

1. Which of the following pairs is of unicellular algae ?
 - (1) *Chlorella* and *Spirulina*
 - (2) *Laminaria* and *Sargassum*
 - (3) *Gelidium* and *Gracilaria*
 - (4) *Anabaena* and *Volvox*
2. Goblet cells of alimentary canal are modified from :
 - (1) Compound epithelial cells
 - (2) Squamous epithelial cells
 - (3) Columnar epithelial cells
 - (4) Chondrocytes
3. The enzyme enterokinase helps in conversion of :
 - (1) pepsinogen into pepsin
 - (2) protein into polypeptides
 - (3) trypsinogen into trypsin
 - (4) caseinogen into casein
4. Which one of the following is the most abundant protein in the animals ?
 - (1) Insulin
 - (2) Haemoglobin
 - (3) Collagen
 - (4) Lectin
5. Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to :
 - (1) Insect predators
 - (2) Insect pests
 - (3) Fungal diseases
 - (4) Plant nematodes
6. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits ?
 - (1) 8
 - (2) 4
 - (3) 2
 - (4) 14
7. The infectious stage of *Plasmodium* that enters the human body is :
 - (1) Male gametocytes
 - (2) Trophozoites
 - (3) Sporozoites
 - (4) Female gametocytes
8. Select the **correct** events that occur during inspiration.
 - (a) Contraction of diaphragm
 - (b) Contraction of external inter-costal muscles
 - (c) Pulmonary volume decreases
 - (d) Intra pulmonary pressure increases
 - (1) only (d)
 - (2) (a) and (b)
 - (3) (c) and (d)
 - (4) (a), (b) and (d)
9. The process of growth is maximum during :
 - (1) Dormancy
 - (2) Log phase
 - (3) Lag phase
 - (4) Senescence
10. The sequence that controls the copy number of the linked DNA in the vector, is termed :
 - (1) Recognition site
 - (2) Selectable marker
 - (3) Ori site
 - (4) Palindromic sequence
11. The plant parts which consist of two generations - one within the other :
 - (a) Pollen grains inside the anther
 - (b) Germinated pollen grain with two male gametes
 - (c) Seed inside the fruit
 - (d) Embryo sac inside the ovule
 - (1) (a) and (d)
 - (2) (a) only
 - (3) (a), (b) and (c)
 - (4) (c) and (d)

12. Which of the following statements is **correct** ?

- (1) Adenine does not pair with thymine.
- (2) Adenine pairs with thymine through two H-bonds.
- (3) Adenine pairs with thymine through one H-bond.
- (4) Adenine pairs with thymine through three H-bonds.

13. In light reaction, plastoquinone facilitates the transfer of electrons from :

- (1) PS-I to ATP synthase
- (2) PS-II to Cytb₆f complex
- (3) Cytb₆f complex to PS-I
- (4) PS-I to NADP⁺

14. Which of the following statements about inclusion bodies is **incorrect** ?

- (1) These represent reserve material in cytoplasm.
- (2) They are not bound by any membrane.
- (3) These are involved in ingestion of food particles.
- (4) They lie free in the cytoplasm.

15. Cuboidal epithelium with brush border of microvilli is found in :

- (1) eustachian tube
- (2) lining of intestine
- (3) ducts of salivary glands
- (4) proximal convoluted tubule of nephron

16. Match the following columns and select the **correct** option.

Column - I		Column - II	
(a) <i>Clostridium butylicum</i>	(i)	Cyclosporin-A	
(b) <i>Trichoderma polysporum</i>	(ii)	Butyric Acid	
(c) <i>Monascus purpureus</i>	(iii)	Citric Acid	
(d) <i>Aspergillus niger</i>	(iv)	Blood cholesterol lowering agent	

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

17. 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) | (i) | (ii) | (iii) |
| (2) | (ii) | (i) | (iv) | (iii) |
| (3) | (iv) | (iii) | (ii) | (i) |
| (4) | (iii) | (iv) | (ii) | (i) |

