



# NEET Exam. 2019 (5<sup>th</sup> May 2019)

## (Paper & Solution)

Code – S2

**Q.1** From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in :

- (1) Pteridophytes                      (2) Gymnosperms                      (3) Liverworts                      (4) Mosses

**Ans.** [1]

**Sol.** The female gametophytes in these plants called pteridophytes are retained on the parent sporophytes for variable period. Development of the zygotes into young embryo take place in female gametophyte

**Q.2** Extrusion of second polar body from egg nucleus occurs :

- (1) Before entry of sperm into ovum  
(2) Simultaneously with first cleavage  
(3) After entry of sperm but before fertilization  
(4) After fertilization

**Ans.** [3]

**Sol.** Sperm enters into 2<sup>o</sup> oocytes which breaks metaphase promoting factor and activates anaphase promoting complex which causes extrusion of second polar body by completing meiosis-II

**Q.3** DNA precipitation out of a mixture of biomolecules can be achieved by treatment with :

- (1) Methanol at room temperature  
(2) Chilled chloroform  
(3) Isopropanol  
(4) Chilled ethanol

**Ans.** [4]

**Sol.** Chilled ethanol is used for DNA precipitation out of a mixture of biomolecules. Process is called spooling

**Q.4** Due to increasing air-borne allergens and pollutants, many people in urban areas are suffering from respiratory disorder causing wheezing due to :

- (1) Proliferation of fibrous tissues and damage of the alveolar walls  
(2) Reduction in the secretion of surfactants by pneumocytes  
(3) Benign growth on mucous lining of nasal cavity  
(4) Inflammation of bronchi and bronchioles

**Ans.** [4]

**Sol.** Asthma is an allergic disorder in which wheezing sound is produced due to inflammation of bronchioles.

- Q.5** The Earth summit held in Rio de Janeiro in 1992 was called :
- (1) to assess threat posed to native species by invasive weed species
  - (2) for immediate steps to discontinue use of CFCs that were damaging the ozone layer
  - (3) to reduce CO<sub>2</sub> emissions and global warming
  - (4) for conservation of biodiversity and sustainable utilization of its benefits

**Ans.** [4]

**Sol.** The earth summit held in *Rio de Janerio* in 1992 was called for conservation of biodiversity and sustainable utilization of its benefits.

- Q.6** Match the hominids with their correct brain size :
- |                                  |                  |
|----------------------------------|------------------|
| (a) <i>Homo habilis</i>          | (i) 900 cc       |
| (b) <i>Homo neanderthalensis</i> | (ii) 1350 cc     |
| (c) <i>Homo erectus</i>          | (iii) 650-800 cc |
| (d) <i>Homo sapiens</i>          | (iv) 1400 cc     |

Select the correct option.

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

**Ans.** [1]

**Sol.** *Homo sapiens* → 1350 cc  
*Homo neanderthalensis* → 1400 cc  
*Homo erectus* → 900 cc  
*Homo habilis* → 650-800 cc

- Q.7** How does steroid hormone influence the cellular activities ?
- (1) Activating cyclic AMP located on the cell membrane
  - (2) Using aquaporin channels as second messenger
  - (3) Changing the permeability of the cell membrane
  - (4) Binding to DNA and forming a gene-hormone complex

**Ans.** [4]

**Sol.** Hormones which interact with intracellular receptors mostly regulate gene expression or chromosome function by the interaction of hormone receptor complex with the genome.

- Q.8** Expressed Sequence Tags (ESTs) refers to :
- (1) DNA polymorphism
  - (2) Novel DNA sequences
  - (3) Genes expressed as RNA
  - (4) Polypeptide expression

**Ans.** [3]

**Sol.** Expressed sequence tags (ESTs) refers to genes expressed as RNA



- Q.9** It takes very long time for pineapple plants to produce flowers. Which combination of hormones can be applied to artificially induce flowering in pineapple plants throughout the year to increase yield ?
- (1) Gibberellin and Abscisic acid
  - (2) Cytokinin and Abscisic acid
  - (3) Auxin and Ethylene
  - (4) Gibberellin and Cytokinin

**Ans.** [3]

**Sol.** In Pineapple plants Auxins and Ethylene induce artificial flowering in pineapple plants throughout the year to increase yield.

