Q-11

ENTRANCE EXAMINATION – 2018
M.Sc. Plant Biology & Biotechnology

Time: 2 hours Maximum Marks: 100

HALL TICKET NO.

INSTRUCTIONS
Please read carefully before answering the questions:

1. Enter your Hall Ticket number both on the top of this page and on the OMR answer sheet.

2. Answers are to be marked only on the **OMR answer sheet** following the instructions provided there upon.

3. Hand over the OMR answer sheet to the Invigilator before leaving the examination hall.

4. The question paper contains **100** questions (**Part-A**: Question Nos. **1-25** and **Part-B**: Questions Nos. **26-100)** of multiple-choice printed in **18** pages, including this page. One OMR answer sheet is provided separately. **Please check.**

5. The marks obtained in **Part-A** will be used for resolving the tie cases.

6. Each question carries one mark.

7. There is **Negative marking** for wrong answers, in **Parts A and B**. For each wrong answer, 0.33 mark will be deducted.

8. Calculators and mobile phones are NOT allowed.

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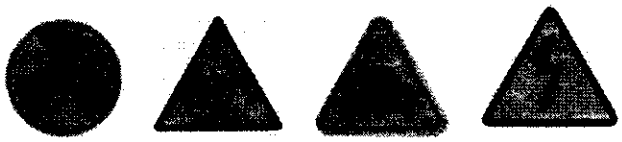
Part-A

1. Arrange the following warning symbols in the correct order from left to right?



A. Radiation, biohazard, poison, high voltage
B. High voltage, biohazard, radiation, poison
C. High voltage, biohazard, poison, radiation
D. Radiation, poison, biohazard, high voltage

2. Which of the following statements about the nature of enzyme catalysis is correct

A. An enzyme can change the equilibrium position of the reaction it catalyzes by lowering the energy of activation of that reaction
B. An enzyme can lower the energy of activation of the reaction it catalyzes by increasing the molecular collisions between the molecules
C. An enzyme lowers the free energy difference between substrate(s) and product(s) but it cannot change the equilibrium position of the reaction it catalyzes
D. An enzyme cannot change the equilibrium position of the reaction it catalyzes but it lowers the energy of activation of that reaction

3. The reaction of H_2 gas with oxygen gas to form water is an example of

A. Combination reaction
B. Exothermic reaction
C. Redox reaction
D. Endothermic reaction

4. Which represents a reduction reaction

A. $AgNO_3 + KBr \rightarrow AgBr + KNO_3$
B. $AgNO_3 + KBr \rightarrow AgBr + KNO_3$
C. $Cl_2 + 2\ e^- \rightarrow 2\ Cl^-$
D. $K \rightarrow K^+ + e^-$

5. To make 1 ml of 20 mM ATP, how much of 10 mM ATP stock should be taken

A. 20 µl
B. 2 µl
C. 200 µl
D. 50 µl

6. Which of the following is **not** a reducing sugar

A. D-Fructose
B. Cellobiose
C. D-Ribose
D. Sucrose

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7. Which of the following single strands would be part of a palindrome in double-stranded DNA

A. GAATTC
B. CTAATC
C. ATGATG
D. CCCTTT

8. Which of the following is most likely to accelerate the evolution of proteins with new functions

A. Exon shuffling
B. Intron excisions
C. Transposon insertions
D. cDNA insertions

9. Arrange the following processes in cell cycle in correct order

1. Metaphase 2. Telophase 3. Anaphase 4. Prophase 5. Cytokinesis

A. 1, 3, 4, 2, 5
B. 4, 1, 3, 2, 5
C. 3, 4, 2, 5, 1
D. 5, 4, 3, 1, 2

10. Which one of the following is **not** a sulfur-containing amino acids

A. Methionine
B. Cysteine
C. Proline
D. Homocysteine

11. The net gain of energy molecules from glycolysis pathway of one glucose could be

A. 2 NADH molecules and 4 ATP molecules
B. 4 NADH molecules and 3 ATP molecules
C. 1 NADH molecule and 2 ATP molecules
D. 2 NADH molecules and 2 ATP molecules

