

**Roll No.**

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(Write Roll Number from left side exactly as in the Admit Card)

*Signature of Invigilators*

1. \_\_\_\_\_

2. \_\_\_\_\_

**Question Booklet Series**

**X**

**Question Booklet No.**

(Identical with OMR Answer Sheet Number)

**1418**

**PAPER-II**

**Subject Code : 14**

## **LIFE SCIENCES**

*Time : 2 Hours*

*Maximum Marks: 200*

### ***Instructions for the Candidates***

1. Write your Roll Number in the space provided on the top of this page as well as on the OMR Sheet provided.
2. At the commencement of the examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and verify it:
  - (i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page.
  - (ii) Faulty booklet, if detected, 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) Verify whether the Question Booklet No. is identical with OMR Answer Sheet No.; if not, the full set is to be replaced.
  - (iv) After this verification is over, the Question Booklet Series and Question Booklet Number should be entered on the OMR Sheet.
3. This paper consists of One hundred (100) multiple-choice type questions. All the questions are compulsory. Each question carries *two* marks.
4. Each Question has four alternative responses marked: **(A) (B) (C) (D)**. You have to darken the circle as indicated below on the correct response against each question.

*Example:* **(A) (B) (●) (D)**, where **(C)** is the correct response.

5. Your responses to the questions are to be indicated correctly in the OMR Sheet. If you mark your response at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Rough work is to be done at the end of this booklet.
7. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Sheet, except in 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.
8. Do not tamper or fold the OMR Sheet in any way. If you do so, your OMR Sheet will not be evaluated.
9. You have to return the 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 question booklet and duplicate copy of OMR Sheet after completion of examination.
10. **Use only Black Ball point pen.**
11. **Use of any calculator or mobile phone etc. is strictly prohibited.**
12. **There are no negative marks for incorrect answers.**

[ Please Turn Over ]



## LIFE SCIENCES

## PAPER II

- 1.** What does the standard error of mean signify?
- Difference between universal mean and observed mean
  - Difference between two mean values of two variants
  - Deviation from experimental mean
  - Error that occur while calculating the mean value
- 2.** Ribophorins are a group of
- Transmembrane glycoproteins located in the membrane of RER
  - Transmembrane lipoproteins located in the membrane of RER
  - Transmembrane glycoproteins located in the membrane of SER
  - Transmembrane lipoproteins located in the membrane of SER
- 3.** Some agents act by binding to a receptor mimicking normal neurotransmitter. Such agents are called
- Agonists
  - Antagonists
  - Allomones
  - Endogenous chemicals
- 4.** Which among the following is *not* established as a genetic disease?
- Phenylketonuria
  - Haemophilia
  - $\beta$ -thalassemia
  - Vitiligo
- 5.** Detoxification site in the liver cell is
- SER
  - RER
  - Golgi apparatus
  - Free ribosomes
- 6.** The pattern recognition receptors (PRRs) are
- Present on amplified cells by selection
  - Primarily responsible for innate immune response
  - Found in small group of organisms
  - Found to trigger only adaptive responses
- 7.** Which of the following statements about nature of enzyme catalysis is correct?
- The rate of formation of transition state intermediate determines the overall reaction rate
  - The rate of formation of transition state intermediate determines the overall free energy change of the reaction
  - The active site of an enzyme is complementary to the substrate in ground state
  - Natural substrates bind to enzymes more tightly than transition state analogs
- 8.** An antimicrobial peptide from bacteria that has been commercialized as food preservative is
- Neomycin
  - Nisin
  - Nystatin
  - Norfloxacin
- 9.** An antibiotic that resembles the 3'-end of a charged tRNA molecule is
- Bacitracin
  - Puromycin
  - Tetracycline
  - Kanamycin
- 10.** A C-terminal peptide sequence of four amino acids (Lys–Asp–Glu–Leu) directs protein to which of the following organelles?
- Endoplasmic reticulum
  - Mitochondria
  - Peroxisomes
  - Nucleus

**11.** In which nutrient cycle given below, both the atmospheric and lithospheric phases operate at similar magnitude leading to release of the element concerned for the effective functioning of bio-geo chemical cycle?

