Part - C (Biology)

1. Oxygen is ***not*** produced during photosynthesis by
(1) *Nostoc*
(2) *Cycas*
(3) Green sulphur bacteria
(4) *Chara*
Ans: [3]

2. Which one of the following plants shows a very close relationship with a species of moth, where none of the two can complete its life cycle without the other?
(1) *Yucca* **(2)** Banana
(3) *Hydrilla* **(4)** *Viola*
Ans: [1]

3. In which of the following forms is iron absorbed by plants ?
(1) Ferrous **(2)** Free element
(3) Ferric **(4)** Both ferric and ferrous
Ans: [3]

4. Which of the following elements is responsible for maintaining turgor in cells ?
(1) Sodium **(2)** Potassium
(3) Magnesium **(4)** Calcium
Ans: [2]

5. Pollen grains can be stored for several years in liquid nitrogen having a temperature of
(1) – 80°C **(2)** – 196°C
(3) – 120°C **(4)** –160°C
Ans: [2]

6. Double fertilization is
(1) Fusion of one male gamete with two polar nuclei
(2) Fusion of two male gametes with one egg
(3) Fusion of two male gametes of a pollen tube with two different eggs
(4) Syngamy and triple fusion
Ans: [4]

7. What is the role of NAD" in cellular respiration ?
(1) It functions as an electron carrier.
(2) It is a nucleotide source for ATP synthesis.
(3) It functions as an enzyme.
(4) It is the final electron acceptor for anaerobic respiration.
Ans: [1]

8. Select the ***correct*** match :
(1) F_2 × Recessive parent - Dihybrid cross
(2) T.H. Morgan - Transduction
(3) Ribozyme - Nucleic acid
(4) G. Mendel - Transformation
Ans: [3]

9. Which of the following is commonly used as a vector for introducing a DNA fragment in human lymphocytes ?
(1) Tiplasmid **(2)** *X* phage
(3) Retrovirus **(4)**. pBR322
Ans: [3]

10. Use of bioresources by multinational companies and organisations without authorisation from the concerned country and its people is called
(1) Biopiracy **(2)** Biodegradation
(3) Bio-infringement **(4)** Bioexploitation
Ans: [1]

11. In India, the organisation responsible for assessing the safety of introducing genetically modified organisms for public use is
(1) Council for Scientific and Industrial Research (CSIR)
(2) Research Committee on Genetic Manipulation (RCGM)
(3) Indian Council of Medical Research (ICMR)
(4) Genetic Engineering Appraisal Committee (GEAC)
Ans: [4]

12. The correct order of steps in Polymerase Chain Reaction (PCR) is
(1) Annealing, Extension, Denaturation
(2) Denaturation, Extension, Annealing
(3) Extension, Denaturation, Annealing
(4) Denaturation, Annealing, Extension
Ans: [4]

13. A 'new' variety of rice was patented by a foreign company, though such varieties have been present in India for a long time. This is related to
(1) Sharbati Sonora **(2)** Lerma Rojo
(3) Co-667 **(4)** Basmati
Ans: [4]

14. Natality refers to
(1) Birth rate
(2) Number of individuals leaving the habitat
(3) Death rale
(4) Number of individuals entering a habitat
Ans: [1]

15. World Ozone Day is celebrated on
(1) 21st April **(2)** 16th September
(3) 5th June **(4)** 22nd April
Ans: [2]

16. Which of the following is a secondary pollutant?
(1) CO_2 **(2)** SO_2
(3) CO **(4)** O_3
Ans: [4]

17. Niche is
(1) the physical space where an organism lives
(2) the range of temperature that the organism needs to live
(3) all the biological factors in the organism's environment
(4) the functional role played by the organism where it lives
Ans: [4]

18. What type of ecological pyramid ' obtained with the following data ?
Secondary consumer : 120 g
Primary consumer : 60 g
Primary producer : 10 g
(1) Pyramid of energy
(2) Upright pyramid of numbers
(3) Inverted pyramid of biomass
(4) Upright pyramid of biomass
Ans: [3]

19. In stratosphere, which of the following elements acts as a catalyst in degradation of oxone and release of molecular oxygen?
(1) Cl **(2)** Fe
(3) Carbon **(4)** Oxygen
Ans: [1]

20. Which of the following pairs is wrongly matched?
(1) ABO blood grouping : Co-dominance
(2) XO type sex determination : Grasshopper
(3) Starch synthesis in pea : Multiple alleles
(4) T.H. Morgan : Linkage
Ans: [3]

