

NEET 2021 — Biology Question Paper with Solutions

96 Biology questions as set in the paper · answers checked by RankUp

NEET 2021

1. In the equation $GPP - R = NPP$

R represents :

- (A) Radiant energy
- (B) Retardation factor
- (C) Environment factor
- (D) Respiration losses

NEET 2021

2. Inspite of interspecific competition in nature, which mechanism the competing species might have evolved for their survival ?

- (A) Resource partitioning
- (B) Competitive release
- (C) Mutualism
- (D) Predation

NEET 2021

3. Amensalism can be represented as :

- (A) Species A (–) ; Species B (0)
- (B) Species A (+) ; Species B (+)
- (C) Species A (–) ; Species B (–)
- (D) Species A (+) ; Species B (0)

NEET 2021

4. Match List - I with List - II.

List - I | List - II

(a) Cells with active cell division capacity | (i) Vascular tissues

(b) Tissue having all cells similar in structure and function | (ii) Meristematic tissue

(c) Tissue having different types of cells | (iii) Sclereids

(d) Dead cells with highly thickened walls and narrow lumen | (iv) Simple tissue

Select the correct answer from the options given below.

- (A) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
- (B) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
- (C) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
- (D) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)

NEET 2021

5. The production of gametes by the parents, formation of zygotes, the F_1 and F_2 plants, can be understood from a diagram called :

- (A) Bullet square
- (B) Punch square
- (C) Punnett square
- (D) Net square

NEET 2021

6. DNA strands on a gel stained with ethidium bromide when viewed under UV radiation, appear as :

- (A) Yellow bands
- (B) Bright orange bands
- (C) Dark red bands
- (D) Bright blue bands

NEET 2021

7. Gemmae are present in :

- (A) Mosses
- (B) Pteridophytes
- (C) Some Gymnosperms
- (D) Some Liverworts

NEET 2021

8. Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called :

- (A) Elasticity
- (B) Flexibility
- (C) Plasticity
- (D) Maturity

NEET 2021

9. Which of the following is an incorrect statement ?

- (A) Mature sieve tube elements possess a conspicuous nucleus and usual cytoplasmic organelles.
- (B) Microbodies are present both in plant and animal cells.
- (C) The perinuclear space forms a barrier between the materials present inside the nucleus and that of the cytoplasm.
- (D) Nuclear pores act as passages for proteins and RNA molecules in both directions between nucleus and cytoplasm.

NEET 2021

10. A typical angiosperm embryo sac at maturity is :

- (A) 8-nucleate and 7-celled
- (B) 7-nucleate and 8-celled
- (C) 7-nucleate and 7-celled
- (D) 8-nucleate and 8-celled

NEET 2021

11. The plant hormone used to destroy weeds in a field is :

- (A) IAA
- (B) NAA
- (C) 2, 4-D
- (D) IBA

NEET 2021

12. Which of the following algae produce Carrageen ?

- (A) Green algae
- (B) Brown algae
- (C) Red algae
- (D) Blue-green algae

NEET 2021

13. Which of the following stages of meiosis involves division of centromere ?

- (A) Metaphase I
- (B) Metaphase II
- (C) Anaphase II
- (D) Telophase II

NEET 2021

14. Match List - I with List - II.

List - I | List - II

(a) Lenticels | (i) Phellogen

(b) Cork cambium | (ii) Suberin deposition

(c) Secondary cortex | (iii) Exchange of gases

(d) Cork | (iv) Phelloderm

Choose the correct answer from the options given below.