- (A) Sulphur cycle
- (B) Nitrogen cycle
- (C) Carbon cycle
- (D) Phosphorous cycle

**12.** Animals that climb on the walls and rocks are categorised as

- (A) Aerial animals
- (B) Scansorial animals
- (C) Clasporial animals
- (D) Arboreal animals

**13.** What kind of behaviour of a goose helps to retrieve its egg that has got knocked outside its nest?

- (A) Cognitive
- (B) Innate
- (C) Territoriality
- (D) Non-associative learning

**14.** Which of the following hormones shows negative feedback in spermatogenesis?

- (A) Inhibin
- (B) LH
- (C) FSH
- (D) Testosterone

**15.** Basic principles of embryonic development were pronounced by

- (A) Von Baer
- (B) Weismann
- (C) Haeckel
- (D) Morgan

**16.** *Bacillus schlegelii* is a

- (A) Nitrite-oxidising bacterium
- (B) Iron-oxidising bacterium
- (C) Sulphur-oxidising bacterium
- (D) Hydrogen-oxidising bacterium

**17.** *Mycoplasma pneumoniae* (MP), an important pathogen of respiratory tract infection, is highly sensitive to

- (A) Penicillins
- (B) Cephalosporins
- (C) Macrolides
- (D) Fosfomycin

**18.** At what allelic frequency does the homozygous recessive genotype (bb) become twice as frequent as the heterozygous genotype (Bb) in a Hardy–Weinberg population?

- (A) 0.5
- (B) 0.4
- (C) 0.8
- (D) 0.25

**19.** Histone acetylation increases transcription of gene because

- (A) It increases the DNA–histone interaction
- (B) The acetyl groups on histones are recognised by RNA polymerase
- (C) Histone acetylation loosens the DNA–histone complex making it more accessible to RNA polymerase
- (D) Histone acetylation increases DNA bending which is recognized by RNA polymerase

**20.** One strand of a double-stranded DNA is mutated, changing all the cytosines to uracils. After one round of replication of the mutated DNA strand, the  $T_m$  value of the resultant DNA will

- (A) Be higher
- (B) Be lower
- (C) Remain same
- (D) Insufficient data

- 21.** Which one of the following is a prokaryote?
- Green algae
  - Grass green algae
  - Brown algae
  - Red algae
- 22.** Structure building materials found in exoskeleton of insects is a combination of
- Acetylglucosamine + Protein
  - Trehalose + Lipid
  - Lactose + Protein
  - Sucrose + Lipid
- 23.** Which feature of a modern bird is found in Archaeopteryx, a transitional form between Dinosaur and bird?
- Hollow bone
  - Wish bone
  - Toothless beak
  - Symmetrical feather arrangement on the body
- 24.** In which phylum similar segments can be individually controlled for different functions?
- Annelida
  - Arthropoda
  - Platyhelminthes
  - Mollusca
- 25.** Select the correct sequence in which the larval stages are stated in terms of evolutionary sequence.
- Planula–Trochophore–Tornaria–Bipinnaria
  - Planula–Trochophore–Brachiolaria–Tornaria
  - Planula–Glochidium–Doliolaria–Veliger
  - Planula–Veliger–Ophiopluteus–Trochophore
- 26.** The concept of ‘gene-for-gene hypothesis’ postulated by Harold Flor in 1956 was that
- Every resistant gene in the plant has a corresponding avirulent gene in the pathogen
  - Every avirulent gene in the plant has a corresponding resistant gene in the pathogen
  - Every resistant gene in the plant does not have a corresponding avirulent gene in the pathogen
  - Every avirulent gene in the plant does not have a corresponding resistance in the pathogen
- 27.** Match the following and select the correct answer from the code given below
- | <i>Column-I</i> | <i>Column-II</i>                                   |
|-----------------|--|
| (P) Extensin    | (1) Phenolic polymer                               |
| (Q) Lignin      | (2) Group of structural proteins of the cell wall  |
| (R) Pectin      | (3) Polymer that confers tensile strength          |
| (S) Cellulose   | (4) Polysaccharides with multiple negative charges |
| (P) (Q) (R) (S) |  |
| (A)             | (1) (2) (3) (4)                                    |
| (B)             | (4) (1) (2) (3)                                    |
| (C)             | (2) (1) (4) (3)                                    |
| (D)             | (3) (4) (1) (2)                                    |
- 28.** Plants bearing hermaphrodite and female flowers on the same individual are known as
- Andromonoecious
  - Gynomonoecious
  - Polygamous
  - Dioecious
- 29.** Both heterospory and circinate ptyxis occur in
- Dryopteris*
  - Pinus*
  - Cycas*
  - Funaria*