- Q.10** Which of the following ecological pyramids is generally inverted?
- (1) Pyramid of biomass in a forest
  - (2) Pyramid of biomass in a sea
  - (3) Pyramid of numbers in grassland
  - (4) Pyramid of energy

**Ans.** [2]

**Sol.** Pyramid of biomass in a sea. It is always inverted.

- Q.11** Which of the following pair of organelles does not contains DNA ?
- (1) Lysosomes and Vacuoles
  - (2) Nuclear envelope and Mitochondria
  - (3) Mitochondria and Lysosomes
  - (4) Chloroplast and Vacuoles

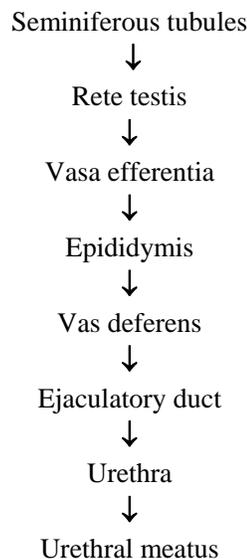
**Ans.** [1]

**Sol.** Lysosomes and vacuoles doesn't contain DNA

- Q.12** Select the correct sequence for transport of sperm cells in male reproductive system :
- (1) Seminiferous tubules → Vasa efferentia → Epididymis → Inguinal canal → Urethra
  - (2) Testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus
  - (3) Testis → Epididymis → Vasa efferentia → Rete testis → Inguinal canal → Urethra
  - (4) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus

**Ans.** [4]

**Sol.** Correct route map for sperm is





**Q.17** Match the following structures with their respective location in organs :

- |                          |                       |
|--------------------------|-----------------------|
| (a) Crypts of Lieberkuhn | (i) Pancreas          |
| (b) Glisson's capsule    | (ii) Duodenum         |
| (c) Islets of Langerhans | (iii) Small intestine |
| (d) Brunner's Glands     | (iv) Liver            |

Select the correct option.

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

**Ans.** [1]

- Sol.** → Crypts of Lieberkuhn are present in small intestine  
→ Glisson's capsule is the covering of Hepatic tubule in liver  
→ Islets of Langerhans are endocrine part of pancreas  
→ Brunner's Glands are submucosal gland of duodenum of small Intestine

**Q.18** Grass leaves curl inward during very dry weather. Select the most appropriate reason from the following :

- (1) Shrinkage of air spaces in spongy mesophyll
- (2) Tyloses in vessels
- (3) Closure of stomata
- (4) Flaccidity of bulliform cells

**Ans.** [4]

**Sol.** Flaccidity of bulliform cells grass leaves curl in words during dry weather due to the loss of water or flaccidity of bulliform cells.

**Q.19** Consider the following statements :

(A) Coenzyme of metal ion that is tightly bound to enzyme protein is called prosthetic group.

(B) A complete catalytic active enzyme with its bound prosthetic group is called apoenzyme

Select the correct option

- |                                |                                  |
|--------------------------------|----------------------------------|
| (1) Both (A) and (B) are false | (2) (A) is false but (B) is true |
| (3) Both (A) and (B) are true  | (4) (A) is true but (B) is false |

**Ans.** [1]

**Sol.** Prosthetic groups are organic compounds which are firmly attached with apoenzyme.  
Prosthetic group with Apoenzyme formes holoenzyme

**Q.20** Respiratory Quotient (RQ) value of tripalmitin is :

- |          |          |         |         |
|----------|----------|---------|---------|
| (1) 0.07 | (2) 0.09 | (3) 0.9 | (4) 0.7 |
|----------|----------|---------|---------|

**Ans.** [4]

**Sol.** Respiratory quotient (R–Q) value of triplamitin is 0–7.



- Q.21** Which of the following statements is incorrect ?
- (1) Infective constituent in viruses is the protein coat
  - (2) Prions consist of abnormally folded proteins
  - (3) Viroids lack a protein coat
  - (4) Viruses are obligate parasites

**Ans.** [1]

**Sol.** The infective constituent in viruses is its genetic material (DNA/RNA) but not its protein coat.

- Q.22** Phloem in gymnosperms lacks :
- (1) Companion cells only
  - (2) Both sieve tubes and companion cells
  - (3) Albuminous cells and sieve cells
  - (4) Sieve tubes only

**Ans.** [2]

**Sol.** Both sieve tubes and companion cells

In gymnosperms only sieve cells and albuminous cells are present but they lack sieve tubes and companion cells ?

- Q.23** Under which of the following conditions will there be no change in the reading frame of following mRNA ?  
5' AACAGCGGUGCUAAU 3'
- (1) Insertion of A and G at 4<sup>th</sup> and 5<sup>th</sup> positions respectively
  - (2) Deletion of GGU from 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> positions
  - (3) Insertion of G at 5<sup>th</sup> positions
  - (4) Deletion of G from 5<sup>th</sup> positions

**Ans.** [2]

**Sol.** Page No. 88 12<sup>th</sup> NCERT

- Q.24** Identify the cells whose secretion protects the lining of gastro-intestinal tract from various enzymes.
- (1) Oxyntic Cells                      (2) Duodenal Cells                      (3) Chief Cells                      (4) Goblet Cells

**Ans.** [4]

**Sol.** Goblet cells / mucocytes secrete mucous which protects the lining of gastro-intestinal tract from various enzymes.