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

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

19. 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	

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

20. Which of the following is **not** an inhibitory substance governing seed dormancy ?

- (1) Para-ascorbic acid
- (2) Gibberellic acid
- (3) Abscisic acid
- (4) Phenolic acid

- 21.** Identify the **correct** statement with reference to human digestive system.
- (1) Vermiform appendix arises from duodenum.
 - (2) Ileum opens into small intestine.
 - (3) Serosa is the innermost layer of the alimentary canal.
 - (4) Ileum is a highly coiled part.
- 22.** The ovary is half inferior in :
- (1) Plum
 - (2) Brinjal
 - (3) Mustard
 - (4) Sunflower
- 23.** The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is :
- (1) Plasmolysis
 - (2) Transpiration
 - (3) Root pressure
 - (4) Imbibition
- 24.** 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) | (ii) | (iv) | (iii) | (i) |
| (2) | (iii) | (iv) | (i) | (ii) |
| (3) | (iv) | (iii) | (ii) | (i) |
| (4) | (i) | (ii) | (iv) | (iii) |
- 25.** Identify the basic amino acid from the following.
- (1) Valine
 - (2) Tyrosine
 - (3) Glutamic Acid
 - (4) Lysine
- 26.** In gel electrophoresis, separated DNA fragments can be visualized with the help of :
- (1) Ethidium bromide in infrared radiation
 - (2) Acetocarmine in bright blue light
 - (3) Ethidium bromide in UV radiation
 - (4) Acetocarmine in UV radiation
- 27.** Identify the substances having glycosidic bond and peptide bond, respectively in their structure :
- (1) Inulin, insulin
 - (2) Chitin, cholesterol
 - (3) Glycerol, trypsin
 - (4) Cellulose, lecithin
- 28.** Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their :
- (1) Effect on reproduction
 - (2) Nutritive value
 - (3) Growth response
 - (4) Defence action
- 29.** Bilaterally symmetrical and acoelomate animals are exemplified by :
- (1) Annelida
 - (2) Ctenophora
 - (3) Platyhelminthes
 - (4) Aschelminthes
- 30.** The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are :
- (1) Ammonia and hydrogen
 - (2) Ammonia alone
 - (3) Nitrate alone
 - (4) Ammonia and oxygen
- 31.** Which of the following would help in prevention of diuresis ?
- (1) Decrease in secretion of renin by JG cells
 - (2) More water reabsorption due to undersecretion of ADH
 - (3) Reabsorption of Na^+ and water from renal tubules due to aldosterone
 - (4) Atrial natriuretic factor causes vasoconstriction

32. Select the **correct** statement.
- (1) Insulin is associated with hyperglycemia.
 - (2) Glucocorticoids stimulate gluconeogenesis.
 - (3) Glucagon is associated with hypoglycemia.
 - (4) Insulin acts on pancreatic cells and adipocytes.
33. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells ?
- (1) Polysomes
 - (2) Endoplasmic reticulum
 - (3) Peroxisomes
 - (4) Golgi bodies
34. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop.
- (1) Abscisic acid
 - (2) Cytokinin
 - (3) Gibberellin
 - (4) Ethylene
35. Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of :
- (1) G_2 phase
 - (2) M phase
 - (3) G_1 phase
 - (4) S phase
36. Flippers of Penguins and Dolphins are examples of :
- (1) Natural selection
 - (2) Adaptive radiation
 - (3) Convergent evolution
 - (4) Industrial melanism
37. The transverse section of a plant shows following anatomical features :
- (a) Large number of scattered vascular bundles surrounded by bundle 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) Dicotyledonous root
 - (2) Monocotyledonous stem
 - (3) Monocotyledonous root
 - (4) Dicotyledonous stem
38. In water hyacinth and water lily, pollination takes place by :
- (1) insects and water
 - (2) insects or wind
 - (3) water currents only
 - (4) wind and water
39. Identify the **wrong** statement with reference to immunity.
- (1) Foetus receives some antibodies from mother, it is an example for passive immunity.
 - (2) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".
 - (3) When ready-made antibodies are directly given, it is called "Passive immunity".
 - (4) Active immunity is quick and gives full response.
40. Which of the following is put into Anaerobic sludge digester for further sewage treatment ?
- (1) Activated sludge
 - (2) Primary sludge
 - (3) Floating debris
 - (4) Effluents of primary treatment