21. Select the correct stement
(1) Punnett square was developed by a British scientist
(2) Spliceosomes take part in translation
(3) Franklin Stahl coined the term "linkage".
(4) Transduction was discovered by S. Altman.
Ans: [1]

22. The experimental proof for semiconservative replication of DNA was first shown in a
(1) Bacterium **(2)** Plant
(3) Fungus **(4)** Virus
Ans: [1]

23. Select the correct match :
(1) Alfred Hershey and Martha Chase - TMV
(2) Matthew Meselson and F. Stahl - *Pisum sativum*
(3) Alec Jeffreys - *Streptococcus pneumoniae*
(4) Francois Jacob and Jacques Monod - *Lac operon*
Ans: [4]

24. Offsets are produced by
(1) Mitotic divisions **(2)** Parthenocarpy
(3) Meiotic divisions **(4)** Parthenogenesis
Ans: [1]

25. Which of the following flowers only once in its life-time?
(1) Jackfruit **(2)** Mango
(3) Bamboo species **(4)** Papaya
Ans: [3]

26. Which of the following has proved helpful in preserving pollen as fossils?

(1) Cellulosic intine **(2)** Oil content

(3) Pollentkitt **(4)** Sporopollenin

Ans: [4]

27. The two functional groups characteristic of sugars are

(1) carbonyl and methyl

(2) carbonyl and phosphate

(3) hydroxyl and methyl

(4) carbonyl and hydroxyl

Ans: [4]

28. Which among the following is not a prokaryote?

(1) *Mycobacterium* **(2)** *Nostoc*

(3) *Saccharomyces* **(4)** *Oscillatoria*

Ans: [3]

29. Which of the following is not a product of light reaction of photosynthesis?

(1) NADH **(2)** NADPH

(3) ATP **(4)** Oxygen

Ans: [1]

30. Stomatal movement is not affected by

(1) Light **(2)** O_2 concentration

(3) Temperature **(4)** CO_2 concentration

Ans: [2]

31. The Golgi complex participates in

(1) Formation of secretory vesicles

(2) Respiration in bacteria

(3) Fatty acid breakdown

(4) Activation of amino acid

Ans: [1]

32. Which of the following is true for nucleolus?

(1) It is a membrane - bond structure

(2) It takes part in spindle formation

(3) Larger nucleoli are present in dividing cells

(4) It is a site for active ribosomal RNA synthesis

Ans: [4]

33. The stage during which separation of the paired homologous chromosomes begins is

(1) Diplotene **(2)** Diakinesis

(3) Pachytene **(4)** Zygotene

Ans: [1]

34. Stomata in grass leaf are

(1) Kidney shaped **(2)** Rectangular

(3) Dumb-bell shaped **(4)** Barrel shaped

Ans: [3]

35. Casparian strips occur in

(1) Pericycle **(2)** Cortex

(3) Epidermis **(4)** Endodermis

Ans: [4]

36. Plants having little or no secondary growth are

(1) Deciduous angiosperms

(2) Conifers

(3) Grasses **(4)** Cycads

Ans: [3]

37. Pneumatophores occur in

(1) Free-floating hydrophytes

(2) Carnivorous plants

(3) Halophytes

(4) Submerged hydrophytes

Ans: [3]

38. Sweet potato is a modified

(1) Adventitious root **(2)** Tap root

(3) Stem **(4)** Rhizome

Ans: [1]

39. Secondary xylem and phloem in dicot stem are produced by

(1) Vascular combium **(2)** Phellogen

(3) Apical meristems **(4)** Axillary meristems

Ans: [1]

40. Which of the following statements is correct?

(1) *Selaginella* is heterosporous, while *Salvinia* is homosporous

(2) Horsetails are gymnospers

(3) Ovules are not enclosed by ovary wall in gymnosperms

(4) Stems are usually unbranded in both *Cycas* and *Cedrus*

Ans: [3]

41. Select the wrong statement :

(1) Mushrooms belong to Basidiomycetes

(2) Pseudopodia are locomotory and feeding structures in Sporozoans

(3) Cell wall is present in members of Fungi and Plantae

(4) Mitochondria are the powerhouse of the cell in all kingdoms except Monera

Ans: [2]

42. Winged pollen grains are present in

(1) *Cycal* **(2)** Mango

(3) Mastard **(4)** *Pinus*

Ans: [4]

43. After karyogamy followed by meiosis, spores are produced exogenously in

(1) *Alternaria* **(2)** *Agaricus*

(3) *Neurospora* **(4)** *Saccharomyces*

Ans: [2]

