

1. Identify the wrong statement with reference to transport of oxygen.
- (1) Partial pressure of  $\text{CO}_2$  can interfere with  $\text{O}_2$  binding with haemoglobin
  - (2) Higher  $\text{H}^+$  conc. in alveoli favours the formation of oxyhaemoglobin
  - (3) Low  $\text{pCO}_2$  in alveoli favours the formation of oxyhaemoglobin
  - (4) Binding of oxygen with haemoglobin is mainly related to partial pressure of  $\text{O}_2$

**Ans.** [2]

**Sol.** Higher  $\text{H}^+$  conc. in alveoli favours the formation of oxyhaemoglobin

2. Which of the following refer to correct example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action?
- (a) Darwin's Finches of Galapagos islands
  - (b) Herbicide resistant weeds
  - (c) Drug resistant eukaryotes
  - (d) Man-created breeds of domesticated animals like dogs
- (1) (a) and (c)
  - (2) (b), (c) and (d)
  - (3) only (d)
  - (4) only (a)

**Ans.** [2]

**Sol.** (b), (c) and (d)

3. Which of the following is not an inhibitory substance governing seed dormancy?
- (1) Abscisic acid
  - (2) Phenolic acid
  - (3) Para-ascorbic acid
  - (4) Gibberellic acid

**Ans.** [4]

**Sol.** Gibberellic acid

4. Match the following diseases with the causative organism and select the correct option.

<b>Column-I</b>		<b>Column-II</b>	
(a) Typhoid		(i) Wuchereria	
(b) Pneumonia		(ii) Plasmodium	
(c) Filariasis		(iii) Salmonella	
(d) Malaria		(iv) Haemophilus	

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

**Ans.** [1]

**Sol.** (a)  $\rightarrow$  (iii); (b)  $\rightarrow$  (iv); (c)  $\rightarrow$  (i); (d)  $\rightarrow$  (ii)

5. Select the correct events that occur during inspiration.
- (a) Contraction of diaphragm
  - (b) Contraction of external inter-coastal muscles
  - (c) Pulmonary volume decreases
  - (d) Intra pulmonary pressure increases
- (1) (c) and (d)
  - (2) (a), (b) and (d)
  - (3) only (d)
  - (4) (a) and (b)

**Ans.** [4]

**Sol.** (a) and (b)

6. The oxygenation activity of RuB is Co-enzyme in photorespiration leads to the formation of:
- (1) 1 molecule of 3-C compound
  - (2) 1 molecule of 6-C compound
  - (3) 1 molecule of 4-C compound and 1 molecule of 2-C compound
  - (4) 2 molecules of 3-C compound