- 30.** Phenetic classification is based on  
 (A) Observable characteristics of existing organisms  
 (B) The ancestral lineage of existing organisms  
 (C) Dendrogram based on DNA characteristics  
 (D) Sexual characteristics
- 31.** The mean of a distribution is 23, the median is 24 and the mode is 25.5. It is most likely that this distribution is  
 (A) Positively skewed  
 (B) Negatively skewed  
 (C) Symmetrical  
 (D) Asymptotic
- 32.** A coefficient of correlation computed as – 0.95 means that  
 (A) The relationship between two variables is weak  
 (B) The relationship between two variables is strong and positive  
 (C) The relationship between two variables is strong but negative  
 (D) Correlation coefficient cannot have this value
- 33.** In which part of the mRNA molecules, siRNAs and miRNAs usually bind during RNA silencing?  
 (A) 3'– poly A tail  
 (B) 3'– UTR  
 (C) 5'– UTR  
 (D) Segment that encodes amino acids
- 34.** Analysis of expressed RNA in a cell is known as  
 (A) Proteomics  
 (B) Transcriptomics  
 (C) Interactomics  
 (D) Metabolomics
- 35.** The wild type *Escherichia coli* cells are growing in a defined medium with glucose. They are transferred to another medium containing only lactose as sugar. Which of the following changes would take place?  
 (A) The cells will stop dividing  
 (B) The lac operon is induced  
 (C) The lac operon is repressed  
 (D) All the operons are induced
- 36.** Which one of the following proteins regulates the transcription of other 'nod' genes?  
 (A) Nod A  
 (B) Nod B  
 (C) Nod C  
 (D) Nod D
- 37.** Which of the following groups are *not* involved in microbially influenced corrosion (MIC) of metal infrastructure in the environment?  
 (A) Sulfate-reducing bacteria  
 (B) Ferric-iron-reducing bacteria  
 (C) Ferrous-iron-oxidizing bacteria  
 (D) Purple non-sulfur bacteria
- 38.** In pBR322, pBR stands for  
 (A) Plasmid Bacterial Replication  
 (B) Plasmid Beltac and Rodriguez  
 (C) Plasmid Baltimore and Rodriguez  
 (D) Plasmid Bolivar and Rodriguez
- 39.** Which of the following repressors is needed for lytic infection in a temperature lambda phage?  
 (A) CI  
 (B) CII  
 (C) Cro  
 (D) CIII
- 40.** The Philadelphia chromosome is an example of reciprocal translocation of genetic material between chromosomes \_\_\_\_\_ and \_\_\_\_\_ in cells of chronic myeloid leukemia (CML) carrying a fusion gene, BCR-ABL1.  
 (A) 5 and 10  
 (B) 12 and 17  
 (C) 9 and 21  
 (D) 9 and 22

- 41.** Primase, an enzyme which is a  
 (A) RNA dependent DNA polymerase  
 (B) DNA dependent RNA polymerase  
 (C) RNA dependent RNA polymerase  
 (D) DNA dependent DNA polymerase
- 42.** Base excision repair (BER) is mediated by  
 (A) DNA pol  $\alpha$   
 (B) DNA pol  $\beta$   
 (C) DNA pol  $\delta$   
 (D) DNA pol  $\sigma$
- 43.** Hypoxia stimulates glycolysis in RBC by which of the following events?  
 (A) Release of all glycolytic enzymes from band 3 protein on RBC membrane  
 (B) Activation of hexokinase  
 (C) Inhibition of hexokinase  
 (D) Activation of pyruvate dehydrogenase system by 2, 3, BPG
- 44.** The anticodon sequence is present in loop \_\_\_\_\_ of t-RNA  
 (A) I  
 (B) II  
 (C) III  
 (D) IV
- 45.** Activation of complement cascade and transplacental transport are characteristic of which of the immunoglobulin isotype/subclass?  
 (A) IgA1  
 (B) IgA2  
 (C) IgG1  
 (D) IgE
- 46.** Which one of the following is a proteotypic peptide?  
 (A) Typical peptide sequence  
 (B) A peptide with unique proteolytic cleavage pattern  
 (C) A peptide which is unique to a specific protein  
 (D) A peptide which is typical to all other proteins in test
- 47.** Name the vitamins that are found in the liver of marine fishes.  
 (A) Vit C & D  
 (B) Vit B & D  
 (C) Vit A & B  
 (D) Vit A & D
- 48.** In which aquatic zone of a marine ecosystem an abundance of plankton is observed?  
 (A) Pelagic zone  
 (B) Neritic zone  
 (C) Benthic zone  
 (D) Abyssal zone
- 49.** Mass extinction at the end of Mesozoic era was due to  
 (A) Continental drift  
 (B) Massive glaciation  
 (C) Change in earth's orbit  
 (D) Earth's collision with large meteorites
- 50.** Which of the following is used as bioindicator of pesticides in soil?  
 (A) Cyanobacteria  
 (B) *Lemna paniculata*  
 (C) *Rumex acetosella*  
 (D) *Artemisia tridentata*

