

PART-C : BIOLOGY

1. Which option is correct for the ATP molecules produced through oxidative phosphorylation of NADH, produced through breakdown of 12 molecules of pyruvic acid in Krebs cycle?

(1) 36 (2) 48
(3) 144 (4) 12

Answer (3)

2. Which is the correct option for the following statements A and R?

Statement-A: With the help of DNA fingerprint it is easy & quick to trace the criminal

Statement-B: The process of DNA finger printing starts from isolation of DNA from blood sample or cell sample.

- (1) Statement A and R are correct and R is explanation of Statement A
(2) Statement A is correct. Statement R is wrong.
(3) Statement A and R are correct and R is not explanation of Statement A
(4) Statement A and R both are wrong.

Answer (3)

3. Choose the right option showing the correct reason, responsible for forming plaques at the injured regions of an artery.

(1) High blood pressure
(2) Smoking
(3) Consumption of high fat food
(4) All of the given

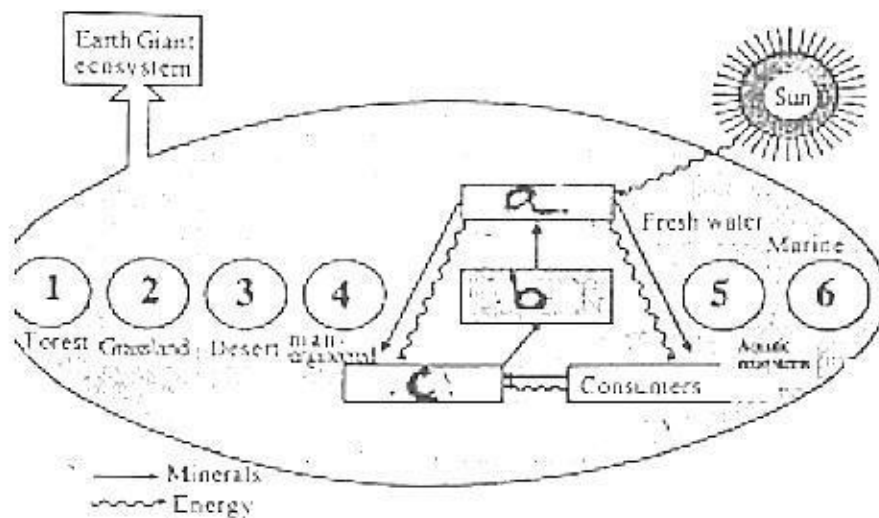
Answer (4)

4. Select the number of amino-acids contained in human insulin.

(1) 21 (2) 51
(3) 31 (4) 41

Answer (2)

5. Choose the correct option for the label 'a', 'b' and 'c' in the diagram, with reference to types of ecosystem.



(1) a = nutrients, b = producer, c = second order consumer

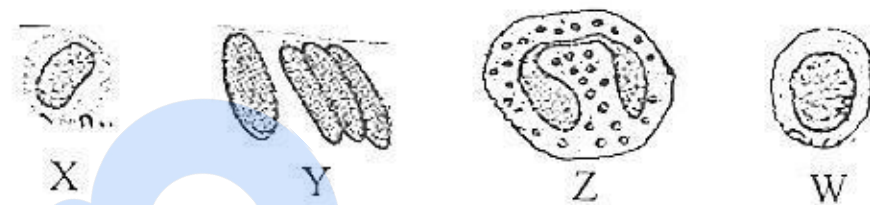
(2) a = decomposers, b = non-living components, c = nutrients

(3) a = producer, b = nutrients, c = decomposers

(4) a = nutrients, b = producer, c = consumer

Answer (3)

6. Which of the figure indicates 'acidophils' from the following options:



(1) Y (2) X
(3) Z (4) W

Answer (3)

7. In mRNA strand having specific number of genetic codes, if the 23rd genetic code UUA is replaced by UAA, what will be the change found in synthesized polypeptide chain?

(1) Amino acid on 23rd place will be change in polypeptide chain
(2) Protein synthesis will stop after 22nd amino acid
(3) There will be no change in polypeptide chain
(4) None amongst these

Answer (2)

8. In reference to the self pollination which of the followig option is correct?

(1) In sunflower the pollen is released after the stigma becomes receptive
(2) In malva genetic mechanism prevents self pollens from fertilizing the ovule
(3) In palms stigma becomes receptive after the release of pollens
(4) In castor flowers are bisexual and they show self pollination.