**Ans.** [1]

**Sol.** 1 molecule of 3-C compound

7. In light reaction, plastoquinone facilitates the transfer of electrons from:
- (1) Cytb<sub>6</sub>f complex to PS-I
  - (2) PS-I to NADP<sup>+</sup>
  - (3) PS-I to ATP synthase
  - (4) PS-II to Cytb<sub>6</sub>f complex
- Ans.** [4]  
**Sol.** PS-II to Cytb<sub>6</sub>f complex
8. In gel electrophoresis, separated DNA fragments can be visualized with the help of:
- (1) Ethidium bromide in UV radiation
  - (2) Acetocarmine in UV radiation
  - (3) Ethidium bromide in infrared radiation
  - (4) Acetocarmine in bright blue light
- Ans.** [1]  
**Sol.** Ethidium bromide in UV radiation
9. The QRS complex in a standard ECG represents:
- (1) Depolarisation of auricles
  - (2) Depolarisation of ventricles
  - (3) Repolarisation of ventricles
  - (4) Repolarisation of auricles
- Ans.** [2]  
**Sol.** Depolarisation of ventricles
10. The plant parts which consist of two generations—one within the other:
- (1) Pollen grains inside the anther
  - (2) Germinated pollen grain with two male gametes
  - (3) Seed inside the fruit
  - (4) Embryo sac inside the ovule
- (1) (a), (b) & (c)
  - (2) (c) & (d)
  - (3) (a) & (d)
  - (4) (a) only
- Ans.** [3]  
**Sol.** (a) & (d)
11. The infectious stage of Plasmodium that enters the human body is:
- (1) Sporozoites
  - (2) Female gametocytes
  - (3) Male gametocytes
  - (4) Trophozoites
- Ans.** [1]  
**Sol.** Sporozoites
12. Identify the incorrect statement.
- (1) Sapwood is involved in conduction of water and minerals from root to leaf.
  - (2) Sapwood is the innermost secondary xylem and is lighter in colour.
  - (3) Due to deposition of tannins, resins, oils etc. heart wood is dark in colour.
  - (4) Heart wood does not conduct water but gives mechanical support.
- Ans.** [2]  
**Sol.** Sapwood is the innermost secondary xylem and is lighter in colour.
13. Flippers of Penguins and Dolphins are examples of:
- (1) Convergent evolution
  - (2) Industrial melanism
  - (3) Natural selection
  - (4) Adaptive radiation
- Ans.** [1]  
**Sol.** Convergent evolution
14. Identify the wrong statement with reference to the gene 'I' that controls ABO blood groups.
- (1) A person will have only two of the three alleles.
  - (2) When IA and IB are present together they express same type of sugar.
  - (3) Allele 'i' does not produce any sugar.
  - (4) The gene (I) has three alleles.
- Ans.** [2]  
**Sol.** When IA and IB are present together they express same type of sugar.
15. Which of the following statements are true for the phylum-Chordata?
- (1) In Urochordata notochord extends from head to tail and it is present throughout their life.
  - (2) In Vertebrata notochord is present during the embryonic period only.
  - (3) Central nervous system is dorsal and hollow.

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- (4) Chordata is divided into 3 subphyla: Hemichordata, Tunicata and Cephalochordata
- (1) (c) and (a)  
(2) (a) and (b)  
(3) (b) and (c)  
(4) (d) and (c)
- Ans.** [3]  
**Sol.** (b) and (c)
16. Presence of which of the following conditions in urine are indicative of Diabetes Mellitus?
- (1) Uremia and Renal Calculi  
(2) Ketonuria and Glycosuria  
(3) Renal calculi and Hyperglycaemia  
(4) Uremia and Ketonuria
- Ans.** [2]  
**Sol.** Ketonuria and Glycosuria
17. The first phase of translation is
- (1) Recognition of DNA molecule  
(2) Aminoacylation of tRNA  
(3) Recognition of an anti-codon  
(4) Binding of mRNA to ribosome
- Ans.** [4]  
**Sol.** Binding of mRNA to ribosome
18. Ray florets have
- (1) Superior ovary  
(2) Hypogynous ovary  
(3) Half inferior ovary  
(4) Inferior ovary
- Ans.** [4]  
**Sol.** Inferior ovary
19. The process of growth is maximum during
- (1) Lag phase  
(2) Senescence  
(3) Dormancy  
(4) Log phase
- Ans.** [4]  
**Sol.** Log phase
20. The roots that originate from the base of the stem are
- (1) Primary roots  
(2) Prop roots  
(3) Lateral roots  
(4) Fibrous roots
- Ans.** [4]  
**Sol.** Fibrous roots
21. In water hyacinth and water lily, pollination takes place by
- (1) Water currents only  
(2) Wind and water  
(3) Insects and water  
(4) Insects or wind
- Ans.** [4]  
**Sol.** Insects or wind
22. Which of the following is put into anaerobic sludge digester for further sewage treatment?
- (1) Floating debris  
(2) Effluents of primary treatment  
(3) Activated sludge  
(4) Primary sludge
- Ans.** [3]  
**Sol.** Activated sludge
23. Bilaterally symmetrical and acoelomate animals are exemplified by
- (1) Platyhelminthes  
(2) Aschelminthes  
(3) Annelida  
(4) Ctenophora
- Ans.** [1]  
**Sol.** Platyhelminthes
24. Identify the basic amino acid from the following
- (1) Glutamic Acid  
(2) Lysine  
(3) Valine  
(4) Tyrosine
- Ans.** [2]  
**Sol.** Lysine
25. In which of the following techniques, the embryos are transferred to assist those females who cannot conceive?
- (1) GIFT and ZIFT  
(2) ICSI and ZIFT  
(3) GIFT and ICSI  
(4) ZIFT and IUT
- Ans.** [4]  
**Sol.** ZIFT and IUT
26. Which of the following statements about inclusion bodies is incorrect?
- (1) These are involved in ingestion of food particles  
(2) They line free in the cytoplasm