44. Match the items given in column I with those in column II and select the correct option given below :

Column I		Column II
a. Herbarium	i.	It is a place having a collection of preserved plants and animals
b. Key	ii.	A list that enumerates methodically all the species found in an area with brief description aiding identification
c. Museum	iii.	Is a place where dried and pressed plant specimens mounted on sheets are kept.
d. Catalogue	iv.	A booklet containing a list of characters are their alternates which are helpful in identification of various taxa

	a	b	c	d
(1)	iii	`ii	i	iv
(2)	ii	iv	iii	i
(3)	i	iv	iii	ii
(4)	iii	iv	i	ii

Ans: [4]

45. Which one is wrongly matched?

(1) Biflagellate zoospores - *Brown algae*

(2) Gemma cups - *Marchantia*

(3) Uniflagellate gametes - *Polysiphonia*

(4) Unicellular organism - *Chlorella*

Ans: [3]

46. Which of these statements is incorrect?

(1) Glycolysis occurs in cytosol

(2) Glycolysis operates as long as it is supplied with NAD that can pick up hydrogen atoms

(3) Enzymes of TCA cycle are present in mitochondrial matrix

(4) Oxidative phosphorylation takes place in outer mitochondrial membrane

Ans: [4]

47. Nissl bodies are mainly composed of

(1) DNA and RNA

(2) Nucleic acids and SER

(3) Proteins and lipids

(4) Free ribosomes and RER

Ans: [4]

48. Select the incorrect match :

(1) Allosomes - Sex chromosomes

(2) Submetacentric chromosomes - L-shaped chromososmes

(3) Lampbrush chromosomes - Diplotene bivalents

(4) Polytene chromososmes - Oocytes of amphibians

Ans: [4]

49. Which of the following events does not occur in rough endoplasmic reticulum?

(1) Protein glycosylation

(2) Cleavage of signal peptide

(3) Protein folding

(4) Phospholipid synthesis

Ans: [4]

50. Which of the following terms describe human dentition?

(1) Thecodont, Diphydont, Heterodont

(2) Pleurodont, Monophyodont, Homodont

(3) Thecodont, Diphodont, Homodont

(4) Pleurodont, Diphyodont, Heterodont

Ans: [1]

51. Many ribosomes may associate with a single mRNA to form multiple copies of a polypeptide simultaneously. Such strings of ribosomes are termed as

(1) Polyhedral bodies **(2)** Plastidome

(3) Polysome **(4)** Nucleosome

Ans: [3]

52. Which one of these animals is not a homeotherm?

(1) *Chelone* **(2)** *Comelus*

(3) *Macropus* **(4)** *Psittacula*

Ans: [1]

53. Identify the vertebrate group of animals characterized by crop and gizzard in its digestive system

(1) Reptilia **(2)** Aves

(3) Amphibia **(4)** Osteichthyes

Ans: [2]

54. Which of the following features is used to identify a male cockroach from a female cockroach?

(1) Presence of caudal styles

(2) Forewings with darker tegmina

(3) Presence of a boat shaped sternum on the 9th abdominal segment

(4) Presence of anal cerci

Ans: [1]

55. Which of the following organisms are known as chief producers in the oceans?

(1) Diatoms **(2)** Cyanobacteria

(3) Dinoflagellates **(4)** Euglenoids

Ans: [1]

56. Ciliates differ from all other protozoans in

(1) having a contractile vacuole for removing excess water

(2) using pseudopodia for capturing prey

(3) using flagella for locomotion

(4) having two types of nuclei

Ans: [4]

57. Which of the following animals does not undergo metamorphosis?

(1) Tunicate **(2)** Moth

(3) Earthworm **(4)** Starfish

Ans: [3]

58. Which of the following options correctly represents the lung conditions in asthma and emphysema, respectively?

(1) Increased number of bronchioles; Increased respiratory surface

(2) Increased respiratory surface; Inflammation of bronchioles

(3) Inflammation of bronchioles; Decreased respiratory surface

(4) Decreased respiratory surface; Inflammation of bronchioles

Ans: [3]

59. Match the items given in Column I with those in Column II and select the correct option given below :

	Column I		Column II
a.	Tricuspid valve	i.	Between left atrium and left ventricle
b.	Bicuspid valve	ii.	Between right ventricle and pulmonary artery
c.	Semilunar valve	iii.	Between right atrium and right ventricle

	a	b	c
(1)	i	iii	ii
(2)	i	ii	iii
(3)	iii	i	ii
(4)	ii	i	iii

Ans: [3]