Answer (2)

9. In context to their mode of reproduction, which option is different than rest of the examples?

(1) Asparagus (2) Sweer potato
(3) Dahlia (4) Ginger

Answer (4)

10. Which option is correct for the statements 'X', 'Y' and 'Z' given below:

Statement-X: A forest in a tropical region like Ecuador has upto 10 times as many species of vascular plants as a forest of equal area in temperate region

Statement-Y: Temperate regions subjected to frequent glaciations in the past, tropical latitudes have remained relatively undisturbed for millions of years.

Statement-Z: In tropical area, productivity is high.

- (1) Statement 'X' is right and statement 'Y' and 'Z' are wrong.
- (2) Statement 'X', 'Y' and 'Z' are all right.
- (3) Statement 'Y' and 'Z' are right and statement 'X' is wrong.
- (4) Statement 'X', 'Y' and 'Z' are all wrong.

Answer (2)

11. When the value of water potential decreases related to water potential pressure?

- (1) When the value of ΨP is positive
- (2) When the value of ΨP is 0
- (3) When the value of ΨP is negative
- (4) When the value of ΨP is constant

Answer (3)

12. With reference to Biotechnology and its applications, choose the incorrect statement from the options:

- (1) Genetically modified plants can produce toxic or allergic metabolites
- (2) Change in genetic constitution under natural environmental pressure
- (3) To stop the exploitation and to recompensate the damages, it is necessary to form strict rules to curb biopiracy
- (4) Biotechnology may pose unforeseen risks to the environment, including risk to biodiversity.

Answer (2)

13. Choose the right option by matching columns I, II and III correctly:

Column I (Gland's name)	Column II (Secretion)	Column III (Function)
(a) Delta cells of Pancreas	(i) TCT	(e) Activates the breakdown of glycogen
(b) Thyroid	(ii) Relaxin	(f) Inhibits GH
(c) Ovary	(iii) Epinephrine	(g) Balances the calcium level in blood
(d) Adrenal Medulla	(iv) Somatostatin	(h) Relax the cervix of the uterus

- (1) (a-iv-g) (b-i-h) (c-ii-e) (d-iii-f)
- (2) (a-iii-e) (b-iv-g) (c-i-f) (d-ii-h)
- (3) (a-iv-f) (b-i-g) (c-ii-h) (d-iii-e)
- (4) (a-ii-f) (b-iv-e) (c-iii-h) (d-i-g)

Answer (3)

14. Choose the option which have correct sentence (statement).

- (1) Propliopithecus lived about 40 million years ago and was having long arms
- (2) Ramapithecus lived 12 to 14 million years ago and their dentition was more identical to dentition of man.
- (3) Aegyptopithecus similar to propliopithecus and it is more identical to man than Ape.
- (4) Dryopithecus lived about 20 million years ago and their hindlimbs was shorter than forelimbs

Answer (2)

15. What is correct for chylomicron?

- (1) It is Glycerol converted into finely fat globule
- (2) It is unit formed by the union of Fructose with carrier molecules
- (3) It is fatty acid converted into very small fat globules
- (4) Small fat globules in the form of cholesterol

Answer (3)

16. When sugar level in blood reduces and stored sugar is not available then in which form protein and lipid will enter respiration process respectively?

- (1) Pyruvic acid; Acetyl CoA
- (2) Glycerol; Fatty acid
- (3) Amino acid; Fatty acid and Glycerol
- (4) Fatty acid; Glycerol, Amino acid

Answer (3)

17. Which of the following option shows correctly matched pairs?

- (1) The pre-motor area of frontal lobe > controls involuntary movement and autonomous nervous system
- (2) Lateral temporal lobe > voluntary movement
- (3) Middle parietal lobe > centres for hearing and sight
- (4) Posterior occipital lobe > with cold, temperature and pain

Answer (1)

18. A normal son of Haemophilic father marries a daughter of haemophilic father. State the possibility of first born daughter child.