12. Which of the following statements is **incorrect** for bryophytes

A. They have a dominant gametophyte generation
B. Fertilization occurs in water
C. Presence of non-lignified vascular system
D. Occurrence of gametophyte-independent sporophyte

13. How many mitotic cell divisions are required to produce 2048 cells from a single cell

A. 1024
B. 11
C. 2048
D. 22

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14. Which type of bonding is responsible for the secondary structure of proteins

A. Hydrogen bonding between the C=O and N-H groups of peptide bonds
B. Peptide bond between two amino acids
C. Salt bridges between charged side chains of amino acids
D. Disulphide bridges between cysteine residues

15. Identify the **mismatch**

A. Vessels - Welwitschia
B. Manas - Tiger Reserve
C. Sacred groves - *ex-situ* conservation
D. Ramsar site - Renuka lake

16. Match the names/features present in 'List A' with their family from 'List B'

	List A		**List B**
i.	Pollinia	a	Solanaceae
ii.	Neem	b.	Poaceae
iii.	Nightshade	c.	Meliaceae
iv.	Parallel venation	d.	Asclepiadoideae

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

17. Which of the following is **incorrect** in Student's T test?

A. It compares two means of two groups to find out the significant difference between them
B. It indicates that if the significant differences could have happened by chance
C. A large t-score is indicative of higher similarity between the groups
D. Low p-values in a T test are good

18. Chromosomal crossing-over during meiosis occurs during

A. Prophase I
B. Interphase I
C. Prophase II
D. Interphase II

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19. If equal number of blue, red, white and yellow flowering plants are present in a randomized growing population of 100 flowering plants in a culture room, what is the probability of picking a blue or red flower in complete dark

A. 25/100
B. 75/100
C. 50/100
D. 20/100

20. Match the following famous chemical reactions in 'List A' with their end products in 'List B'

	List A		**List B**
i.	Friedel-Crafts alkylation Reaction	a	Salicylaldehyde
ii.	Coupling Reactions	b.	Ammonia
iii.	Reimer-Tiemann Reaction	c.	Toluene
iv.	Haber's process	d.	*p*-Hydroxyazobenzene

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

21. Match the following Nobel laureates given in the 'List A' with their discoveries present in the 'List B'

	List A		**List B**
i.	Yoshinori Ohsumi	a	Chemiosmotic theory
ii.	Frederick Sanger	b.	Interpretation of genetic code
iii.	Peter D. Mitchell	c.	Determination of base sequences in nucleic acids
iv.	Marshall W. Nirenberg	d.	Autophagy

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

22. Which of the following is **not** a form of asexual reproduction

A. Parthenogenesis
B. Binary fission
C. Budding
D. Syngamy

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23. Match the characters present in the 'List A' with the correct plant names given in the 'List B'

	List A		List B
i.	Anomalous secondary growth	a	Cannabis
ii.	Epidermal fibre	b.	Linseed
iii.	Phloem fibre	c.	Cotton
iv.	Hemp fibre	d.	Boerhaavia

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

24. Match the plant names present in the 'List A' with the corresponding common name/feature in the 'List B'

	List A		List B
i.	*Funaria*	a	Tree fern
ii.	*Equisetum*	b.	Aquatic fern
iii.	*Salvinia*	c.	Xerophytic fern
iv.	*Dicksonia*	d.	Rhizoids

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

25. Match the algae from the 'List A' with the products, extracted from them, presented in the 'List B'

	List A		List B
i.	*Dunaliella salina*	a	Iodine and potassium
ii.	*Macrocystis pyrifera*	b.	Carrageenan
iii.	*Gracilaria bursa-pastoris*	c.	β-carotene
iv.	*Chondrus crispus*	d.	Agar-agar