- (3) These represent reserve material in cytoplasm  
 (4) They are not bound any membrane
- Ans.** [1]  
**Sol.** These are involved in ingestion of food particles
27. Experimental verification of the chromosomal theory of inheritance was done by-
- (1) Sutton (2) Boveri  
 (3) Morgan (4) Mendel
- Ans.** [3]  
**Sol.** Morgan
28. Select the option including all sexually transmitted diseases.
- (1) Gonorrhoea, Malaria, Genitalherpes  
 (2) AIDS, Malaria, Filaria  
 (3) Cancer, AIDS, Syphilis  
 (4) Gonorrhoea, Syphilis, Genital herpes
- Ans.** [4]  
**Sol.** Gonorrhoea, Syphilis, Genitalherpes
29. Which of the following statements is not correct?
- (1) The proinsulin has an extra peptide called C-peptide  
 (2) The functional insulin has A and B chains linked together by hydrogen bonds  
 (3) Genetically engineered insulin is produced in E-coli  
 (4) In man insulin is synthesised as proinsulin
- Ans.** [2]  
**Sol.** The functional insulin has A and B chains linked together by hydrogen bonds
30. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells?
- (1) Peroxisomes  
 (2) G.C  
 (3) Polysomes  
 (4) E.R
- Ans.** [2]  
**Sol.** Golgi bodies
31. Match the following columns and select the correct option.

- | Column-I                   | Column-II                             |
|----------------------------|---------------------------------------|
| (a) Clostridium butylicum  | (i) Cyclosporin-A                     |
| (b) Trichoderma polysporum | (ii) Butyric Acid                     |
| (c) Monascus               | (iii) Citric Acid                     |
| (d) Aspergillus niger      | (iv) Blood cholesterol lowering agent |
- (1) (a) → (ii); (b) → (i);  
 (c) → (iv); (d) → (iii)  
 (2) (a) → (i); (b) → (ii);  
 (c) → (iv); (d) → (iii)  
 (3) (a) → (iv); (b) → (iii);  
 (c) → (ii); (d) → (i)  
 (4) (a) → (iii); (b) → (iv);  
 (c) → (ii); (d) → (i)
- Ans.** [1]  
**Sol.** (a) → (ii); (b) → (i);  
 (c) → (iv); (d) → (iii)
32. Embryological support for evolution was disapproved by:
- (1) Alfred Wallace  
 (2) Charles Darwin  
 (3) Oparin  
 (4) Karl Ernst vonBaer
- Ans.** [4]  
**Sol.** Karl Ernst von Baer
33. The sequence that controls the copy number of the linked DNA in the vector, is termed:
- (1) Ori C site  
 (2) Palindromic sequence  
 (3) Recognition site  
 (4) Selectable marker
- Ans.** [1]  
**Sol.** Ori C site
34. Which of the following is correct about viroids?
- (1) They have free RNA without protein coat.  
 (2) They have DNA with protein coat.  
 (3) They have free DNA without protein coat.  
 (4) They have RNA with protein coat.
- Ans.** [1]  
**Sol.** They have free RNA without protein coat.