60. Match the items given in Column I with those in Column II and select the correct option given below :

	Column I		Column II
a.	Tidal volume	i.	2500 - 3000 mL
b.	Inspiratory Reserve volume	ii.	1100 - 1200 mL
c.	Expiratory Reserve volume	iii.	500 - 550 mL
d.	Residual volume	iv.	1000 - 1100 mL

	a	b	c	d
(1)	iii	i	iv	ii
(2)	i	iv	ii	iii
(3)	iii	ii	i	iv
(4)	iv	iii	ii	i

Ans: [1]

61. Which of the following is an amino acid derived hormone?

(1) Ecdysone **(2)** Estradiol

(3) Epinephrine **(4)** Estriol

Ans: [3]

62. Which of the following structure or regions is incorrectly paired with its function?

(1)	Limbic system	:	consists of fibre tracts that interconnect different regions of brain; controls movement
(2)	Hypothalamus	:	production of releasing hormones and regulation or temperature, hunger and thirst
(3)	Medulla oblongata	:	controls respiration and cardiovascular reflexes
(4)	Corpus callosum	:	band of fibres connecting left and right cerebral hemisphers.

Ans: [1]

63. The transparent lens in the human eye is held in its place by

(1) ligaments attached to the iris

(2) smooth muscles attached to the iris

(3) ligaments attached to the ciliary body

(4) smooth muscles attached to the ciliary body

Ans: [3]

64. Which of the following hormones can play a significant role in osteoporosis?

(1) Progesterone and Aldosterone

(2) Estrogen and Parathyroid hormone

(3) Aldosterone and Prolactin

(4) Parathyroid hormone and Prolactin

Ans: [2]

65. Hormones secreted by the placenta to maintain pregnancy are

(1) hCG, hPL, estrogens, relaxin, oxytocin

(2) hCG, hPL, progestogens, estrogesn

(3) hCG, hPL, progestrogens, prolactin

(4) hCG, progestogens, estrogens, glucocorticoids

Ans: [2]

66. The contraceptive "SAHELI"

(1) increases the concentration of estrogen and prevents ovulation in females

(2) is an IUD

(3) blocks estrogen receptors in the uterus, preventing eggs from getting implanted

(4) is a post coital contraceptive

Ans: [3]

67. The difference between spermiogenesis and spermidation is

(1) In spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed

(2) In spermiogenesis spermatozoa from sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed

(3) In spermiogenesis spermatids are formed while in spermiation spermatozoa are formed

(4) In spermiogenesis spermatozoa are formed, while in spermiation spermatozoa are released from sertoi cells into the cavity of seminiferous tubules

Ans: [4]

68. The amnion of mammalian embryo is derived from

(1) endoderm and mesoderm

(2) mesoderm and trophoblast

(3) ectoderm and mesoderm

(4) ectoderm and endoderm

Ans: [4]

69. Among the following sets of examples for divergent evolution, select the incorrect option :

(1) Heart of bat, man and cheetah

(2) Brain of bat, man and cheetah

(3) Forelimbs of man, bat and cheetah

(4) Eye of octopus, bat and man

Ans: [4]

70. Which of the following is **not** an autoimmune disease ?

(1) Rheumoatoid arthirits

(2) Alzheimer's disease

(3) Psoriasis

(4) Vitiligo

Ans: [2]

71. In which disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels?

(1) Ascariasis **(2)** Ringworm disease

(3) Elephantiasis **(4)** Amoebiasis

Ans: [3]

72. Conversion of milk to curd improves nutritional value by increasing the amount of

(1) Vitamin A **(2)** Vitamin B_{12}

(3) Vitamin D **(4)** Vitamin E

Ans: [2]

73. The similarity of bone structure in the forelimbs if many vertebrates is an example of

(1) Analogy **(2)** Convergent evolution

(3) Homology **(4)** Adaptive radiation

Ans: [3]

74. Which of the following characteristics represent 'Inheritance of blood groups' in humans?

a. Dominance

b. Co-dominance

c. Multiple allele

d. Incomplete dominance

e. Polygenic inheritance

(1) a, b and c **(2)** b, d and e

(3) b, c and e **(4)** a, c and e

Ans: [1]

75. Which one of the following population interactions is widely used in medical science for the production of antiobiotics ?