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

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Part-B

26. The main role of phragmoplast during cytokinesis is

A. Provides energy
B. Provides structure materials
C. Supports cell plate
D. None of the above

27. Phages that show lysogenic cycle are called

A. Virulent phages
B. Lytic phases
C. Temperate phages
D. None of these

28. Which of the following statements about the competitive inhibition of an enzyme-catalyzed reaction is correct

A. A competitive inhibitor and substrate can bind simultaneously to the enzyme
B. The V_{max} and K_m (Michaelis constant) for a reaction are unchanged in the presence of a competitive inhibitor
C. The V_{max} for a reaction remains unchanged in the presence of a competitive inhibitor
D. The K_m for a reaction remains unchanged in the presence of a competitive inhibitor

29. In plants, the major site for *de novo* biosynthesis of fatty acids is

A. Plastids
B. Cytoplasm
C. Mitochondria
D. Glyoxysome

30. Which of the following act as precursors for porphyrin formation

A. Histidine and proline
B. Tyrosine and glutamic acid
C. Succinyl CoA and glycine
D. Oxaloacetate and acetyl CoA

31. Which of the following microorganisms leach metals out of rock ores and can accumulate silver

A. *Pseudomonas aeruginosa*
B. *Thiobacillus ferrooxidans*
C. *Pseudomonas putida*
D. *Zoogloea ramigera*

32. A genetically distinct geographic variety within a species, which is genotypically adapted to specific environmental conditions is called as

A. Ecological species
B. Ecophenes
C. Ecotypes
D. Sub-species

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33. Which of the following statements about the mechanism of synthesis of fatty acids is correct

A. Acetyl-CoA is the active donor of two carbon atoms in fatty acid synthesis
B. Malonyl-CoA is the active donor of two carbon atoms in fatty acid synthesis
C. Fatty acid synthesis is the reverse of β-oxidation of fatty acids
D. Coenzyme A is the acyl group carrier of intermediates in fatty acid synthesis

34. Which of the following is **not** an example of a biofilm

A. Bacterial colony growing on an agar surface
B. Human microbiome
C. Toilet bowl scum
D. Dental plaque

35. The apparatus used for measuring rate of transpiration is called

A. Lactometer
B. Potometer
C. Refractometer
D. Auxanometer

36. If the occurrence of one event means that another cannot happen, then the events are

A. Independent
B. Empirical
C. Mutually exclusive
D. Mutually dependent

37. Resistance genes found in the commonly used cloning vector pBR322 are

A. Bacitracin and kanamycin
B. Tetracycline and ampicillin
C. Chloramphenicol and neomycin
D. Streptomycin and cycloheximide

38. Striga is a

A. Complete stem parasite
B. Partial root parasite
C. Complete root parasite
D. Partial stem parasite

39. If the respiration rate is higher than the rate of photosynthesis, the plant will

A. Die of starvation
B. Grow healthier due to more energy
C. Not exhibit any change
D. Become thin and fall

40. Synaptonemal complex during meiosis is formed in sub-stage

A. Leptotene
B. Pachytene
C. Zygotene
D. Diplotene

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41. In the morning, the fresh weight of a plant is usually greater than that in the evening because

A. Photosynthesis is absent in the night
B. Respiration is less in the night
C. Plants transpire more in the night
D. Plants transpire less in the night

42. George Beadle and Edward Tatum received Nobel Prize in 1958 for demonstrating the interaction of genes in biochemical pathways in the haploid fungus *Neurospora*. In their study, they isolated mutants that were affected in the synthesis of

A. Arginine
B. Leucine
C. Phenylalnine
D. Tryptophan

43. An individual of genotype AA BB Cc DD Ee Ff is testcrossed. Assuming that the loci undergo independent assortment, what fraction of the progeny are expected to have the genotype Aa Bb Cc Dd Ee Ff?

A. 1/4
B. 1/16
C. 1/8
D. 1/32

44. *Drosophila virilis* is a diploid organism with 6 pairs of chromosomes (12 chromosomes altogether). The number of chromatids and chromosomes that are present in metaphase II of meiosis is?