- Q.25** What is the site of perception of photoperiod necessary for induction of flowering in plants ?
- (1) Shoot apex                      (2) Leaves                      (3) Lateral buds                      (4) Pulvinus

**Ans.** [3]

**Sol.** The site of perception of light / dark duration are leaves. It is hypothesized that there is a hormonal substance that migrates from leaves to shoot apices for inducing flowering when plants are exposed to the necessary inductive photoperiod.



- Q.26** What would be the heart rate of a person if the cardiac output is 5L, blood volume in the ventricles at the end of diastole is 100 mL and at the end of ventricular systole is 50 mL ?
- (1) 100 beats per minute (2) 125 beats per minute  
(3) 50 beats per minute (4) 75 beats per minute

**Ans.** [1]

**Sol.** Cardiac output = Stroke volume  $\times$  Heart rate

$$\begin{aligned}\text{Where stroke volume} &= \text{End diastolic volume} - \text{End systolic volume} \\ &= 100 \text{ ml} - 50 \text{ ml} \\ &= 50 \text{ ml}\end{aligned}$$

- Q.27** Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL ?
- (1) 2200 mL (2) 2700 mL (3) 1500 mL (4) 1700 mL

**Ans.** [3]

**Sol.** E.C. = T.V. + E.R.V. = 500 + 1000 = 1500 ml

- Q.28** Placentation, in which ovules develop on the inner wall of the ovary or in peripheral part, is :
- (1) Parietal (2) Free central (3) Basal (4) Axile

**Ans.** [1]

- Q.29** Which of these following methods is the most suitable for disposal of nuclear waste ?
- (1) Dump the waste within rocks under deep ocean  
(2) Bury the waste within rocks deep below the Earth's surface  
(3) Shoot the waste into space  
(4) Bury the waste under Antarctic ice-cover

**Ans.** [2]

**Sol.** Page No. 280 12<sup>th</sup> NCERT

- Q.30** Which of the following statement is incorrect ?
- (1) Conidia are produced exogenously and ascospores endogenously.  
(2) Yeasts have filamentous bodies with long thread-like hyphae.  
(3) Morels and truffles are edible delicacies.  
(4) Clauiceps is a source of many alkaloids and LSD.

**Ans.** [2]

**Sol.** Yeasts are not filamentous, they are usually oval in shape. They are not having hyphal structure.

- Q.31** Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?
- (1) Industrial oven (2) Bioreactor (3) BOD incubator (4) Sludge digester

**Ans.** [2]

**Sol.** Bioreactor are required for growing microbes on a large scale production of enzymes

**Q.32** Match the following organisms with the products they produce:

(a)	Lactobacillus	(i)	Cheese
(b)	Saccharomyces cerevisiae	(ii)	Curd
(c)	Aspergillus niger	(iii)	Citric Acid
(d)	Acetobacter aceti	(iv)	Bread
		(v)	Acetic Acid

Select the correct option

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

**Ans.** [4]

**Sol.** Lactobacillus — Curd formation

**Q.33** Select the incorrect statement.

- (1) Inbreeding selects harmful recessive genes that reduce fertility and productivity.
- (2) Inbreeding helps in accumulation of superior genes and elimination of undesirable genes.
- (3) Inbreeding increases homozygosity.
- (4) Inbreeding is essential to evolve purelines in any animal.

**Ans.** [1]

**Sol.** Inbreeding selects superior traits leading to higher fertility and productivity but due to continuous inbreeding can lead to inbreeding depression

**Q.34** Which of the following immune responses is responsible for rejection of kidney graft?

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| (1) Inflammatory immune response | (2) Cell-mediated immune response |
| (3) Auto-immune response         | (4) Humoral immune response       |

**Ans.** [2]

**Sol.** Cytotoxic /killer t-lymphocytes which are part of cell mediated immunity are responsible for graft rejection.

**Q.35** Which of the statements given below is not true about formation of Annual Rings in trees?

- (1) Activity of cambium depends upon variation in climate.
- (2) Annula ring are not prominent in trees of temperate region.
- (3) Annula ring is a combination of spring wood and autumn wood produced in a year.
- (4) Differential activity of cambium causes light and dark bands of tissue-early and late wood respectively

**Ans.** [2]

**Sol.** Annual ring are not prominent trees of temperate region

Explanation : - Annual rings are prominent only in trees of temperate region. In tropical and coastal regions there is no clear temperature variations in the seasons. So there is no differential activity of cambium.