(1) Mutualism **(2)** Parasitism

(3) Commensalism **(4)** Amensalism

Ans: [4]

76. Match the items given in Column I with those in Column II and select the correct options given below

Column I	**Column II**
a. Eutrophication	i. UV-B radiation
b. Sanitary landfill	ii. Deforestation
c. Snow blindness	iii. Nutrient enrichment
d. Jhum cultivation	iv. Waste disposal

(1) a - i, b - iii, c - iv, d - ii **(2)** a - iii, b - iv, c - i, d - ii

(3) a - ii, b - i, c - iii, d - iv **(4)** a - i, b - ii, c - iv, d - iii

Ans: [2]

77. All of the following are included in 'Ex-situ conservation' *except*

(1) Sacred groves

(2) Botanical gardens

(3) Wildlife safari parks

(4) Seed banks

Ans: [1]

78. In a growing population of a country

(1) reproductive individuals are less than the post-reproductive individuals

(2) reproductive and pre-reproductive individuals are equal in number

(3) pre-reproductive individuals are more than the reproductive individuals

(4) pre-reproductive individuals are less than the reproductive individuals

Ans: [3]

79. Which part of poppy plants is used to obtain the drug "Smack" ?

(1) Latex **(2)** Roots

(3) Flowers **(4)** Leaves

Ans: [1]

80. All of the following are part of an operon except

(1) structural genes

(2) an enhancer

(3) an operator

(4) a promoter

Ans: [2]

81. A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by

(1) Only sons

(2) Only grandchildren

(3) Only daughters

(4) Both sons and daughters

Ans: [4]

82. According to Hugo de Vries, the mechanism evolution is

(1) Saltvation

(2) Phenotypic variations

(3) Multiple step mutations

(4) Minor mutations

Ans: [1]

83. AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA ?

(1) UGGTUTCGCAT **(2)** ACCUAUGCGAU

(3) AGGUAUCGCAU **(4)** UCCAUAGCGUA

Ans: [3]

84. Match the items given in Column I with those in Column II and select the correct options given below

Column I	**Column II**
a. Proliferative Phase	i. Breakdown of endometrial lining
b. Secretory Phase	ii. Follicular Phase
c. Menstruation	iii. Luteal Phase

(1) a - i, b - iii, c - ii **(2)** a - ii, b - iii, c - i

(3) a - iii, b - ii, c - i **(4)** a - iii, b - i, c - ii

Ans: [2]

85. Match the items given in Column I with those in Column II and select the correct options given below

Column I	**Column II**
a. Glycosuria	i. Accumulation of uric acid in joints
b. Gout	ii. Mass of crystallised salts within the kidney
c. Renal calculi	iii. Inflammation in glomeruli
d. Glomerular nephritis	iv. Presence of glucose in urine

(1) a - i, b - ii, c - iii, d - iv **(2)** a - ii, b - iii, c - i, d - iv

(3) a - iii, b - ii, c - iv, d - i **(4)** a - iv, b - i, c - ii, d - iii

Ans: [4]

86. Match the items given in Column I with those in Column II and select the correct options given below

Column I (*Function*)	**Column II** (*Part of Excretory System*)
a. Ultrafiltration	i. Henle's loop
b. Concentration of urine	ii. Ureter
c. Transport of urine	iii. Urinary bladder
d. Storage of urine	iv. Malpighian corpuscle
	v. Proximal convulated tubule

(1) a - iv, b - i, c - ii, d - iii **(2)** a - v, b - iv, c - i, d - ii

(3) a - iv, b - v, c - i, d - iii **(4)** a - v, b - iv, c - i, d - iii

Ans: [1]

87. Which of the following is an occupational respiratory disorder ?

(1) Silicosis **(2)** Botulism

(3) Anthracis **(4)** Emphysema

Ans: [1]

88. Calcium is important in skeletal muscle contraction because it

(1) activities the myosin ATPase by binding to it

(2) detaches the myosin head from the actin filament

(3) binds to troponin to remove the masking of active sites on actin for myosin

(4) prevents the formation of bonds between the myosin cross bridges and the actin filament

Ans: [3]

89. Which of the following gastric cells indirectly help in erythorpoiesis ?

(1) Mucous cells **(2)** Goblet cells

(3) Chief cells **(4)** Parietal cells

Ans: [4]

90. Match the items given in Column I with those in Column II and select the correct options given below

Column I	**Column II**
a. Fibrinogen	i. Osmotic balance
b. Globulin	ii. Blood clotting
c. Albumin	iii. Defence mechanisms

(1) a - i, b - ii, c - iii **(2)** a - i, b - iii, c - ii

(3) a - iii, b - ii, c - i **(4)** a - ii, b - iii, c - i

Ans: [4]