosis :
- (A) solvent moves from hypotonic to hypertonic solution
 - (B) solvent moves from hypertonic to hypotonic solution
 - (C) solute moves from hypotonic to hypertonic solution
 - (D) solute moves across their charge gradient
58. Fireflies flash light as a signal :
- (A) for mating
 - (B) of danger
 - (C) displaying path in the dark to be followed by young
 - (D) expressing availability of food in the dark.
59. Which one of the following falls under "*Postmating isolating Mechanisms*" ?
- (A) Ecological isolation
 - (B) Behavioural isolation
 - (C) Gametic incompatibility
 - (D) Mechanical incompatibility

60. Which one of the following statements is *incorrect* ?
- (A) Adaptive immune response is produced by interactions among white blood cells.
 - (B) Adaptive immune response is compromised by interactions among white blood cells.
 - (C) Both B- and T-cells arise from dividing stem cells in the bone marrow.
 - (D) Both B- and T-cells are types of lymphocytes.
61. A lysosomal enzyme is :
- (A) Lactate dehydrogenase
 - (B) Epimerase
 - (C) Ligase
 - (D) Cathepsin
62. Which one of the following is made of monolayer membrane ?
- (A) Nucleus
 - (B) Mitochondria
 - (C) Lysosome
 - (D) Neurotransmitter containing vesicles
63. What would you expect when a solution containing particles of similar density but varying sizes is centrifuged ?
- (A) the force experienced by the particles depends only on the relative distance at which the particles are present from the centre
 - (B) heavier particles will move more rapidly away from the centre than the lighter ones
 - (C) lighter particles will move more rapidly away from the centre than the heavier ones
 - (D) all particles will experience the same amount of force

64. Which of the following set is *correct* in terms of concentration of urine ?
- (A) Kangaroo rat > Camel > Elephant
 - (B) Elephant > Kangaroo rat > Camel
 - (C) Camel > Elephant > Kangaroo rat
 - (D) Kangaroo rat > Elephant > Camel
65. A cell (AQ) has been mutated not to express aquaporin (AQm). Both the cell types were then placed in water for about 30 min. Which of the following statements would be most appropriate ?
- (A) Only AQm would burst
 - (B) Both AQ and AQm would burst
 - (C) Neither AQ nor AQm would burst
 - (D) Only AQ would burst
66. To achieve higher resolution in microscopy, the refractive index of the immersion oil used should be :
- (A) Less than air
 - (B) Less than glass
 - (C) Same as glass
 - (D) Same as air
67. "Dominance hierarchy" in male bighorn sheep is signaled by :
- (A) body size
 - (B) horns
 - (C) length of mane
 - (D) power of kicking during bull-fight

68. Evolutionary theory suggests that principles of life are applicable to :
- (A) Extant organisms (B) Extinct organisms
- (C) Protists (D) All organisms
69. Gene expression of a flower colour in the F₁ generation of snapdragon is referred as :
- (A) Dominant
- (B) Recessive
- (C) Neither dominant nor recessive
- (D) Co-repressive
70. When a phage transduces a specific gene adjacent to a prophage, the method of gene transfer is :
- (A) Generalized transduction (B) Restricted transduction
- (C) Conjugation (D) Sex duction
71. Two bacterial species are considered similar provided they exhibit :
- (A) 65–70% DNA-DNA reassociation.
- (B) 97% rRNA sequence homology.
- (C) 70% and above DNA-DNA reassociation, $\Delta T_m < 5^\circ\text{C}$ and 97% and above rRNA gene sequence homology.
- (D) phenotypic and chemotypic characteristics.

72. Fixation of CO_2 by Calvin's cycle uses :
- (A) 9 molecules of ATP and 6 molecules of NADPH.
 - (B) 6 molecules of ATP and 9 molecules of NADPH.
 - (C) 9 molecules of NADPH only.
 - (D) 6 molecules of ATP only.
73. A marker for the inner mitochondrial membrane is :
- (A) Succinate dehydrogenase.
 - (B) ATP Synthase.
 - (C) Citrate Synthase.
 - (D) Alpha-ketoglutarate dehydrogenase.
74. Which one of the following sets of amino acids have more propensity to attach with glycoporphin to form complex oligosaccharides ?
- (A) Tyr, Thr
 - (B) Ser, Asp
 - (C) Lys, Arg
 - (D) Tyr, Lys
75. Which one of the following sets does *not* have a single facultative anaerobe/aerobe ?
- (A) Clostridium, Enterococcus, Bacteroides
 - (B) Enterococcus, Clostridium, Methanobacterium
 - (C) Bacteroides, Clostridium, Methanobacterium
 - (D) Methanobacterium, Enterococcus, Clostridium