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35. Montreal protocol was signed in 1987 for control of:
- (1) Emission of ozone depleting substances
  - (2) Release of Green House gases
  - (3) Disposal of e-wastes
  - (4) Transport of Genetically modified organisms from one country to another

**Ans.** [1]

**Sol.** Emission of ozone depleting substances

36. The number of substrate level phosphorylations in one turn of citric acid cycle is:
- (1) One
  - (2) Two
  - (3) Three
  - (4) Zero

**Ans.** [1]

**Sol.** One

37. Which of the following hormone levels will cause release of ovum (ovulation) from the graffian follicle?
- (1) High concentration of Progesterone
  - (2) Low concentration of LH
  - (3) Low concentration of FSH
  - (4) High concentration of Estrongen

**Ans.** [4]

**Sol.** High concentration of Estrongen

38. Select the correct match.
- (1) Phenylketonuria – Autosomal dominant trait
  - (2) Sickel cell anaemia – Autosomal recessive trait, chromosome-11
  - (3) Thalassemia – Xlinked
  - (4) Haemophilia – Ylinked

**Ans.** [2]

**Sol.** Sickel cell anaemia – Autosomal recessive trait, chromosome-11

39. Cuboidal epithelium with brush border of microvilli is found in:
- (1) ducts of salivary glands
  - (2) proximal convoluted tubule of nephron
  - (3) eustachian tube
  - (4) lining of intestine

**Ans.** [2]

**Sol.** proximal convoluted tubule of nephron

40. Snow-blindness in Antarctic region is due to:

- (1) Inflammation of cornea due to high dose of UV-B radiation
- (2) High reflection of light from snow
- (3) Damage to retina caused by infra-red rays
- (4) Freezing of fluids in the eye by low temperature

**Ans.** [1]

**Sol.** Inflammation of cornea due to high dose of UV-B radiation

41. Which of the following pairs is of unicellular algae?
- (1) Gelidium and Gracilaria
  - (2) Anabaena and Volvox
  - (3) Chlorella and Spirulina
  - (4) Laminaria and Sargassum

**Ans.** [3]

**Sol.** Chlorella and Spirulina

42. The transverse section of a plant shows following anatomical features:
- (a) Large number of scattered vascular bundles surrounded by bundles sheath.
  - (b) Large conspicuous parenchymatous ground tissue.
  - (c) Vascular bundles conjoint and closed.
  - (d) Phloem parenchyma absent.
- Identify the category of plant and its part:
- (1) Monocotyledonous root
  - (2) Dicotyledonous stem
  - (3) Dicotyledonous root
  - (4) Monocotyledonous stem

**Ans.** [4]

**Sol.** Monocotyledonous stem

43. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits?
- (1) 2
  - (2) 14
  - (3) 8
  - (4) 4

**Ans.** [2]

**Sol.** 14

44. Floridean starch has structure similar to:
- (1) Amylopectin and glycogen
  - (2) Mannitol and algin

- (3) Laminarin and cellulose  
(4) Starch and cellulose
- Ans.** [1]  
**Sol.** Amylopectin and glycogen
45. Identify the correct statement with regard to G1 phase (Gap 1) of interphase.  
(1) Reorganisation of all cell components takes place.  
(2) Cell is metabolically active, grows but does not replicate its DNA.  
(3) Nuclear Division takes place.  
(4) DNA synthesis or replication takes place.
- Ans.** [2]  
**Sol.** Cell is metabolically active, grows but does not replicate its DNA.
46. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams?  
(1) Mutational breeding  
(2) Cross breeding  
(3) In breeding  
(4) Out crossing
- Ans.** [2]  
**Sol.** Cross breeding
47. Identify the wrong statement with reference to immunity.  
(1) When ready-made antibodies are directly given, it is called "Passive immunity".  
(2) Active immunity is quick and gives full response.  
(3) Foetus receives some antibodies from mother, it is an example for passive immunity.  
(4) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".
- Ans.** [2]  
**Sol.** Active immunity is quick and gives full response.
48. The specific palindromic sequence which is recognized by EcoRI is:  
(1) 5'-GGAACC-3', 3'-CCTTGG-5'  
(2) 5'-CTTAAG-3', 3'-GAATTC-5'  
(3) 5'-GGATCC-3', 3'-CCTAGG-5'  
(4) 5'-GAATTC-3', 3'-CTTAAG-5'