A. 6 chromatids and 6 chromosomes
B. 12 chromatids and 6 chromosomes
C. 12 chromatids and 12 chromosomes
D. 24 chromatids and 12 chromosomes

45. The enzyme responsible for initiating DNA replication in prokaryotes is

A. DNA polymerase I
B. DNA polymerase III
C. DNA polymerase II
D. Primase

46. An example of a post-translational process is

A. Alternative splicing
B. Antisense knockdown
C. Spliceosome activity
D. RNA interference

47. Gibberellins were discovered during scientific studies of foolish seedling disease caused by fungus in the following plant species

A. *Secale cereale*
B. *Zea mays*
C. *Oryza sativa*
D. *Triticum aestivum*

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48. One of the primary reasons for the loss of biological activity in aquatic and marine dead zones is

A. Depleted levels of oxygen
B. Depleted levels of nutrients
C. Migration of species
D. None of the above

49. Which of the following statements is **incorrect** about passive transport

A. It involves movement of ions across cell membrane
B. The rate of passive transport depends on the permeability of the cell membrane
C. It does not require cellular energy for transportation
D. It moves solutes from area of low concentration to area of higher concentration

50. Two linked genes are separated by a distance such that exactly 10 percent of the cells undergoing meiosis have one crossover (chiasmata) between the genes and 90 percent have no crossover. The percent recombination between the genes

A. 2%
B. 10%
C. 5%
D. 50%

51. Queen Victoria was carrier of hemophilia, a sex-linked disease. Which of the following statements is **true**

A. Hemophilia would have occurred more in her males than female descendants
B. Queen's father must have had hemophilia
C. All of her sons would have had hemophilia
D. All of her daughters would have had hemophilia

52. On immersing an iron nail into $CuSO_4$ solution for few minutes, you will observe

A. No reaction takes place
B. The colour of solution fades away
C. The surface of iron nails acquires a black coating
D. The colour of solution changes to green

53. Which of the following statements is **true**

A. Proteins are synthesized always from carboxy terminus to amino terminus
B. Proteins are synthesized always from amino terminus to carboxy terminus
C. Proteins can be synthesized randomly in any direction
D. Direction of protein synthesis depends on type of the protein

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54. Which of the following **do not** contain nucleic acids

A. Nucleus
B. Mitochondria
C. Ribosomes
D. Endoplasmic reticulum

55. Match the names given in the 'List A' with the class of major chemical compounds present in the 'List B'

	List A		List B
i.	Natural rubber	a	Morphine
ii.	Black pepper	b.	β-carotene
iii.	Golden rice	c.	Terpenes
iv.	*Papaver somniferum*	d.	Piperine

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

56. Which of the following RNAs are involved in splicing of introns from primary genomic transcripts

A. Ribosomal RNA
B. Small interfering RNA
C. Transfer RNA
D. Small nuclear RNA

57. Endospores are

A. Certain bacterial spores, enable them to survive in adverse conditions
B. Certain protozoan fruiting bodies, enable them to survive in adverse conditions
C. Certain fungal spores, enable their species to survive in adverse conditions
D. Non-living viral capsules, capable infecting eukaryotic cells

58. During secondary growth, the cells of the cortex of a dicot plant turn meristematic, giving rise to a cork cambium known as

A. Phellem
B. Periderm
C. Phellogen
D. Phelloderm

59. Hydra belongs to the Phylum

A. Cnidaria
B. Porifera
C. Platyhelmintha
D. Echinodermata

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60. Promoter is

A. Upstream RNA sequence of an mRNA, which recognized by translation initiation factors in order to initiate translation
B. Upstream DNA sequence of a gene, which is recognized by RNA polymerase in order to initiate transcription
C. Sequence of amino acids in a protein, which promote catalysis of an enzyme
D. Sequence of amino acids in a protein, which specifically promote oxidative/reductive reactions

61. A technique that separates and resolves molecules according to their net charge in an electric field, usually on solid or semi-solid agarose medium is called

A. Denaturation
B. Electophoresis
C. Sonification
D. Polymerase chain reaction

62. A pigment-containing sensory protein found in specialized light receptor cells called rodstats is required for vision in dim light is