**51.** Secondary active transport across mammalian cell membrane uses

- (A) ATP
- (B) Electrochemical gradient
- (C)  $\text{Na}^+$
- (D) Glucose

**52.** Which of the following statements is accurate in explaining why Gram-negative bacteria are generally more resistant to penicillins than Gram-positive ones?

- (A) Gram-negative bacteria have a thicker cell wall
- (B) Gram-negative bacteria concentrate  $\beta$ -lactamase in the periplasmic space
- (C) Gram-negative bacteria produce smaller quantities of transpeptidase
- (D) Gram-negative bacteria have an outer hydrophilic membrane that acts as an extra barrier

**53.** Biological control of well-dwelling mosquito larvae has been successfully done using

- (A) Grass Carp
- (B) Climbing perch
- (C) Toxorhynchites
- (D) Guppy fish

**54.** What unit is used for measuring continuous silk filament (thread)?

- (A) Meter
- (B) Yard
- (C) Furlong
- (D) Denier

**55.** ‘Surra’ is a disease of wild and domesticated animals caused by

- (A) *Leishmania*
- (B) *Plasmodium*
- (C) *Trypanosoma*
- (D) *Ascaris*

**56.** Select the correct combination of the parasite and the disease caused by it from the following options

- (A) Roundworm – Ancylostomiasis
- (B) Hookworm – Ancylostomiasis
- (C) Filarial worm – Japanese encephalitis
- (D) Tapeworm – Ascariasis

**57.** Which of the following is produced during water stress that brings stomatal closure?

- (A) Ethylene
- (B) Abscisic acid
- (C) Ferulic acid
- (D) Coumarin

**58.** In vascular plants most cytokinins are synthesized in the

- (A) Shoot apices
- (B) Root apices
- (C) Leaves
- (D) Axillary buds

**59.** Which of the following genes is a floral repressor?

- (A) CONSTANS (CO)
- (B) FLOWERING D (FD)
- (C) SUPPRESSION OF OVEREXPRESSION OF CONSTANS 1 (SOC 1)
- (D) FLOWERING LOCUS (FLC)

**60.** In C4 plants, Calvin cycle operates in

- (A) Stroma of bundle sheath chloroplasts
- (B) Grana of bundle sheath chloroplasts
- (C) Grana of mesophyll chloroplasts
- (D) Stroma of mesophyll chloroplasts

61. Cobalt is an essential component of

- (A) Vitamin B<sub>1</sub>
- (B) Vitamin B<sub>3</sub>
- (C) Vitamin B<sub>6</sub>
- (D) Vitamin B<sub>12</sub>

62. Pollination that takes place by flies is called

- (A) Melittophily
- (B) Psychophily
- (C) Anemophily
- (D) Myophily

63. The deposition of pollen on the stigma of another flower of the same plant is called as

- (A) Homogamy
- (B) Dichogamy
- (C) Geitonogamy
- (D) Xenogamy

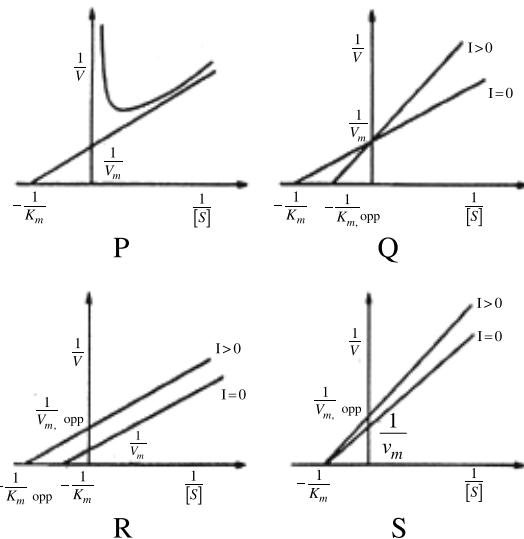
64. Which of the following acts as a female S determinant in the sporophytic self incompatibility system of Brassicaceae?