**Q.36** Which of the following is true for Golden rice?

- (1) It is drought tolerant, developed using Agrobacterium vector.
- (2) It has yellow grains, because of a gene introduced from a primitive variety of rice.
- (3) It is Vitamin A enriched, with a gene from daffodil.
- (4) It is pest resistant, with a gene from Bacillus thuringiensis.

**Ans.** [3]

**Sol.** Golden rice are enriched with vitamin A, the gene is taken from daffodils

- Q.37** What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia, and is sterile?
- (1) Edward syndrome (2) Down's syndrome  
(3) Turner's syndrome (4) Klinefelter's syndrome

**Ans.** [4]

**Sol.** Page No. 92 12<sup>th</sup> NCERT

- Q.38** Which one of the following statements regarding post-fertilization development in flowering plants is incorrect?
- (1) Central cell develop into endosperm  
(2) Ovules develop into embryo sac  
(3) Ovary develops into fruit  
(4) Zygote develops into embryo

**Ans.** [1]

**Sol.** Central cell develops into Endosperm. Endosperm develops from the fusion of secondary diploid nucleus with one male nucleus forming primary endosperm nucleus (PEN).

- Q.39** Which of the following is the most important cause for animals and plants being driven to extinction?
- (1) Economic exploitation (2) Alien species invasion  
(3) Habitat loss and fragmentation (4) Drought and floods

**Ans.** [3]

**Sol.** Page No. 264 12<sup>th</sup> NCERT

- Q.40** Which of the following contraceptive methods do involve a role of hormone?
- (1) CuT, Pills, Emergency contraceptives  
(2) Pills, Emergency contraceptives, Barrier methods  
(3) Lactational amenorrhea, Pills, Emergency contraceptives  
(4) Barrier method, Lactational amenorrhea, Pills

**Ans.** [3]

**Sol.** Lactational amenorrhea is a period of intense lactation during which ovulation does not occur Pills and emergency contraceptives contain hormones.

- Q.41** Consider following features:
- (a) Organ system level of organisation  
(b) Bilateral symmetry  
(c) True coelomates with segmentation of body

Select the correct option of animal groups which possess all the above characteristics.

- (1) Arthropoda, Mollusca and chordata (2) Annelida, Mollusca and chordata  
(3) Annelida, Arthropoda and chordate (4) Annelida, Arthropoda and Mollusca

**Ans.** [3]

**Sol.** Annelida, Arthropoda and chordata shown organ system level of organization, bilateral symmetry, eucoelomates and are segmented

**Q.42** Which of the following factors is responsible for the formation of concentrated urine?

- (1) Secretion of erythropoietin by Juxtaglomerular complex.
- (2) Hydrostatic pressure during glomerular filtration.
- (3) Low levels of antidiuretic hormone.
- (4) Maintaining hyperosmolarity towards inner medullary interstitium in the kidneys

**Ans.** [4]

**Sol.** Maintaining hyperosmolarity towards inner medullary interstitium in the kidneys for the formation of concentrated urine.

**Q.43** Match the following organisms with their respective characteristics:

(a)	Pila	(i)	Flame cells
(b)	Bombyx	(ii)	Comb plates
(c)	Pleurobrachia	(iii)	Radula
(d)	Taenia	(iv)	Malpighian Tubules

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

**Ans.** [4]

**Sol.** → Pila (mollusca) have radula  
 → Bombyx (arthropoda) have malpighian tubules  
 → Pleurobrachia (ctenophora) have comb plates  
 → Taenia (platyhelminthes) have flame cells for excretion

**Q.44** Xylem translocates:

- (1) Water, mineral salts and some organic nitrogen only
- (2) Water, mineral salts, some organic nitrogen and hormones
- (3) Water only
- (4) Water and mineral salts only

**Ans.** [4]

**Sol.** Xylem trans locates water and mineral salts only.

**Q.45** What is the direction of movement of sugars in phloem?

- |                          |                    |
|--------------------------|--------------------|
| (1) Downward             | (2) Bi-directional |
| (3) Non-multidirectional | (4) Upward         |

**Ans.** [2]

**Sol.** The correct sequence of phases in cell cycle starts from G<sub>1</sub> phase & ends in the 'M' – phase or mitotic phase



**Q.46** The correct sequence of phases of cell cycle is:

- (1)  $S \rightarrow G_1 \rightarrow G_2 \rightarrow M$  (2)  $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$   
(3)  $M \rightarrow G_1 \rightarrow G_2 \rightarrow S$  (4)  $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$

**Ans.** [2]

**Sol.** The correct sequence of phases in cell cycle starts from  $G_1$  phase & ends in the 'M' – phase or mitotic phase