A. Melanin
B. Sclerotin
C. Rhodopsin
D. Retinol

63. Seed dormancy inhibited mechanically by causing seed coat injury is called as

A. Scarification
B. Vernalization
C. Stratification
D. Humification

64. In which of the following phyla are the sperm non-motile

A. Cycadophyta
B. Ginkophyta
C. Gnetophyta
D. Lycophyta

65. The T-DNA of one of the following bacterium is de-armed to use as vector to clone gene sequences

A. *Xanthomonas campestris*
B. *Agrobacterium tumefaciens*
C. *Pseudomonas putida*
D. *Erwinia carotovora*

66. A multiple-layered epidermis consisting of non-living compact cells with lignified strips of secondary walls to provide support, prevent water loss and assist the plant in absorbing water is called as

A. Phelloderm
B. Epithelial
C. Velamen
D. Endothelial

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67. Which stage of the plant development have more respiration

A. Germinating seed
B. Root tip
C. Growing shoot apex
D. Leaf bud

68. Electron transport system happens in which part of mitochondria

A. Inner membrane
B. Matrix
C. Outer membrane
D. Ribosomes

69. What is the role of kinase enzyme

A. Removal of phosphate groups
B. Addition of methyl groups
C. Addition of phosphate groups
D. Removal of methyl groups

70. What is the prosthetic group in chromoprotein

A. Chromophore
B. Nucleic acid
C. Cytochrome
D. Pigments

71. What is the by-product in light induced photosynthesis process

A. ATP and NADPH
B. O_2
C. H_2O
D. Carbohydrates

72. Mendal's tall/dwarf alleles in pea is an example of a single gene locus that can control the level of bioactive

A. Auxin
B. Cytokinin
C. Gibberellin
D. Ethylene

73. Phylogeny and inter-relationship found between taxa on the basis of number, type and arrangement of chromosomes is

A. Cytotaxonomy
B. Karyotaxonomy
C. Chromotaxonomy
D. Chemotaxonomy

74. Viroids have

A. DS-DNA enclosed by protein coat
B. SS-DNA not enclosed by protein coat
C. SS-RNA not enclosed by protein coat
D. DS-RNA enclosed by protein coat

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75. A research scholar has newly joined a biology lab for his PhD. His supervisor explained the work and asked him to conduct an experiment with the given bio-molecules and few chemicals/buffers as per given protocol. After mixing all given components, he suggested him to put the tubes at 95°C for 5 min, followed by 30 cycles of 95°C for 1 min, 60°C for 30 Sec, 72°C for 1 min, followed by 72°C for 4 min and 4°C for infinite time. Which experiment his supervisor suggested him to perform?

A. Isolation of Heat-Shock protein from mammalian chromosome
B. Southern hybridization
C. Polymerase Chain Reaction
D. RNA isolation from a bacteria collected from high temperature altitude

76. Which of the following statements is **false**

A. The bacteriophage has a double-stranded DNA molecule
B. TMV has a double-stranded RNA molecule
C. Most plant viruses are RNA viruses
D. Most animal viruses are DNA viruses

77. Endosperm formation begins with

A. The establishment of the suspensor
B. The fusion of the antipodals
C. The syncytial development of the embryo
D. The fertilization of the polar nuclei

78. Which of the plant mitochondrial electron transport chain complex is **not** involved in pumping out of H^+ from mitochondrial matrix to inter mitochondrial membrane space

A. NADH dehydrogenase complex
B. Succinate dehydrogenase complex
C. Cytochrome bC1 complex
D. Cytochrome oxidase complex

79. In angiosperms, the free nuclear division takes place during

A. Gamete formation
B. Endosperm formation
C. Flower formation
D. Embryo formation

80. Meiosis cell division is mainly responsible for

A. Growth and development of plants
B. Production of secondary metabolites
C. Increase in the number of mature cells and destroying dead cells
D. Maintaining the number of chromosome constant from one generation to other

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81. Micronutrients are

A. Available in the soil only in smaller amounts
B. Required by plants in smaller amounts
C. Smaller molecules required by plants
D. Useful, but not required by plants