- (A) S-locus cysteine rich protein
- (B) S-locus receptor kinase
- (C) F-box proteins
- (D) Della proteins

65. The name perisperm is given to the

- (A) Remnant of the nucellus
- (B) Peripheral nucellus
- (C) Disintegrated antipodal cells
- (D) Disintegrated synergids

66. Kinetics of different forms of enzyme inhibition are graphically represented in Figs. P, Q, R and S. Select the correct combination from the following:



- (A) P-Competitive, Q-Non-competitive, R-Substrate and S-Uncompetitive
- (B) P-Non-competitive, Q-Uncompetitive, R-Substrate and S-Competitive
- (C) P-Substrate, Q-Non-competitive, R-Uncompetitive and S-Competitive
- (D) P-Substrate, Q-Competitive, R-Uncompetitive and S-Non-competitive

67. Polar molecules can readily dissolve in water because

- (A) All polar molecules are amphipathic
- (B) Polar molecules can form hydrogen bonds with water
- (C) Polar molecules can replace water-water interaction with more energetically favourable water-solute interaction
- (D) Polar charged water can interact with the charge of polar molecules

68. Besides its anti-oxidant activity, vitamin E causes

- (A) Increased release of prostacyclin
- (B) Increased adherence of blood cell components to inner lining of blood vessels
- (C) Stimulation of protein kinase C
- (D) Vasoconstriction

**69.** Hemophilia is a sex-linked recessive trait in human. If both father and son are hemophilic and mother is normal, what would be the genotype of the mother?

- (A)  $X^h X^h$
- (B)  $X^H X^h$
- (C)  $X^H X^H$
- (D)  $X^h Y$

**70.** An RNA molecule can be radioactively labelled during its synthesis using

- (A)  $\alpha\text{-}^{32}\text{P-ATP}$
- (B)  $^3\text{H-thymidine}$
- (C)  $\gamma\text{-}^{32}\text{P-ATP}$
- (D)  $^3\text{H-UDP-ribose}$

**71.** Why is hydropathy plot employed?

- (A) To determine the hydrophobia in a patient
- (B) To investigate the transmembrane domain of proteins
- (C) To determine affinity of two interacting peptides
- (D) To determine the tertiary structure of peptides

**72.** What correctly describes the  $C_{ot}$  curve?

- (A) It compares the secondary structures of nucleic acid in one organism's genome
- (B) It compares the complexity and amount of repetitive DNA in genomes
- (C) It determines the C-values of species genome
- (D) It quantifies nucleic acid accurately in genomic DNA preparation

**73.** Which of the following is a useful tool in analysing RNA-protein interaction?

- (A) Yeast-1-hybrid assay
- (B) Yeast-2-hybrid assay
- (C) Yeast-3-hybrid assay
- (D) Western blot

**74.** Haploid condition contributing a particular sex in natural population is readily encountered in

- (A) Apple snail
- (B) Honey bee
- (C) Star fish
- (D) Rabbit

**75.** The first transgenic crop developed was

- (A) Cotton
- (B) Pea
- (C) Flax
- (D) Tobacco

**76.** For cloning of DNA fragments longer than 100 kb, which of the following vector systems would be most appropriate?

- (A) Plasmid
- (B) Cosmid
- (C) YAC
- (D) Lambda phage

**77.** The potential application of an ultracentrifuge is

- I. To determine the purity of biomolecules
- II. To determine relative molecular masses of the biomolecules in a complex macromolecule in native form
- III. To determine the conformational changes
- IV. To determine the interaction and changes of components in a macromolecular complexes

The right answer would be:

- (A) I only
- (B) III only
- (C) I, III and IV
- (D) I, II, III and IV

**78.** Electrophoresis is *not* used for the separation of

- (A) Fats
- (B) Nucleic acids
- (C) Amino acids
- (D) Proteins

**79.** A researcher has isolated two large plasmids of 80 kb and 100 kb respectively from *Rhizobium* sp. Which technique should be employed to separate these two plasmids?