**Q.47** The shorter and longer arms of a submetacentric chromosome are referred to as:

- (1) q-arm and p-arm respectively (2) m-arm and n-arm respectively  
(3) s-arm and l-arm respectively (4) p-arm and q-arm respectively

**Ans.** [4]

**Sol.** The shorter arm of a sub-metacentric chromosome is called as the 'P' arm and the longer arm is called as a 'q' - arm

**Q.48** Which of the following can be used as a biocontrol agent in the treatment of plant disease?

- (1) Anabaena (2) Lactobacillus (3) Trichoderma (4) Chlorella

**Ans.** [3]

**Sol.** A biological control being developed for use in the treatment of plant disease is the fungus is trichoderma trichoderma species are free living fungi that are very common in the root ecosystems. They are effective biocontrol agents of several plant pathogens.

**Q.49** Which of the following glucose transporters is insulin-dependent?

- (1) GLUT III (2) GLUT IV (3) GLUT I (4) GLUT II

**Ans.** [2]

**Sol.** GLUT IV is insulin dependent glucose transporter which increases uptake of glucose.

**Q.50** Purines found both in DNA and RNA are:

- (1) Guanine and cytosine (2) Cytosine and thymine  
(3) Adenine and thymine (4) Adenine and guanine

**Ans.** [4]

**Sol.** Adenine & guanine are purines which are common to both DNA & RNA

**Q.51** Drug called 'Heroin' is synthesized by:

- (1) glycosylation of morphine  
(2) nitration of morphine  
(3) methylation of morphine  
(4) acetylation of morphine

**Ans.** [4]

**Sol.** Heroine is formed by acetylation of morphine

**Q.52** Select the correct option.

- (1) Each rib is a flat thin bone and all the ribs are connected dorsally to the thoracic vertebrae and ventrally to the sternum
- (2) There are seven pairs of vertebrosteral, three pairs of vertebrochondral and two pairs of vertebral ribs
- (3) 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> pairs of ribs articulate directly with the sternum
- (4) 11<sup>th</sup> and 12<sup>th</sup> pairs of ribs are connected to the sternum with the help of hyaline cartilage.

**Ans.** [2]

**Sol.** Seven pairs of Ribs are vertebrosteral while 8, 9 and 10<sup>th</sup> pair of ribs are vertebrochondral and the last 11<sup>th</sup>, 12<sup>th</sup> pair are vertebral ribs.

**Q.53** A gene locus has two alleles A, a. If the frequency of dominant allele A is 0.4, then what will be the frequency of homozygous dominant, heterozygous and homozygous recessive individuals in the population?

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| (1) 0.16(AA); 0.48 (Aa); 0.36(aa)   | (2) 0.16 (AA); 0.36(Aa); 0.48(aa)   |
| (3) 0.36 (AA); 0.48 (Aa); 0.16 (aa) | (4) 0.16 (AA); 0.24 (Aa); 0.36 (aa) |

**Ans.** [1]

**Sol.** If A = 0.4, then a = 0.6

So,  $AA = 0.4 \times 0.4 = 0.16$

$Aa = 0.4 \times 0.6 = 0.24$

$Aa = 0.6 \times 0.6 = 0.36$

**Q.54** Which of the following statements regarding mitochondria is **incorrect** ?

- (1) Inner membrane is convoluted with infoldings
- (2) Mitochondrial matrix contains single circular DNA molecule and ribosomes
- (3) Outer membrane is permeable to monomers of carbohydrates, fats and proteins
- (4) Enzymes of electron transport are embedded in outer membrane.

**Ans.** [4]

**Sol.** The enzymes required for the ETS are present in the inner matrix only as the elementary particles are embedded in the inner membrane of the mitochondrial matrix.

**Q.55** Variations caused by mutation, as proposed by Hugo de Vries, are :

- |                            |                              |
|----------------------------|------------------------------|
| (1) small and directional  | (2) small and directionless  |
| (3) random and directional | (4) random and directionless |

**Ans.** [3]

**Sol.** According to De Vries, Variations are large, random and directionless

**Q.56** Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the **incorrect** statement.

- (1) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand
- (2) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA
- (3) The enzyme cuts DNA molecule at identified position within the DNA
- (4) The enzyme binds DNA at specific sites and cuts only one of the two strands

**Ans.** [4]

**Sol.** Enzyme binds DNA at specific sites and cut both the strands by breaking phosphodiester linkage.

**Q.57** Which part of the brain is responsible for thermoregulation ?  
(1) Corpus callosum                      (2) Medulla oblongata                      (3) Cerebrum                      (4) Hypothalamus

**Ans.** [4]

**Sol.** Hypothalamus is responsible for thermoregulation

**Q.58** Use of an artificial kidney during hemodialysis may result in :  
(a) Nitrogenous waste build-up in the body  
(b) Non –elimination of excess potassium ions  
(c) Reduced absorption of calcium ions from gastro-intestinal tract  
(d) Reduced RBC production

Which of the following options is the most **appropriate** ?