82. The combination of pressure potential and solute potential is

A. Water potential
B. Field potential
C. Transpiration potential
D. Osmotic potential

83. A common adaptation of aquatic plants is the formation of

A. Chlorenchyma
B. Colenchyma
C. Aerenchyma
D. Sclerenchyma

84. The mature female gametophyte of an angiosperm is

A. the archegonium and its egg cell
B. the ovule inside the ovary
C. the carpel after pollination
D. an embryo sac with eight nuclei and seven cells

85. Which of the following is an essential element for all plants

A. Molybdenum
B. Sodium
C. Silicon
D. Selenium

86. In monocots, phloem is composed of specialized cells including

A. Sieve tubes, companion cells, phloem fibres, and phloem parenchyma
B. Sieve tubes, companion cells, and phloem fibres
C. Sieve tubes, companion cells, and phloem parenchyma
D. Sieve tubes, companion cells, phloem fibres, and vessels

87. The softwood of conifers can be distinguished from the hardwood of angiosperms by the absence of

A. Vessel elements
B. Tracheids
C. Sieve tube elements
D. Companion cells

88. The function of leghemoglobin in the root nodules of legumes is

A. Nodule differentiation
B. Expression of *nif* gene
C. Inhibition of nitrogenase activity
D. Oxygen scavenging

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89. BAC, PAC and YACs are generally used in Molecular Biology labs. These are

A. Different types of DNA vectors
B. Different types of restriction endonuclease
C. Names of Bacterial-Aromatic Compound, Plant-Aromatic Compound and Yeast-Aromatic Compounds, respectively
D. When bacterial genomic DNA sequence ends with A & C = BAC, when Plasmid DNA sequence ends with A & C = PAC, When human Y-chromosome ends with A & C = YAC

90. In the evolution of land plants, sporophytes became dominant over gametophytes due primarily to what adaptation

A. Airborne pollen
B. Seeds
C. Vascular tissue
D. Flowers

91. Reindeer moss is

A. *Cladonia rangiferina*
B. *Polytrichum stictum*
C. *Sphagnum papillosum*
D. *Huperzia lucidula*

92. Which among the following has **not** been released as a transgenic crop in the market so far

A. Tomato
B. Papaya
C. Apple
D. Pepper

93. Vivipary is

A. Seed germination without pollination
B. Seed germination inside the fruit while attached to the plant
C. Seed germination inside the fruit in a detached fruit
D. Seed germination with epiterranean cotyledons

94. Vernalization is the process whereby flowering is promoted by

A. A cold treatment given to a fully hydrated seed
B. A cold treatment given to dry seed
C. A cold treatment given to a fully hydrated flower bud
D. A cold treatment given to dehisced flower

95. Which of the following component is **not** essentially required for *in vitro* molecular cloning technique

A. DNA ligase
B. DNA topoisomerase
C. Plasmid
D. Restriction enzyme

96. Match the type of cell wall material given in the 'List A' with the group of organisms it is present in the 'List B'

	List A		List B
i.	Chitin	a	Bacteria
ii.	Lignin	b.	Brown algae
iii.	Peptidoglycan	c.	Fungi
iv.	Alginic acid	d.	Angiosperms

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

97. What is the natural function of restriction enzymes

A. Protecting bacteria by cleaving the DNA of infecting viruses
B. Protecting bacteria by cleaving their own DNA
C. Protecting bacteria by methylating their own DNA
D. Protecting bacteria by methylating the DNA of infecting viruses

98. UNFCCC stands for

A. United Nations Framework Council on Climate Change
B. United Nations Framework Convention on Climate Change
C. United Nations Federation Convention on Climate Change
D. United Nations Federation Council on Climate Change

99. Match the type of diseases given in the 'List A' with their causing agents presented in the 'List B'

	List A		List B
i.	Leaf roll of potato	a	Nematode
ii.	Red-rot of sugarcane	b.	Viral
iii.	Citrus canker	c.	Fungal
iv.	Root knot of tomato	d.	Bacterial