- (1) 100% (2) 25%
(3) 0% (4) 50%

Answer (3)

19. Formual for human vertabral column is _____

- (1) $C_7T_{12}L_5S_5C_4$ (2) $C_7T_{10}L_5S_7C_4$
(3) $C_4T_{12}L_5S_5C_7$ (4) $C_7T_{10}L_7S_5C_4$

Answer (1)

20. Which option is correct for the induced movement in plants?

- (1) Ciliary movement - Chlamydomonas
(2) Circumnutation - Spiral growth of the shoot in climbers
(3) Negative geotropism - Stem
(4) Amoebic movement - Plasmodia of Slime molds

Answer (3)

21. Which of the following options shows correctly matched pairs for the given column-A and column-B?

- | Column-A | Column-B |
|---------------------------------|---------------------------------|
| (a) ethmoid | (i) bone of pelvic girdle |
| (b) lacrymal | (ii) bone of skull |
| (c) clavicle | (iii) bone of face |
| (d) ischium | (iv) collar bone |
| (1) (a-i) (b-ii) (c-iv) (d-iii) | (2) (a-iii) (b-iv) (c-i) (d-ii) |
| (3) (a-ii) (b-iii) (c-iv) (d-i) | (4) (a-iv) (b-i) (c-iii) (d-ii) |

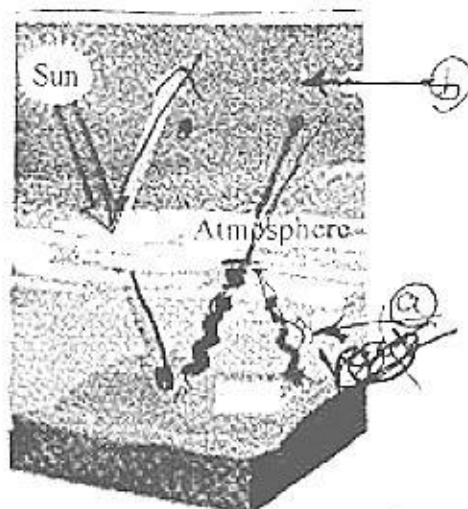
Answer (3)

22. Which hormones is not associated with menstrual cycle?

- (1) Melatonin (2) Progesterone
(3) Estrogen (4) Relaxin

Answer (4)

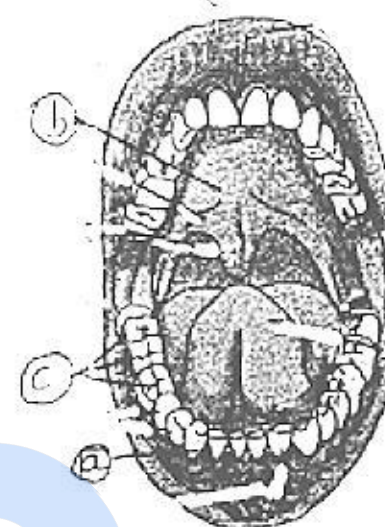
23. Choose the correct option for the label 'a' and 'b' in the diagram given below:



- (1) a = CO₂, b = heat
(2) a = heat, b = CO₂
(3) a = heat, b = green house gases
(4) a = earth, b = CO₂

Answer (1)

24. Which option is correct for the region labelled as 'a', 'b' and 'c' in the given diagram?



- (1) a = Incisors; b = Hard Palate; c = Premolar
(2) a = Incisors; b = Soft Palate; c = Premolar
(3) a = Canine; b = Hard Palate; c = Molar
(4) a = Canine; b = Soft Palate; c = Molars

Answer (3)

25. Sequence of genes on a specific DNA segment is ABCDEFGHI. If the middle three genes get inverted and first three genes get tendemised duplication, then in newly formed DNA segment gene sequence will be _____

- (1) ABCCCBAGHIDEF (2) ABCABCFEDGHI
(3) ABCABCEFGHI (4) ABCCBAFEDGHI

Answer (2)

26. How many types and in what ratio tghе gametes are produced by a dihybrid heterozygous parents in Mendel's experiment"

- (1) 4 types, 9:3:3:1 ratio (2) 3 types, 1:2:1 ratio
(3) 2 types, 3:1 ratio (4) 4 types, 1:1:1:1 ratio

Answer (4)

27. Match the following

- | Column-I | Column-II |
|---------------------|----------------------------|
| (i) B.thuringiensis | (a) treatment for diabetes |
| (ii) P.brazzeana | (b) cancer |
| (iii) C-peptide | (c) cry protein |
| (iv) Gene-therapy | (d) human insulin |

Choose the right option showing correct matching

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

Answer (3)

28. Following are the steps, following in Recombinant DNA Technology:

- (i) Amplification
- (ii) Downstream processing
- (iii) Isolation
- (iv) Obtaining the foreign gene product
- (v) Insertion

Choose the correct option showing the correct sequence of steps involved in Recombinant DNA Technology