- (1) (c) and (d) are correct                      (2) (a) and (d) are correct  
(3) (a) and (b) are correct                      (4) (b) and (c) are correct

**Ans.** [1]

**Sol.** Kidney produces erythropoietin which helps in RBC production

Kidney also secretes calcitriol which allows absorption of calcium ion from gastro intestinal tract.

**Q.59** What triggers activation of protoxin to active Bt toxin of *Bacillus thuringiensis* in boll worm ?  
(1) Alkaline pH of gut                      (2) Acidic pH of stomach  
(3) Body temperature                      (4) Moist surface of midgut

**Ans.** [1]

**Sol.** Protoxin are converted into active toxins in the alkaline pH of gut

**Q.60** Which of the following protocols did aim for reducing emission of chlorofluorocarbons into the atmosphere?  
(1) Gothenburg Protocol                      (2) Geneva Protocol  
(3) Montreal Protocol                      (4) Kyoto Protocol

**Ans.** [3]

**Sol.** Page No. 283 12<sup>th</sup> NCERT

**Q.61** Which of the following sexually transmitted diseases is **not** completely curable ?  
(1) Genital herpes                      (2) Chlamydisias                      (3) Gonorrhoea                      (4) Genital warts

**Ans.** [1]

**Sol.** HIV and Genital Herpes is not completely curable.

**Q.62** Thiobacillus is a group of bacteria helpful in carrying out :  
(1) Nitrification                      (2) Denitrification  
(3) Nitrogen fixation                      (4) Chemoautotrophic fixation

**Ans.** [4]

**Sol.** Page No. 201 12<sup>th</sup> NCERT



**Q.63** In *Antirrhinum* (Snapdragon), a red flower was crossed with a white flower and in  $F_1$  generation, pink flowers were obtained. When pink flowers were selfed, the  $F_2$  generation showed white, red and pink flowers. Choose the incorrect statement from the following :

- (1) Ratio of  $F_2$  is  $\frac{1}{4}$  (Red) :  $\frac{2}{4}$  (Pink) :  $\frac{1}{4}$  (White)  
 (2) Law of Segregation does not apply in this experiment  
 (3) This experiment does not follow the Principle of Dominance  
 (4) Pink colour in  $F_1$  is due to incomplete dominance

**Ans.** [2]

**Sol.** Page No. 76 12<sup>th</sup> NCERT

**Q.64** In a species, the weight of newborn ranges from 2 to 5 kg. 97% of the newborn with an average weight between 3 to 3.3 kg survive whereas 99% of the infants born with weights from 2 to 2.5 kg or 4.5 to 5kg die. Which type of selection process is taking place ?

- (1) Disruptive Selection (2) Cyclical Selection  
 (3) Directional Selection (4) Stabilizing Selection

**Ans.** [4]

**Sol.** 3 to 3.3 kg weight of Newborn are mostly selected by nature which is an intermediate character  $\therefore$  this is an example of stabilizing selection.

**Q.65** Concanavalin A is :

- (1) a lectin (2) a pigment (3) an alkaloid (4) an essential oil

**Ans.** [1]

**Sol.** Concanavalin A is an example of lectin

**Q.66** Match the Column-I with Column-II :

Column-I	Column-II
(a) P-wave	(i) Depolarisation of ventricles
(b) QRS complex	(ii) Repolarisation of ventricles
(c) T-wave	(iii) Coronary ischemia
(d) Reduction in the size of T-wave	(iv) Depolarisation of atria
	(v) Repolarisation of atria

Select the correct option.

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

**Ans.** [3]

**Sol.**  $\rightarrow$  P wave represent atrial depolarization

$\rightarrow$  QRS complex " ventricular "

T - wave " depolarisation of ventricles

$\rightarrow$  Reduction in the size of T-wave indicates coronary ischemia

**Q.67** Match the following genes of the Lac operon with their respective products :

- |            |                            |
|------------|----------------------------|
| (a) i gene | (i) $\beta$ -galactosidase |
| (b) z gene | (ii) Permease              |
| (c) a gene | (iii) Repressor            |
| (d) y gene | (iv) Transacetylase        |

Select the correct option.