- Ans.** [4]  
**Sol.** 5'-GAATTC-3', 3'-CTTAAG-5'
49. If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is  $6.6 \times 10^9$  bp, then the length of the DNA is approximately:  
(1) 2.5 meters (2) 2.2 meters  
(3) 2.7 meters (4) 2.0 meters
- Ans.** [2]  
**Sol.** 2.2 meters
50. If the head of cockroach is removed, it may live for few days because:  
(1) the cockroach does not have nervous system.  
(2) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.  
(3) the head holds a 1/3<sup>rd</sup> of a nervous system while the rest is situated along the dorsal part of its body.  
(4) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.
- Ans.** [2]  
**Sol.** the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.
51. Match the trophic levels with their correct species examples in grass land ecosystem.  
(a) Fourth trophic level (i) Crow  
(b) Second trophic level (ii) Vulture  
(c) First trophic level (iii) Rabbit  
(d) Third trophic level (iv) Grass
- Select the correct option:  
(1) (iii) (ii) (i) (iv)  
(2) (iv) (iii) (ii) (i)  
(3) (i) (ii) (iii) (iv)  
(4) (ii) (iii) (iv) (i)
- Ans.** [4]  
**Sol.** (a) → (ii) ; (b) → (iii) ;  
(c) → (iv) ; (d) → (i)

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52. The enzyme enterokinase helps in conversion of:

- (1) trypsinogen into trypsin
- (2) caseinogen into pepsin
- (3) pepsinogen into pepsin
- (4) protein into polypeptides

**Ans.** [1]

**Sol.** trypsinogen into trypsin

53. Identify the correct statement with reference to human digestive system.

- (1) Serosa is the innermost layer of the alimentary canal.
- (2) Ileum is a highly coiled part.
- (3) Vermiform appendix arises from duodenum.
- (4) Ileum opens into small intestine

**Ans.** [2]

**Sol.** Ileum is a highly coiled part.

54. Name the plant growth regulator which upon spraying on sugarcane crop.

- Increases the length of stem. Thus increasing the yield of sugarcane crop.
- (1) Gibberellin
  - (2) Ethylene
  - (3) Abscisic acid
  - (4) Cytokinin

**Ans.** [1]

**Sol.** Gibberellin

55. Identify the wrong statement with regard to Restriction Enzymes.

- (1) They cut the strand of DNA at palindromic sites.
- (2) They are useful in genetic engineering.
- (3) Sticky ends can be joined by using DNA ligases.
- (4) Each restriction enzyme functions by inspection the of a DNA sequence.

**Ans.** [1]

**Sol.** They cut the strand of DNA at palindromic sites.

56. Match the following:

- |                                     |               |
|-------------------------------------|---------------|
| (a) Inhibitor of catalytic activity | (i) Ricin     |
| (b) Possess peptide bonds           | (ii) Malonate |
| (c) Cell wall material in fungi     | (iii) Chitin  |
| (d) Secondary metabolite            | (iv) Collagen |

Choose the correct option from the following :

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

**Ans.** [4]

**Sol.** (a) → (ii); (b) → (iv); (c) → (iii); (d) → (i)

57. Goblet cells of alimentary canal are modified from:

- (1) Columnar epithelial cells
- (2) Chondrocytes
- (3) Compound epithelial cells
- (4) Squamous epithelial cells

**Ans.** [1]

**Sol.** Columnar epithelial cells

58. Match the following columns and select the correct option.

- | Column-I                     | Column-II            |
|------------------------------|----------------------|
| (a) 6-15 pairs of gill slits | (i) Trygon           |
| (b) Heterocercal             | (ii) Cyclostomes     |
| (c) Air Bladder              | (iii) Chondrichthyes |
| (d) Poison sting             | (iv) Osteichthyes    |
- |     |       |       |       |      |
|-----|-------|-------|-------|------|
|     | (a)   | (b)   | (c)   | (d)  |
| (1) | (iii) | (iv)  | (i)   | (ii) |
| (2) | (iv)  | (ii)  | (iii) | (i)  |
| (3) | (i)   | (iv)  | (iii) | (ii) |
| (4) | (ii)  | (iii) | (iv)  | (i)  |