H6

41. 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) (ii) (iii) (i) (iv) |
| (2) (ii) (iv) (iii) (i) |
| (3) (iii) (i) (iv) (ii) |
| (4) (iii) (iv) (i) (ii) |

42. Which of the following hormone levels will cause release of ovum (ovulation) from the graffian follicle ?

- (1) Low concentration of FSH
- (2) High concentration of Estrogen
- (3) High concentration of Progesterone
- (4) Low concentration of LH

43. Select the option including all sexually transmitted diseases.

- (1) Cancer, AIDS, Syphilis
- (2) Gonorrhoea, Syphilis, Genital herpes
- (3) Gonorrhoea, Malaria, Genital herpes
- (4) AIDS, Malaria, Filaria

44. Match the following columns and select the **correct** option.

Column - I

Column - II

- | | |
|---------------------|--------------------------------------|
| (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) (i) (ii) (iv) (iii) |
| (2) (ii) (iii) (i) (iv) |
| (3) (iii) (i) (iv) (ii) |
| (4) (iv) (ii) (i) (iii) |

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45. Identify the **incorrect** statement.

- (1) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour.
- (2) Heart wood does not conduct water but gives mechanical support.
- (3) Sapwood is involved in conduction of water and minerals from root to leaf.
- (4) Sapwood is the innermost secondary xylem and is lighter in colour.

46. Identify the **correct** statement with regard to G₁ phase (Gap 1) of interphase.

- (1) Nuclear Division takes place.
- (2) DNA synthesis or replication takes place.
- (3) Reorganisation of all cell components takes place.
- (4) Cell is metabolically active, grows but does not replicate its DNA.

47. The number of substrate level phosphorylations in one turn of citric acid cycle is :

- (1) Three
- (2) Zero
- (3) One
- (4) Two

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

- (1) CH₃, H₂, NH₃ and water vapor at 600°C
- (2) CH₄, H₂, NH₃ and water vapor at 800°C
- (3) CH₃, H₂, NH₄ and water vapor at 800°C
- (4) CH₄, H₂, NH₃ and water vapor at 600°C

49. The body of the ovule is fused within the funicle at :

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

50. The QRS complex in a standard ECG represents :

- (1) Repolarisation of ventricles
- (2) Repolarisation of auricles
- (3) Depolarisation of auricles
- (4) Depolarisation of ventricles