- (1) (ii) → (iv) → (vi) → (i) → (v) → (iii)
- (2) (iii) → (v) → (i) → (ii) → (iv) → (vi)
- (3) (iv) → (ii) → (i) → (vi) → (iii) → (v)
- (4) (iii) → (v) → (i) → (vi) → (iv) → (ii)

Answer (4)

29. Which option is correct for the given statement X, Y and Z.

Statement-X: The descending limb of Henle's loop is permeable for water but nearly impermeable to salts

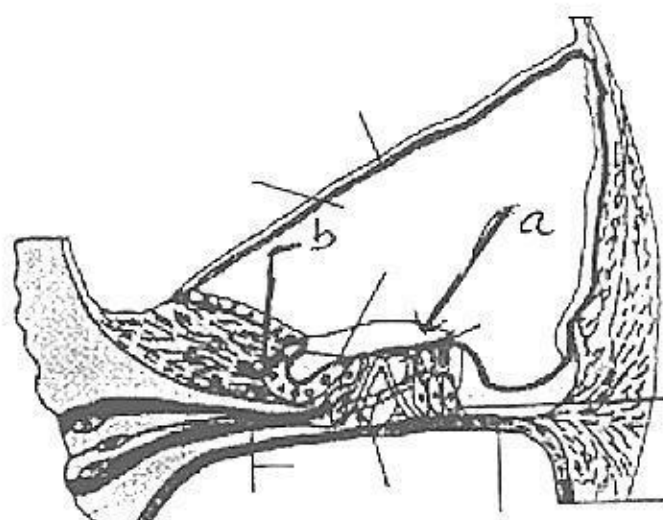
Statement-Y: The ascending limb of Henle's loop is impermeable to water but permeable to electrolytes and transports them actively or passively.

Statement-Z: In descending limb of Henle's loop the filtrate is hypertonic to blood plasma.

- (1) Statements X, Y and Z are correct and statement X is not correct explanation of statement Z
- (2) Statement X and Y are correct and Statement Z is wrong
- (3) Statement X, Y and Z are correct and Statement Z is correct explanation of Statement X
- (4) Statement X and Y are wrong and Statement Z is correct

Answer (3)

30. What does 'a' and 'b' indicates in the given diagram?



- (1) a = Basilar membrane; b = Hair cells
- (2) a = Basilar membrane; b = Border cell
- (3) a = Reissner's membrane; b = Outer hair cells
- (4) a = Tectorial membrane; b = Border cell

Answer (4)

31. Cytokinin was first discovered as kinetin from 'a', which a modified form of 'b'.

- (1) a = eggs of herring fish; b = guanine
- (2) a = sperms of herring fish; b = adenine
- (3) a = coconut milk; b = adenine
- (4) a = maize seed; b = thymine

Answer (2)

32. Choose the correct option for the given statement X and Y.

Statement-X: Out of total CO_2 produced only 10% of CO_2 is transported in form of H_2CO_3 by blood plasma.

Statement-Y: pH of blood plasma is higher than its normal level due to formation of H_2CO_3 during transport of CO_2 .

- (1) Statement X and statement Y are true
- (2) Statement X and Statement Y are wrong
- (3) Statement X is correct and Statement Y is wrong
- (4) Statement X is wrong and Y is correct

Answer (2)

33. Where does the process of Oogenesis get completed in human?

- (1) In Oviduct
- (2) In ovarian follicle
- (3) In uterus
- (4) In the cervix of uterus

Answer (1)

34. Choose the right option showing correct matching:

- (1) Tadpole - ammonotelic, Mammals - Ureotelic, Birds - Uricotelic
- (2) Aquatic insect - ammonotelic, Mammal - Uricotelic - Land snail - Ureotelic
- (3) Land snail - ammonotelic, Terrestrial Amphibians - Ureotelic - Mammal - Uricotelic
- (4) Terrestrial Amphibian - Ammonotelic, Birds - Uricotelic, Mammal - Ureotelic

Answer (1)

35. Select the right option matching column I and column II correctly.

Column-I	Column-II
(i) Hormonal pills	(a) Fusion of gametes is prevented
(ii) Spermicides	(b) vasectomy
(iii) Condoms	(c) natural method and almost nil side effects
(iv) Sterilization	(d) inhibit O ₂ uptake and kill sperms
(v) Interruption-coitus interruptus	(e) prevents the release of ovum from the ovary

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

Answer (3)

36. From the following options choose the chemical reaction which does not occur in chloride shift.

- (1) $\text{KHCO}_3 \rightarrow \text{K}^+ + \text{HCO}_3^-$
- (2) $\text{K}^+ + \text{Cl}^- \rightarrow \text{KCl}$
- (3) $\text{Na}^+ + \text{HCO}_3^- \rightarrow \text{NaHCO}_3$
- (4) $\text{CO}_2 + \text{Hb} \cdot \text{NH}_2 \rightarrow \text{Hb} \cdot \text{NHCOOH}$

Answer (4)

37. Which option indicate correct chronology of the reactions during photosynthesis, taking place in mesophyll cells of C_4 plant?