**Ans.** [4]

**Sol.** (a) → (ii); (b) → (iii); (c) → (iv); (d) → (i)

59. Dissolution of the synaptonemal complex occurs during:

- (1) Zygotene
- (2) Diplotene
- (3) Leptotene
- (4) Pachytene

**Ans.** [2]

**Sol.** Diplotene

60. Name the enzyme that facilitates opening of DNA helix during transcription.

- (1) DNA helicase
- (2) DNA polymerase
- (3) RNA polymerase
- (4) DNA ligase

**Ans.** [3]

**Sol.** RNA polymerase

61. Which of the following statements is correct
- (1) Adenine pairs with thymine through one H-bond
  - (2) Adenine pairs with thymine through three H-bonds
  - (3) Adenine does not pair with thymine
  - (4) Adenine pairs with thymine through two H-bonds

**Ans.** [4]

**Sol.** Adenine pairs with thymine through two H-bonds

62. Which of the following regions of the globe exhibits highest species diversity?
- (1) Madagascar
  - (2) Himalayas
  - (3) Amazon forests
  - (4) Western Ghats of India

**Ans.** [3]

**Sol.** Amazon forests

63. Match the following columns and select the correct option

**Column-I**

**Column-II**

- |                     |                          |
|---------------------|--------------------------|
| (a) Pituitary gland | (i) Grave's disease      |
| (b) Thyroid gland   | (ii) Diabetes mellitus   |
| (c) Adrenal gland   | (iii) Diabetes insipidus |
| (d) Pancreas        | (iv) Addison's disease   |
- 
- |           |       |      |       |
|-----------|-------|------|-------|
| (1) (a)   | (b)   | (c)  | (d)   |
| (2) (iii) | (ii)  | (i)  | (iv)  |
| (3) (ii)  | (i)   | (iv) | (iii) |
| (4) (iv)  | (iii) | (i)  | (ii)  |

**Ans.** [2]

**Sol.** (a) → (iii); (b) → (i);  
(c) → (iv); (d) → (ii)

64. The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are:
- (1) Nitrate alone
  - (2) Ammonia and oxygen
  - (3) Ammonia and hydrogen
  - (4) Ammonia alone

**Ans.** [3]

**Sol.** Ammonia and hydrogen

65. Match the following concerning essential elements and their functions in plants:
- |          |                         |
|----------|-------------------------|
| (a) Iron | (i) Photolysis of Water |
| (b) Zinc | (ii) Pollen germination |

- |           |   |
|-----------|---|
| (c) Boron | (iii) Required for chlorophyll biosynthesis |
|-----------|---|

- |               |                       |
|---------------|-----------------------|
| (d) Manganese | (iv) IAA biosynthesis |
|---------------|-----------------------|

Select the correct option:

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

**Ans.** [2]

**Sol.** (a) → (iii); (b) → (iv);  
(c) → (ii); (d) → (i)

66. Which of the following would help in prevention of diuresis?
- (1) Reabsorption of  $\text{Na}^+$  and water form renal tubules due to aldosterone
  - (2) Atrial natriuretic factor causes vasoconstriction
  - (3) Decrease in secretion of renin by JG cells
  - (4) More water reabsorption due to undersecretion of ADH

**Ans.** [1]

**Sol.** Reabsorption of  $\text{Na}^+$  and water form renal tubules due to aldosterone

67. Meiotic division of the secondary oocyte is completed:
- (1) At the time of copulation
  - (2) After zygote formation
  - (3) At the time of fusion of a sperm with an ovum
  - (4) Prior to ovulation

**Ans.** [3]

**Sol.** At the time of fusion of a sperm with an ovum

68. Match the following columns and select the correct option:

**Column- I**

**Column - II**

- |                                  |                  |
|----------------------------------|------------------|
| (a) Gregarious, polyphagous pest | (i) Asterias     |
| (b) Adult with radial            | (ii) Scorpion    |
| (c) Book lung                    | (iii) Ctenoplana |
| (d) Bioluminescence              | (iv) Locusta     |
- 
- |     |       |       |       |       |
|-----|-------|-------|-------|-------|
|     | (a)   | (b)   | (c)   | (d)   |
| (1) | (iv)  | (i)   | (ii)  | (iii) |
| (2) | (iii) | (ii)  | (i)   | (iv)  |
| (3) | (ii)  | (i)   | (iii) | (iv)  |
| (4) | (i)   | (iii) | (ii)  | (iv)  |