51. Meiotic division of the secondary oocyte is completed :
- (1) At the time of fusion of a sperm with an ovum
 - (2) Prior to ovulation
 - (3) At the time of copulation
 - (4) After zygote formation
52. Match the following columns and select the **correct** option.
- | Column - I | | Column - II | |
|--------------------|-------|---|--|
| (a) Floating Ribs | (i) | Located between second and seventh ribs | |
| (b) Acromion | (ii) | Head of the Humerus | |
| (c) Scapula | (iii) | Clavicle | |
| (d) Glenoid cavity | (iv) | Do not connect with the sternum | |
- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|------|-------|
| (1) | (iv) | (iii) | (i) | (ii) |
| (2) | (ii) | (iv) | (i) | (iii) |
| (3) | (i) | (iii) | (ii) | (iv) |
| (4) | (iii) | (ii) | (iv) | (i) |
53. Match the following diseases with the causative organism and select the **correct** option.
- | Column - I | | Column - II | |
|----------------|-------|--------------------|--|
| (a) Typhoid | (i) | <i>Wuchereria</i> | |
| (b) Pneumonia | (ii) | <i>Plasmodium</i> | |
| (c) Filariasis | (iii) | <i>Salmonella</i> | |
| (d) Malaria | (iv) | <i>Haemophilus</i> | |
- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|-------|-------|
| (1) | (iv) | (i) | (ii) | (iii) |
| (2) | (i) | (iii) | (ii) | (iv) |
| (3) | (iii) | (iv) | (i) | (ii) |
| (4) | (ii) | (i) | (iii) | (iv) |
54. Match the following columns and select the **correct** option.
- | Column - I | | Column - II | |
|--|-------|--------------------|--|
| (a) Gregarious, polyphagous pest | (i) | <i>Asterias</i> | |
| (b) Adult with radial symmetry and larva with bilateral symmetry | (ii) | Scorpion | |
| (c) Book lungs | (iii) | <i>Ctenoplanea</i> | |
| (d) Bioluminescence | (iv) | <i>Locusta</i> | |
- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|-------|-------|
| (1) | (ii) | (i) | (iii) | (iv) |
| (2) | (i) | (iii) | (ii) | (iv) |
| (3) | (iv) | (i) | (ii) | (iii) |
| (4) | (iii) | (ii) | (i) | (iv) |
55. Dissolution of the synaptonemal complex occurs during :
- (1) Leptotene
 - (2) Pachytene
 - (3) Zygotene
 - (4) Diplotene
56. Which of the following is **correct** about viroids ?
- (1) They have free DNA without protein coat.
 - (2) They have RNA with protein coat.
 - (3) They have free RNA without protein coat.
 - (4) They have DNA with protein coat.
57. Embryological support for evolution was disapproved by :
- (1) Oparin
 - (2) Karl Ernst von Baer
 - (3) Alfred Wallace
 - (4) Charles Darwin
58. The specific palindromic sequence which is recognized by EcoRI is :
- (1) 5' - GGATCC - 3'
3' - CCTAGG - 5'
 - (2) 5' - GAATTC - 3'
3' - CTTAAG - 5'
 - (3) 5' - GGAACC - 3'
3' - CCTTGG - 5'
 - (4) 5' - CTTAAG - 3'
3' - GAATTC - 5'
59. Match the organism with its use in biotechnology.
- | | | | |
|--------------------------------------|-------|-------------------------------------|--|
| (a) <i>Bacillus thuringiensis</i> | (i) | Cloning vector | |
| (b) <i>Thermus aquaticus</i> | (ii) | Construction of first rDNA molecule | |
| (c) <i>Agrobacterium tumefaciens</i> | (iii) | DNA polymerase | |
| (d) <i>Salmonella typhimurium</i> | (iv) | Cry proteins | |
- Select the **correct** option from the following :
- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|-------|------|
| (1) | (iii) | (iv) | (i) | (ii) |
| (2) | (ii) | (iv) | (iii) | (i) |
| (3) | (iv) | (iii) | (i) | (ii) |
| (4) | (iii) | (ii) | (iv) | (i) |

60. Which of the following statements are **true** for the phylum-Chordata ?

- (a) In Urochordata notochord extends from head to tail and it is present throughout their life.
 (b) In Vertebrata notochord is present during the embryonic period only.
 (c) Central nervous system is dorsal and hollow.
 (d) Chordata is divided into 3 subphyla : Hemichordata, Tunicata and Cephalochordata.
- (1) (b) and (c)
 (2) (d) and (c)
 (3) (c) and (a)
 (4) (a) and (b)

61. Montreal protocol was signed in 1987 for control of :

- (1) Disposal of e-wastes
 (2) Transport of Genetically modified organisms from one country to another
 (3) Emission of ozone depleting substances
 (4) Release of Green House gases

62. 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 6.6×10^9 bp, then the length of the DNA is approximately :

- (1) 2.7 meters
 (2) 2.0 meters
 (3) 2.5 meters
 (4) 2.2 meters

63. Match the following columns and select the **correct** option.

Column - I		Column - II	
(a) Placenta	(i)	Androgens	
(b) Zona pellucida	(ii)	Human Chorionic Gonadotropin (hCG)	
(c) Bulbo-urethral glands	(iii)	Layer of the ovum	
(d) Leydig cells	(iv)	Lubrication of the Penis	