- (1) $\text{CO}_2 + \text{OAA} \rightarrow \text{Malic acid}$
(oxalo acetic acid)
- (2) $\text{CO}_2 + \text{P.A.} \rightarrow \text{RuBP} \rightarrow \text{PGA}$
- (3) $\text{CO}_2 + \text{PEP} \rightarrow \text{OAA} \rightarrow \text{Malic acid}$
(oxalo acetic acid)
- (4) $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$

Answer (3)

38. Which option is correct for the correctly matched pairs of the following mineral ions and their importance?

Mineral ions	Importance
(i) Chlorine	(a) For germination of pollen grain
(ii) Boron	(b) For synthesis of nucleic acid
(iii) Zinc	(c) For cell-division
(iv) Magnesium	(d) For the synthesis of Auzin

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

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

Answer (1)

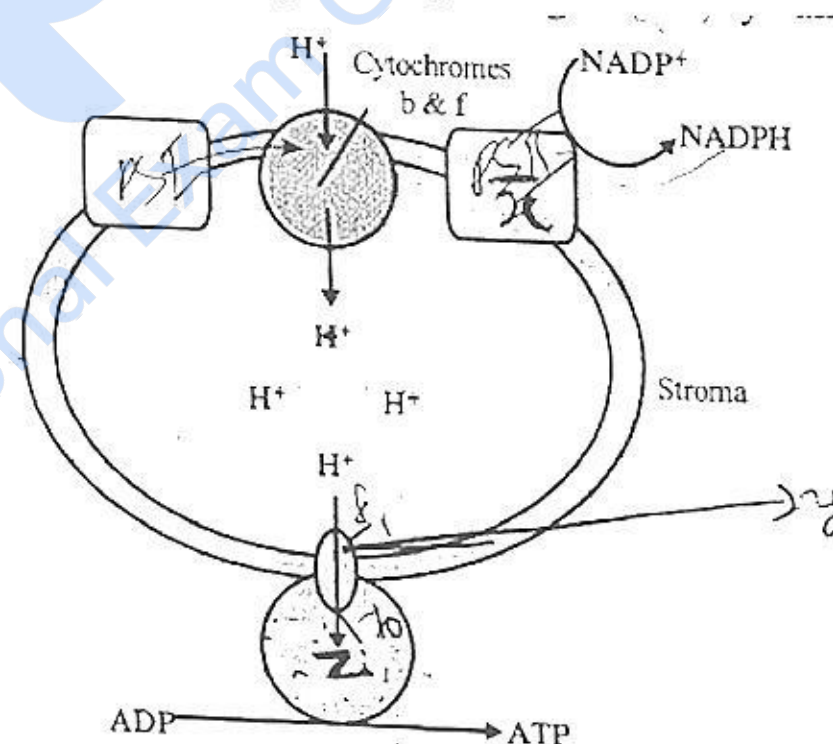
39. Sequential order of nucleotides on template strand forming m-RNA synthesizing specific protein is given below. Based on it select the sequential t-RNA anticodon entering in the process of protein synthesis.

Template - TAC, GAC, AAC, CAC, TTA, ATT.

- (1) AUG, CUG, UUG, GUG, AAU, UAA
(2) UAC, GAC, AAC, CAC, UUA, AUU
(3) TAC, GAC, AAC, CAC, TTA, ATT
(4) None

Answer (2)

40. Which option is correct for the labelled region 'x', 'y' and 'z' in the given diagram?



- (1) $x = \text{PS I}$, $y = \text{Cytochrome}$, $z = F_0$
- (2) $x = \text{PS I}$, $y = F_0$, $z = F_1$
- (3) $x = \text{PS II}$, $y = F_1$, $z = F_0$
- (4) $x = \text{PS II}$, $y = \text{Stroma}$, $z = F_1$

Answer (2)