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

**Ans.** [1]

**Sol.** Page No. 117 12<sup>th</sup> NCERT

**Q.68** Which of the following statements is not correct ?

- (1) Lysosomes are membrane bound structures.
- (2) Lysosomes are formed by the process of packaging in the endoplasmic reticulum.
- (3) Lysosomes have numerous hydrolytic enzymes.
- (4) The hydrolytic enzymes of lysosomes are active under acidic pH.

**Ans.** [2]

**Sol.** Page No. 134 11<sup>th</sup> NCERT

**Q.69** In some plants, the female gamete develops into embryo without fertilization. This phenomenon is known as :

- |             |                     |              |                   |
|-------------|---------------------|--------------|-------------------|
| (1) Syngamy | (2) Parthenogenesis | (3) Autogamy | (4) Parthenocarpy |
|-------------|---------------------|--------------|-------------------|

**Ans.** [4]

**Sol.** Page No. 14 12<sup>th</sup> NCERT

**Q.70** Match Column-I with Column –II.

- | Column-I       | Column-II   |
|----------------|---|
| (a) Saprophyte | (i) Symbiotic association or fungi with plant roots |
| (b) Parasite   | (ii) Decomposition of dead organic materials        |
| (c) Lichens    | (iii) Living on living plants of animals            |
| (d) Mycorrhiza | (iv) Symbiotic association of algae and fungi       |

Choose the **correct** answer from the options given below :

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

**Ans.** [2]

**Sol.** A saprophyte is an organism that survives on dead and decaying organisms like fungi and decomposition bacteria.

A parasite is an organism that survives on living plants and animals.

A lichen is symbiotic association of algae & fungi.

Mycorrhiza is a symbiotic association of fungi and roots of higher plants like *pinus*



**Q.71** Which of the following is a commercial blood cholesterol lowering agent ?  
(1) Streptokinase                      (2) Lipases                                      (3) Cyclosporin A                      (4) Statin

**Ans.** [4]

**Sol.** Page No. 183 12<sup>th</sup> NCERT

**Q.72** Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology ?

- (1) Genetic code is nearly universal                                      (2) Genetic code is specific  
(3) Genetic code is not ambiguous                                      (4) Genetic code is redundant

**Ans.** [1]

**Sol.** Page No. 112 12<sup>th</sup> NCERT

**Q.73** The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in :

- (1) Eustachian tube and Salivary duct                                      (2) Bronchioles and Fallopian tubes  
(3) Bile duct and Bronchioles                                      (4) Fallopian tubes and Pancreatic duct

**Ans.** [2]

**Sol.** Bronchioles are lined by ciliated epithelium and fallopian tube

**Q.74** Conversion of glucose to glucose-6phosphate, the first irreversible reaction of glycolysis, is catalyzed by

- (1) Enolase                                      (2) Phosphofructokinase                      (3) Aldolase                                      (4) Hexokinase

**Ans.** [4]

**Sol.** Page No. 229 11<sup>th</sup> NCERT

**Q.75** Which one of the following is not a method of in situ conservation of biodiversity?

- (1) Botanical Garden                                      (2) Sacred Grove  
(3) Biosphere Reserve                                      (4) Wildlife Sanctuary

**Ans.** [1]

**Sol.** Page No. 266 12<sup>th</sup> NCERT

**Q.76** The concept of "Omnis cellula-e cellula" regarding cell division was first proposed by :

- (1) Schleiden                                      (2) Aristotle  
(3) Rudolf Virchow                                      (4) Theodore Schwann

**Ans.** [3]

**Sol.** Page No. 126 11<sup>th</sup> NCERT

**Q.77** Select the correct group of biocontrol agents

- (1) Oscillatoria, Rhizobium, Trichoderma  
(2) Nostoc, Azospirillum, Nucleopolyhedrovirus  
(3) Bacillus thuringiensis, Tobacco mosaic virus, Aphids  
(4) Trichoderma, Baculovirus, Bacillus thuringiensis

**Ans.** [4]

**Sol.** Page No. 187 12<sup>th</sup> NCERT



**Q.78** Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid.

- (1) Salmonella typhi/ Anthorone test
- (2) Salmonella typhi/ Widal test
- (3) Plasmodium vivax/ UTI test
- (4) Streptococcus pneumoniae/ Widal test

**Ans.** [2]

**Sol.** Typhoid fever is caused by salmonella typhi which is diagnosed through WIDAL TEST

**Q.79** Select the incorrect statement.

- (1) In domesticated fowls, sex of progeny depends on the type of sperm rather than egg.
- (2) Human males have one of their sex-chromosome much shorter than the other.
- (3) Male fruit fly is heterogametic
- (4) In male grasshoppers, 50% of sperms have no sex-chromosome.