**Ans.** [1]

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**Sol.** (a) → (iv); (b) → (i);  
(c) → (ii); (d) → (iii)

69. Match the following column and select the correct option.

<b>Column-I</b>		<b>Column-II</b>	
(a) Floating Ribs	(i)	Located between second and seven ribs	
(b) A cromion	(ii)	Head of the Humerus	
(c) Scapula	(iii)	Clavicle	
(d) Glenoidcavity	(iv)	Do not connect with the sternum	

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

**Ans.** [3]

**Sol.** (a) → (iv) ; (b) → (iii) ; (c) → (i) ;  
(d) → (ii)

70. Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their

- (1) Growth response
- (2) Defence action
- (3) Effect on reproduction
- (4) Nutritive value

**Ans.** [2]

**Sol.** Defence action

71. Match the following columns and select the correct option.

<b>Column-I</b>		<b>Column-II</b>	
(a) Btcotton	(i)	Genetherapy	
(b) Adenosinedeami nasedeficiency	(ii)	Cellulardefence	
(c) RNAi	(iii)	Detection of HIVinfection	
(d) PCR	(iv)	Bacillusthuringiensis	

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

**Ans.** [4]

**Sol.** (a) → (iv); (b) → (i); (c) → (ii);  
(d) → (iii)

72. From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask:

- (1) CH<sub>3</sub>, H<sub>2</sub>, NH<sub>4</sub> and water vapor at 800°C
- (2) CH<sub>4</sub>, H<sub>2</sub>, NH<sub>3</sub> and water vapor at 600°C
- (3) CH<sub>3</sub>, H<sub>2</sub>, NH<sub>3</sub> and water vapor at 600°C
- (4) CH<sub>4</sub>, H<sub>2</sub>, NH<sub>3</sub> and water vapor at 800°C

**Ans.** [4]

**Sol.** CH<sub>4</sub>, H<sub>2</sub>, NH<sub>3</sub> and water vapor at 800°C

73. Match the organism with its use in biotechnology

(a) Bacillus thuringiensis	(i)	Cloning vector
(b) Thermusaquaticus	(ii)	Construction of first DNA molecule
(c) Agrobacterium tumefaciens	(iii)	DNA polymerase
(d) Salmonella typhimurium	(iv)	Cryproteins

Select the correct option from the following:

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

**Ans.** [1]

**Sol.** (a) → (iv); (b) → (iii); (c) → (i);  
(d) → (ii)

74. Bt cotton variety that was developed by the introduction of toxin gene of Bacillus thuringiensis (Bt) is resistant to:

- (1) Fungaldiseases
- (2) plantnematodes
- (3) Insectpredators
- (4) Insectpests

**Ans.** [4]

**Sol.** Insectpests

75. Choose the correct pair from the following:

- (1) Polymerases – Break the DNA into fragments
- (2) Nucleases – Separate the two strands of DNA

- (3) Exonucleases – Make cuts at specific positions within DNA  
 (4) Ligases – Join the two DNA molecules

**Ans.** [4]

**Sol.** Ligases – Join the two DNA molecules

76. The body of the ovule is fused within the funicle

- (1) Micropyle (2) Nucellus  
 (3) Chalaza (4) Hilum

**Ans.** [4]

**Sol.** Hilum

77. Strobili or cones are found in:

- (1) Pteris (2) Marchantia  
 (3) Equisetum (4) Salvinia

**Ans.** [3]

**Sol.** Equisetum

78. Match the following columns and select the correct option.

**Column-I**

**Column-II**

- |                 |  |
|-----------------|--|
| (a) Eosinophils | (i) Immune response                            |
| (b) Basophils   | (ii) Phagocytosis                              |
| (c) Neutrophils | (iii) Release histaminase, destructive enzymes |
| (d) Lymphocytes | (iv) Release granules containing histamine     |

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

**Ans.** [4]

**Sol.** (a) → (iii); (b) → (iv);  
 (c) → (ii); (d) → (i)

79. Identify the substances having glycosidic bond and peptide bond, respectively in their structure:

- (1) Glycerol, trypsin  
 (2) Cellulose, lecithin  
 (3) Inulin, insulin  
 (4) Chitin, cholesterol

**Ans.** [3]

**Sol.** Inulin, insulin

80. In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is correct?

- (1) Gross primary productivity is always more than net primary productivity.  
 (2) Gross primary productivity and Net primary productivity are one and same.  
 (3) There is no relationship between Gross primary productivity and Net primary productivity.  
 (4) Gross primary productivity is always less than net primary productivity.