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

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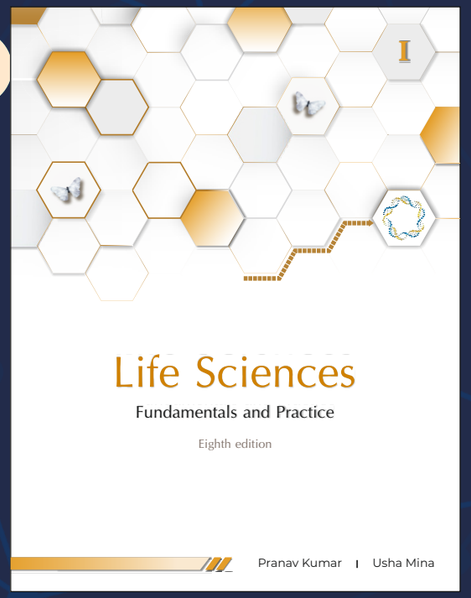
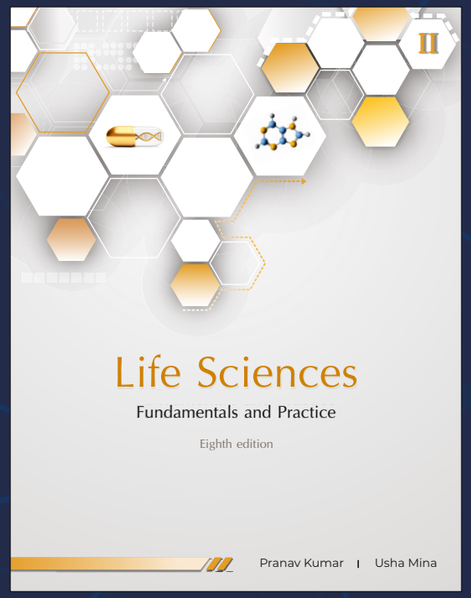
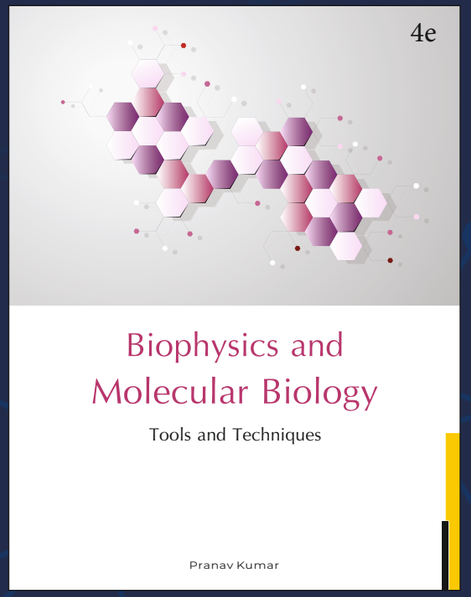
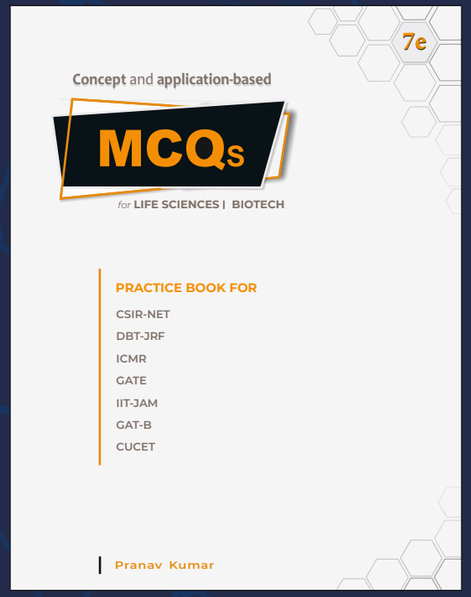
100. Which of the following statements is **not** correct for plasmids

A. A plasmid is a generally a small, circular, double-stranded DNA molecule
B. A plasmid contains multiple cloning sites
C. Plasmids cannot be used in genome sequencing projects
D. A plasmid possesses an origin of replication









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