**Ans.** [2]

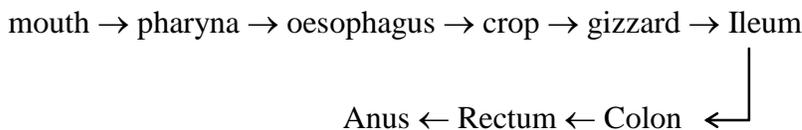
**Sol.** Page No. 186 12<sup>th</sup> NCERT

**Q.80** Select the correct sequence of organs in the alimentary canal of cockroach starting from mouth :

- (1) Pharynx → Oesophagus → Gizzard → Ileum → Crop → Colon → Rectum
- (2) Pharynx → Oesophagus → Ileum → Crop → Gizzard → Colon → Rectum
- (3) Pharynx → Oesophagus → Crop → Gizzard → Ileum → Colon → Rectum
- (4) Pharynx → Oesophagus → Gizzard → Crop → Ileum → Colon → Rectum

**Ans.** [3]

**Sol.** In cockroach the food goes into



**Q.81** Colostrum, the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the newborn infants because it contains :

- (1) Macrophages
- (2) Immunoglobulin A
- (3) Natural killer cells
- (4) Monocytes

**Ans.** [2]

**Sol.** Colostrum is enriched with IgA which is a form of Natural passive immunity

**Q.82** What is the fate of the male gametes discharged in the synergid ?

- (1) One fuses with the egg, other (s) fuse (s) with synergid nucleus.
- (2) One fuses with the egg and other fuses with central cell nuclei.
- (3) One fuses with the egg, other (s) degenerate (s) in the synergid.
- (4) All fuse with the egg.

**Ans.** [2]

**Sol.** Page No. 26 12<sup>th</sup> NCERT

- Q.83** What map unit (Centimorgan) is adopted in the construction of genetic maps ?
- (1) A unit of distance between genes on chromosomes, representing 1% cross over.
  - (2) A unit of distance between genes on chromosomes, representing 50% cross over.
  - (3) A unit of distance between two expressed genes, representing 10% cross over.
  - (4) A unit of distance between two expressed genes, representing 100% cross over.

**Ans.** [1]

**Sol.** Page No. 83 12<sup>th</sup> NCERT

- Q.84** Select the hormone-releasing Intra-Uterine Devices.
- (1) Progestasert, LNG-20
  - (2) Lippes Loop, Multiload 375
  - (3) Vaults, LNG-20
  - (4) Multiload 375, Progestasert

**Ans.** [1]

**Sol.** Progestasert, LNG – 20 both are hormonal containing IUD's

- Q.85** Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus.
- (1) *Mangifera indica*
  - (2) *Mangifera Indica*
  - (3) *Mangifera indica* Car. Linn.
  - (4) *Mangifera Indica* Linn

**Ans.** [4]

**Sol.** Page No. 7 11<sup>th</sup> NCERT

- Q.86** Which of the following pairs of gases is mainly responsible for green house effect ?
- (1) Nitrogen and Sulphur dioxide
  - (2) Carbon dioxide and Methane
  - (3) Ozone and Ammonia
  - (4) Oxygen and Nitrogen

**Ans.** [2]

**Sol.** Page No. 281 12<sup>th</sup> NCERT

- Q.87** The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by :
- (1) Alfred Sturtevant
  - (2) Sutton Boveri
  - (3) T.H. Morgan
  - (4) Gregor J. Mendel

**Ans.** [1]

**Sol.** Page No. 83 12<sup>th</sup> NCERT

- Q.88** Which of the following statements is correct ?
- (1) Cornea is convex, transparent layer which is highly vascularised
  - (2) Cornea consists of dense matrix of collagen and is the most sensitive portion of the eye.
  - (3) Cornea is an external, Transparent and protective proteinaceous covering of the eye-ball
  - (4) Cornea consists of dense connective tissue of elastin and can repair itself.

**Ans.** [3]

**Sol.** Cornea is avascular, external, transparent and protective proteinaceous covering of the eye ball.



**Q.89** Which of the following muscular disorders is inherited ?

- |                       |                        |
|-----------------------|------------------------|
| (1) Myasthenia gravis | (2) Botulism           |
| (3) Tetany            | (4) Muscular dystrophy |

**Ans.** [4]

**Sol.** Muscular dystrophy is autosomal recessive disorder.

**Q.90** Polyblend, a fine powder of recycled modified plastic, has proved to be a good material for :

- |                           |                            |
|---------------------------|----------------------------|
| (1) Construction of roads | (2) Making tubes and pipes |
| (3) Making plastic sacks  | (4) use as a fertilizer    |

**Ans.** [1]

**Sol.** Page No. 279 12<sup>th</sup> NCERT