76. In angiosperms lateral roots develop from :
- (A) Endodermis (B) Pericycle
(C) Cortex (D) Interfascicular cambium
77. Which statement about the function of the Casparian strip is correct ?
- (A) Prevents excess transpiration from leaves
(B) Regulates ion movements into the root vascular cylinder
(C) Prevents horizontal water movement from vascular cylinder to cortex
(D) It is a pathway for nutrient transfer from xylem to phloem
78. In photosynthesis, the function of water is to :
- (A) Supply electrons in the light dependent reactions
(B) Provide O₂ for the light dependent reactions
(C) Transport H⁺ ions in the light dependent reactions
(D) Absorb light energy
79. Shannon-Wiener index is used for the estimation of :
- (A) Amount of energy transfer from one trophic level to another
(B) Total biomass of an ecosystem or any of its components at a given time
(C) Species diversity in an ecological community
(D) Rate of generation of biomass in an ecosystem
80. What causes a growing green plant to bend towards the light ?
- (A) Chloroplasts move towards light
(B) Shoot apex grows towards light
(C) Auxin accumulates on the shaded side, which causes cell elongation
(D) The cells grow faster on the lighted side

81. Match the following and select the *correct* option of the codes given below :

(i) Respine

(a) *Rauwolfia serpentina*

(ii) Rubber

(b) *Crotalaria juncea*

(iii) Bast fibres

(c) *Syzygium aromaticum*

(iv) Clove

(d) *Hevea brasiliensis*

Code :

(i) (ii) (iii) (iv)

(A) (d) (a) (b) (c)

(B) (c) (d) (a) (b)

(C) (b) (c) (d) (a)

(D) (a) (d) (b) (c)

82. Epidermal seed fibres are obtained from :

(A) *Cocos nucifera*

(B) *Gossypium species*

(C) *Cannabis sativa*

(D) *Linum usitatissimum*

83. Saffron is obtained from :

(A) Sepals of *Rhododendron* sp

(B) Petals of Tulip

(C) Style and stigma of *Crocus sativus*

(D) Stamens of *Lilium wallichianum*

84. The sieve elements involved in long distance transport of sucrose possess :
- (A) ER and nucleus
 - (B) ER, P-proteins and plastids
 - (C) Plastids, microtubules and dictyosomes
 - (D) Mitochondria, plastids and ER
85. Which one of the following is involved in the lipid biosynthesis ?
- (A) Lysosomes
 - (B) Peroxisomes
 - (C) Cytosol
 - (D) Smooth endoplasmic reticulum
86. Which one of the following statements about Juvenile play behaviour is *incorrect* ?
- (A) increases strength and coordination.
 - (B) increases experience and skill.
 - (C) decreases learning and skills.
 - (D) is usually seen most intense early in life when brain develops.
87. Group living behavior increases :
- (A) difficulty of finding mates.
 - (B) risk of being spotted by predators.
 - (C) possibility of division of labour.
 - (D) hunting efficiency.

88. The nucleosome contains :
- (A) proteins and ribonucleic acids
 - (B) DNA and non-histone proteins
 - (C) DNA coiled around the core of histones
 - (D) Ribosomal RNA and ribosomal proteins
89. WUSCHEL expression is associated with :
- (A) Tracheary elements
 - (B) Shoot apical meristem
 - (C) Sieve elements
 - (D) Root apical meristem
90. What is the expected melting temperature of the following PCR primer ?
- 5' -AATCCAGGTATTCGCGAAG-3'
- (A) 52°C
 - (B) 56°C
 - (C) 60°C
 - (D) 65°C
91. Which one of the following is a feature of mismatch DNA repair ?
- (A) Modified nucleotides are reorganized
 - (B) Cyclobutyl dimers are removed
 - (C) The parent and daughter strands of newly replicated DNA are distinguished
 - (D) The correct reading frame is identified

92. The protein binding site on DNA can be identified by which one of the following experiments ?
- (A) Mobility shift assay (B) DNA footprinting
(C) Western blotting (D) Southern blotting
93. DNA transposons that carry a pair of terminal repeats and a transposase gene have everything they need to promote their own transposition. These elements are called :
- (A) Autonomous transposons
(B) Non-autonomous transposons
(C) LTR transposons
(D) Retrotransposons
94. Which of the following histones can exist as tetramers in solution ?
- (A) H₃-H₄ (B) H₂A-H₂B
(C) H₃-H₂A (D) H₃-H₄-H₂A-H₂B
95. Which one of the following enzymes is used for 5' - end labeling of oligonucleotide ?
- (A) Klenow fragment
(B) T₄-polynucleotide kinase
(C) T₇ DNA polymerase
(D) DNA polymerase II
96. A species has been introduced in a region where abiotic conditions for supporting life are ideal. The species prefers to go for :
- (A) *r*-selection (B) *k*-selection
(C) *s*-selection (D) *J*-selection.

ROUGH WORK

SEAL