**Ans.** [1]

**Sol.** Gross primary productivity is always more than net primary productivity.

81. Match the following columns and select the correct option-

**Column-I**

**Column-II**

- |                          |   |
|--------------------------|---|
| (a) Placenta             | (i) Androgens                           |
| (b) Zonapellucida        | (ii) Human Chorionic Gonadotropin (hCG) |
| (c) Bulbo-urethralglands | (iii) Layer of the ovum                 |
| (d) Leydigcells          | (iv) Lubrication of the penis           |

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

**Ans.** [3]

**Sol.** (a) → (ii); (b) → (iii);  
 (c) → (iv); (d) → (i)

82. Which of the following is NOT an attribute of a population?

- (1) Natality (2) Mortality  
 (3) Species interaction (4) Sex ratio

**Ans.** [3]

**Sol.** Species interaction

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83 Match the following columns and select the correct option

<b>Column-I</b>		<b>Column-II</b>		
(a) Organ of Corti	(i)	Connects middle ear and pharynx		
(b) Cochlea	(ii)	Coiled part of the labyrinth		
(c) Eustachian tube	(iii)	Attached to the oval window		
(d) Stapes	(iv)	Located on the basilar membrane		
	(a)	(b)	(c)	(d)
(1)	(iii)	(i)	(iv)	(ii)
(2)	(iv)	(ii)	(i)	(iii)
(3)	(i)	(ii)	(iv)	(iii)
(4)	(ii)	(iii)	(i)	(iv)

**Ans.** [2]

**Sol.** (a) → (iv); (b) → (ii); (c) → (i); (d) → (iii)

84. Which one of the following is the most abundant protein in the animals?

- (1) Collagen
- (2) Lectin
- (3) Insulin
- (4) Haemoglobin

**Ans.** [1]

**Sol.** Collagen

85. Match the following with respect to meiosis:

(a) Zygotene	(i)	Terminalization
(b) Pachytene	(ii)	Chiasmata
(c) Diplotene	(iii)	Crossing Over
(d) Diakinesis	(iv)	Synapsis

Select the Correct option from the following :

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

**Ans.** [1]

**Sol.** (a) → (iv); (b) → (iii); (c) → (ii); (d) → (i)

86. According to Robert May, the global species diversity is about:

- (1) 20 million
- (2) 50 million
- (3) 7 million
- (4) 1.5 million

**Ans.** [3]

**Sol.** 7 million

87. The ovary is half inferior in:

- (1) Mustard
- (2) Sunflower
- (3) Plum
- (4) Brinjal

**Ans.** [3]

**Sol.** Plum

88. Select the correct statement:

- (1) Glucagon is associated with hypoglycemia
- (2) Insulin acts on pancreatic cells and adipocyte
- (3) Insulin is associated with hyperglycemia
- (4) Glucocorticoids stimulate gluconeogenesis

**Ans.** [4]

**Sol.** Glucocorticoids stimulate gluconeogenesis

89. The process responsible for facilitating loss of water in liquid form the tip of grass blades at night and in early morning is

- (1) Rootpressure
- (2) Imbibition
- (3) Plasmolysis
- (4) Transpiration

**Ans.** [1]

**Sol.** Rootpressure

90. Some dividing cells exit cell cycle and enter vegetative inactive stage. This is called quiescent stage (G<sub>0</sub>). This process occurs at the end of:

- (1) G<sub>1</sub> phase
- (2) S phase
- (3) G<sub>2</sub> phase
- (4) M phase

**Ans.** [1]

**Sol.** G<sub>1</sub> phase