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

64. Which of the following regions of the globe exhibits highest species diversity ?

- (1) Amazon forests
 (2) Western Ghats of India
 (3) Madagascar
 (4) Himalayas

65. Match the following columns and select the **correct** option.

Column - I		Column - II	
(a) 6 - 15 pairs of gill slits	(i)	<i>Trygon</i>	
(b) Heterocercal caudal fin	(ii)	Cyclostomes	
(c) Air Bladder	(iii)	Chondrichthyes	
(d) Poison sting	(iv)	Osteichthyes	

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

66. Which of the following is **not** an attribute of a population ?

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

67. Match the following columns and select the **correct** option.

Column - I		Column - II	
(a) Bt cotton	(i)	Gene therapy	
(b) Adenosine deaminase deficiency	(ii)	Cellular defence	
(c) RNAi	(iii)	Detection of HIV infection	
(d) PCR	(iv)	<i>Bacillus thuringiensis</i>	

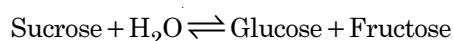
(a)	(b)	(c)	(d)
(1) (i)	(ii)	(iii)	(iv)
(2) (iv)	(i)	(ii)	(iii)
(3) (iii)	(ii)	(i)	(iv)
(4) (ii)	(iii)	(iv)	(i)

68. Which of the following refer to **correct** example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action ?
- Darwin's Finches of Galapagos islands.
 - Herbicide resistant weeds.
 - Drug resistant eukaryotes.
 - Man-created breeds of domesticated animals like dogs.
- only (d)
 - only (a)
 - (a) and (c)
 - (b), (c) and (d)
69. In which of the following techniques, the embryos are transferred to assist those females who cannot conceive ?
- GIFT and ICSI
 - ZIFT and IUT
 - GIFT and ZIFT
 - ICSI and ZIFT
70. Experimental verification of the chromosomal theory of inheritance was done by :
- Morgan
 - Mendel
 - Sutton
 - Boveri
71. The oxygenation activity of RuBisCo enzyme in photorespiration leads to the formation of :
- 1 molecule of 4-C compound and 1 molecule of 2-C compound
 - 2 molecules of 3-C compound
 - 1 molecule of 3-C compound
 - 1 molecule of 6-C compound
72. If the head of cockroach is removed, it may live for few days because :
- the head holds a 1/3rd of a nervous system while the rest is situated along the dorsal part of its body.
 - the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.
 - the cockroach does not have nervous system.
 - the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.
73. Select the **correct** match.
- | | | | |
|-----|---------------------|---|--|
| (1) | Thalassemia | - | X linked |
| (2) | Haemophilia | - | Y linked |
| (3) | Phenylketonuria | - | Autosomal dominant trait |
| (4) | Sickle cell anaemia | - | Autosomal recessive trait, chromosome-11 |
74. Strobili or cones are found in :
- Equisetum*
 - Salvinia*
 - Pteris*
 - Marchantia*
75. 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) | (ii) | (i) | (iii) | (iv) |
| (2) | (iii) | (iv) | (ii) | (i) |
| (3) | (iv) | (i) | (ii) | (iii) |
| (4) | (i) | (ii) | (iv) | (iii) |
76. According to Robert May, the global species diversity is about :
- 7 million
 - 1.5 million
 - 20 million
 - 50 million
77. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams ?
- Inbreeding
 - Out crossing
 - Mutational breeding
 - Cross breeding