- (A) Gel filtration chromatography
- (B) Pulse field gel electrophoresis
- (C) Polyacrylamide gel electrophoresis
- (D) Capillary gel electrophoresis

**80.** Huntington's disease, a genetic disorder of basal ganglion involves

- (A) An autosomal recessive gene
- (B) An autosomal dominant gene
- (C) An X-linked recessive gene
- (D) An X-linked dominant gene

**81.** In anaphase-I of meiosis, the centromeric cohesin remains intact and prevents the separation of two sister chromatids by the protective action of

- (A) Shelterin
- (B) Kinesin
- (C) Dynein
- (D) Shugoshin

**82.** The presence of abundant golgi vesicles near the cell plate in the middle of a plant cell at late telophase and cytokinesis of mitosis reflects the role of golgi complex in

- (A) Lysosomal enzyme targeting
- (B) Polysaccharide synthesis
- (C) Protein packaging
- (D) Uptake of membrane lipids

**83.** A phenomenon where a single gene has more than one phenotypic effect is known as

- (A) Pleiotropy
- (B) Phenocopy
- (C) Phenotype
- (D) Phenology

**84.** Development of reproductive isolation among the members of a continuous population in the absence of geographic barrier is known as

- (A) Peripatric speciation
- (B) Sympatric speciation
- (C) Punctuated equilibrium
- (D) Parapatric speciation

**85.** Enzyme that is *not* used in the isolation of plant protoplast is

- (A) Cellulase
- (B) Pectinase
- (C) Protease
- (D) Hemicellulase

**86.** Cell wall regeneration in cultured protoplasts can be detected by

- (A) Fluorescein isothiocyanate
- (B) Triphenyl tetrazolium chloride
- (C) Acridine orange
- (D) Calcafluor white

**87.** Synthetic seeds are

- (A) Seeds produced in the laboratory
- (B) Seeds encapsulated in an inert gel
- (C) Somatic embryos encapsulated in an inert gel
- (D) Zygotic embryos encapsulated in an inert gel

**88.** Cell-cell communication in bacteria by taking into account the number of cells present in the surrounding, is known as

- (A) Conjugation
- (B) Specialized transduction
- (C) Bioaccumulation
- (D) Quorum sensing

- 89.** What is used to cool the superconducting coil in an NMR spectroscopy?
- Hydrogen
  - Dry ice
  - Ice
  - Liquid helium
- 90.** The addition of 5% NaCl solution to extracellular fluid compartment through intravenous infusion will cause
- Water to move into the cells
  - No movement of water across the plasma membrane
  - Movement of  $\text{Na}^+$ -s from outside to inside of the cells
  - Water to move out of the cells
- 91.** Evolutionary convergence is the development of
- Common set of characters in groups of different ancestry
  - Common set of characters in closely related groups
  - Dissimilar characters in closely related groups
  - Random mating
- 92.** Which gas is upwelled from troposphere to stratosphere to get involved in global warming?
- Carbon dioxide
  - Ozone
  - Methane
  - Chlorofluorocarbon
- 93.** Which kind of insect has been mainly tried as biocontrol agent to put a check on the spread of *Parthenium* weed in India?
- Grasshopper
  - Beetle
  - Sucking bug
  - Wasp
- 94.** Succession in an ecosystem that is determined by outside forces/organisms is termed as
- Autogenic succession
  - Autotrophic succession
  - Allochronic succession
  - Allogenic succession
- 95.**  $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$  represents
- An unsaturated fatty acid
  - A saturated fatty acid
  - A triglyceride
  - A lipoid
- 96.** The Taj Mahal is threatened due to the effect of
- Dust
  - Carbon monoxide
  - Chlorine
  - Sulphur dioxide
- 97.** Bioaugmentation, one of the bioremediation strategies to degrade pollutants within an environmental matrix refers to the
- Stimulation of indigenous microorganisms by addition of nutrients or electron acceptors
  - Addition of specific and efficient pollutant degrading microorganisms to enhance the biodegradation of recalcitrant molecules in the polluted environment
  - Enhancement of activity of indigenous bacteria and *in situ* biodegradation of pollutants in soil by inducing air or oxygen flow in the unsaturated zone
  - Controlled decomposition of organic matter
- 98.** Which one of the following biochemical reactions is an oxidative decarboxylation?
- Pyruvate to Acetyl CoA
  - Lactate to Pyruvate
  - Pyruvate to Oxaloacetate
  - Pyruvate to Lactate

**99.** Among the following which is *not* identified as a criterion to declare a ‘Biodiversity Hotspot’?

- (A) Species richness
- (B) Endemism
- (C) Agroclimate
- (D) Endangeredness

**100.** Nokrek biosphere reserve is located in the state of

- (A) Nagaland
  - (B) Tripura
  - (C) Meghalaya
  - (D) Manipur
-

**ROUGH WORK**

X-15

*I418-II*

**ROUGH WORK**

*1418-II*

X-16

**ROUGH WORK**