78. The roots that originate from the base of the stem are :
- (1) Lateral roots
 - (2) Fibrous roots
 - (3) Primary roots
 - (4) Prop roots
79. Identify the **wrong** statement with reference to transport of oxygen.
- (1) Low $p\text{CO}_2$ in alveoli favours the formation of oxyhaemoglobin.
 - (2) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2 .
 - (3) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
 - (4) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.
80. Presence of which of the following conditions in urine are indicative of Diabetes Mellitus ?
- (1) Renal calculi and Hyperglycaemia
 - (2) Uremia and Ketonuria
 - (3) Uremia and Renal Calculi
 - (4) Ketonuria and Glycosuria
81. Ray florets have :
- (1) Half inferior ovary
 - (2) Inferior ovary
 - (3) Superior ovary
 - (4) Hypogynous ovary
82. Name the enzyme that facilitates opening of DNA helix during transcription.
- (1) RNA polymerase
 - (2) DNA ligase
 - (3) DNA helicase
 - (4) DNA polymerase
83. Identify the **wrong** statement with regard to Restriction Enzymes.
- (1) Sticky ends can be joined by using DNA ligases.
 - (2) Each restriction enzyme functions by inspecting the length of a DNA sequence.
 - (3) They cut the strand of DNA at palindromic sites.
 - (4) They are useful in genetic engineering.
84. Match the trophic levels with their **correct** species examples in grassland 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 :
- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|-------|------|
| (1) | (i) | (ii) | (iii) | (iv) |
| (2) | (ii) | (iii) | (iv) | (i) |
| (3) | (iii) | (ii) | (i) | (iv) |
| (4) | (iv) | (iii) | (ii) | (i) |
85. In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is **correct** ?
- (1) There is no relationship between Gross primary productivity and Net primary productivity.
 - (2) Gross primary productivity is always less than net primary productivity.
 - (3) Gross primary productivity is always more than net primary productivity.
 - (4) Gross primary productivity and Net primary productivity are one and same.
86. Floridean starch has structure similar to :
- (1) Laminarin and cellulose
 - (2) Starch and cellulose
 - (3) Amylopectin and glycogen
 - (4) Mannitol and algin
87. Choose the **correct** pair from the following :
- | | |
|--------------------|--|
| (1) Exonucleases - | Make cuts at specific positions within DNA |
| (2) Ligases - | Join the two DNA molecules |
| (3) Polymerases - | Break the DNA into fragments |
| (4) Nucleases - | Separate the two strands of DNA |

88. Identify the **wrong** statement with reference to the gene 'I' that controls ABO blood groups.
- (1) Allele 'i' does not produce any sugar.
 - (2) The gene (I) has three alleles.
 - (3) A person will have only two of the three alleles.
 - (4) When I^A and I^B are present together, they express same type of sugar.
89. The first phase of translation is :
- (1) Recognition of an anti-codon
 - (2) Binding of mRNA to ribosome
 - (3) Recognition of DNA molecule
 - (4) Aminoacylation of tRNA
90. Which of the following statements is **not correct** ?
- (1) Genetically engineered insulin is produced in *E-Coli*.
 - (2) In man insulin is synthesised as a proinsulin.
 - (3) The proinsulin has an extra peptide called C-peptide.
 - (4) The functional insulin has A and B chains linked together by hydrogen bonds.
91. Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give :
- (1) Isobutyl alcohol
 - (2) Isopropyl alcohol
 - (3) Sec. butyl alcohol
 - (4) Tert. butyl alcohol
92. Sucrose on hydrolysis gives :
- (1) α -D-Fructose + β -D-Fructose
 - (2) β -D-Glucose + α -D-Fructose
 - (3) α -D-Glucose + β -D-Glucose
 - (4) α -D-Glucose + β -D-Fructose
93. A mixture of N_2 and Ar gases in a cylinder contains 7 g of N_2 and 8 g of Ar. If the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N_2 is :
- [Use atomic masses (in $g\ mol^{-1}$) : N = 14, Ar = 40]
- (1) 18 bar
 - (2) 9 bar
 - (3) 12 bar
 - (4) 15 bar
94. The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are :
- (1) 175, 104 and 71
 - (2) 71, 104 and 71
 - (3) 104, 71 and 71
 - (4) 71, 71 and 104
95. On electrolysis of dil. sulphuric acid using Platinum (Pt) electrode, the product obtained at anode will be :
- (1) SO_2 gas
 - (2) Hydrogen gas
 - (3) Oxygen gas
 - (4) H_2S gas
96. Match the following and identify the **correct** option.
- | | |
|---------------------------------|------------------------------------|
| (a) $CO(g) + H_2(g)$ | (i) $Mg(HCO_3)_2 + Ca(HCO_3)_2$ |
| (b) Temporary hardness of water | (ii) An electron deficient hydride |
| (c) B_2H_6 | (iii) Synthesis gas |
| (d) H_2O_2 | (iv) Non-planar structure |
- | | (a) | (b) | (c) | (d) |
|-----|-------|-------|------|------|
| (1) | (i) | (iii) | (ii) | (iv) |
| (2) | (iii) | (i) | (ii) | (iv) |
| (3) | (iii) | (ii) | (i) | (iv) |
| (4) | (iii) | (iv) | (ii) | (i) |
97. Measuring Zeta potential is useful in determining which property of colloidal solution ?
- (1) Size of the colloidal particles
 - (2) Viscosity
 - (3) Solubility
 - (4) Stability of the colloidal particles

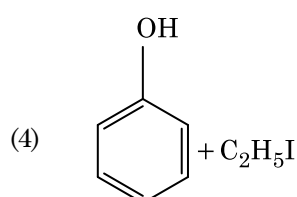
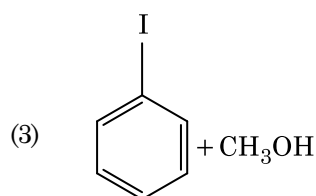
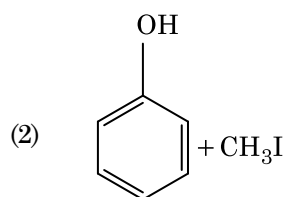
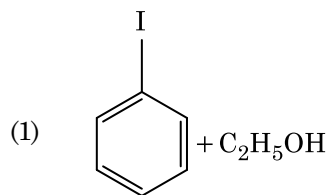
98. Hydrolysis of sucrose is given by the following reaction.



If the equilibrium constant (K_c) is 2×10^{13} at 300 K, the value of $\Delta_r G^\ominus$ at the same temperature will be :

- (1) $-8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(4 \times 10^{13})$
 - (2) $-8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(2 \times 10^{13})$
 - (3) $8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(2 \times 10^{13})$
 - (4) $8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(3 \times 10^{13})$
99. The rate constant for a first order reaction is $4.606 \times 10^{-3} \text{ s}^{-1}$. The time required to reduce 2.0 g of the reactant to 0.2 g is :
- (1) 1000 s
 - (2) 100 s
 - (3) 200 s
 - (4) 500 s

100. Anisole on cleavage with HI gives :



101. Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known as :

- (1) Cross Aldol condensation
- (2) Aldol condensation
- (3) Cannizzaro's reaction
- (4) Cross Cannizzaro's reaction

102. Which of the following oxoacid of sulphur has $-\text{O}-\text{O}-$ linkage ?

- (1) $\text{H}_2\text{S}_2\text{O}_7$, pyrosulphuric acid
- (2) H_2SO_3 , sulphurous acid
- (3) H_2SO_4 , sulphuric acid
- (4) $\text{H}_2\text{S}_2\text{O}_8$, peroxodisulphuric acid

103. Urea reacts with water to form A which will decompose to form B. B when passed through Cu^{2+} (aq), deep blue colour solution C is formed. What is the formula of C from the following ?

- (1) $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$
- (2) CuSO_4
- (3) $[\text{Cu}(\text{NH}_3)_4]^{2+}$
- (4) $\text{Cu}(\text{OH})_2$

104. Which of the following is a cationic detergent ?

- (1) Sodium dodecylbenzene sulphonate
- (2) Sodium lauryl sulphate
- (3) Sodium stearate
- (4) Cetyltrimethyl ammonium bromide

105. The freezing point depression constant (K_f) of benzene is $5.12 \text{ K kg mol}^{-1}$. The freezing point depression for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is (rounded off upto two decimal places) :

- (1) 0.60 K
- (2) 0.20 K
- (3) 0.80 K
- (4) 0.40 K

106. For the reaction, $2\text{Cl}(\text{g}) \rightarrow \text{Cl}_2(\text{g})$, the correct option is :

- (1) $\Delta_r H < 0$ and $\Delta_r S < 0$
- (2) $\Delta_r H > 0$ and $\Delta_r S > 0$
- (3) $\Delta_r H > 0$ and $\Delta_r S < 0$
- (4) $\Delta_r H < 0$ and $\Delta_r S > 0$