(A) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)

(B) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

(C) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

(D) (a)-(iv), (b)-(ii), (c)-(i), (d)-(iii)

NEET 2021

15. The site of perception of light in plants during photoperiodism is :

(A) Shoot apex

(B) Stem

(C) Axillary bud

(D) Leaf

NEET 2021

16. Which of the following plants is monoecious ?

(A) Carica papaya

(B) Chara

(C) Marchantia polymorpha

(D) Cycas circinalis

NEET 2021

17. When the centromere is situated in the middle of two equal arms of chromosomes, the chromosome is referred as :

(A) Metacentric

(B) Telocentric

(C) Sub-metacentric

(D) Acrocentric

NEET 2021

18. Which of the following is not an application of PCR (Polymerase Chain Reaction) ?

(A) Molecular diagnosis

(B) Gene amplification

(C) Purification of isolated protein

(D) Detection of gene mutation

NEET 2021

19. Genera like Selaginella and Salvinia produce two kinds of spores. Such plants are known as :

(A) Homosorus

(B) Heterosorus

(C) Homosporous

(D) Heterosporous

NEET 2021

20. Complete the flow chart on central dogma.

(a) $\rightarrow$ DNA $\rightarrow$ (b) $\rightarrow$ mRNA $\rightarrow$ (c) $\rightarrow$ (d)

(A) (a)-Replication; (b)-Transcription; (c)-Transduction; (d)-Protein

(B) (a)-Translation; (b)-Replication; (c)-Transcription; (d)-Transduction

(C) (a)-Replication; (b)-Transcription; (c)-Translation; (d)-Protein

(D) (a)-Transduction; (b)-Translation; (c)-Replication; (d)-Protein

NEET 2021

21. Which of the following statements is not correct ?

- (A) Pyramid of biomass in sea is generally inverted.
- (B) Pyramid of biomass in sea is generally upright.
- (C) Pyramid of energy is always upright.
- (D) Pyramid of numbers in a grassland ecosystem is upright.

NEET 2021

22. Which of the following algae contains mannitol as reserve food material ?

- (A) Ectocarpus
- (B) Gracilaria
- (C) Volvox
- (D) Ulothrix

NEET 2021

23. During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out :

- (A) RNA
- (B) DNA
- (C) Histones
- (D) Polysaccharides

NEET 2021

24. The factor that leads to Founder effect in a population is :

- (A) Natural selection
- (B) Genetic recombination
- (C) Mutation
- (D) Genetic drift

NEET 2021

25. Diadelphous stamens are found in :

- (A) China rose
- (B) Citrus
- (C) Pea
- (D) China rose and citrus

NEET 2021

26. Which of the following are not secondary metabolites in plants ?

- (A) Morphine, codeine
- (B) Amino acids, glucose
- (C) Vinblastin, curcumin
- (D) Rubber, gums

NEET 2021

27. Match List - I with List - II.

List - I | List - II

(a) Cristae | (i) Primary constriction in chromosome

(b) Thylakoids | (ii) Disc-shaped sacs in Golgi apparatus

(c) Centromere | (iii) Infoldings in mitochondria

(d) Cisternae | (iv) Flattened membranous sacs in stroma of plastids

Choose the correct answer from the options given below.

- (A) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
- (B) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)
- (C) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
- (D) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

NEET 2021

28. When gene targetting involving gene amplification is attempted in an individual's tissue to treat disease, it is known as :

- (A) Biopiracy
- (B) Gene therapy
- (C) Molecular diagnosis
- (D) Safety testing

NEET 2021

29. The term used for transfer of pollen grains from anthers of one plant to stigma of a different plant which, during pollination, brings genetically different types of pollen grains to stigma, is :

- (A) Xenogamy
- (B) Geitonogamy
- (C) Chasmogamy
- (D) Cleistogamy

NEET 2021

30. Which of the following is a correct sequence of steps in a PCR (Polymerase Chain Reaction) ?

- (A) Denaturation, Annealing, Extension
- (B) Denaturation, Extension, Annealing
- (C) Extension, Denaturation, Annealing
- (D) Annealing, Denaturation, Extension

NEET 2021

31. The amount of nutrients, such as carbon, nitrogen, phosphorus and calcium present in the soil at any given time, is referred as :

- (A) Climax
- (B) Climax community
- (C) Standing state
- (D) Standing crop

NEET 2021

32. The first stable product of CO₂ fixation in sorghum is :

- (A) Pyruvic acid
- (B) Oxaloacetic acid
- (C) Succinic acid
- (D) Phosphoglyceric acid

NEET 2021

33. Which of the following statements is incorrect ?

- (A) Both ATP and NADPH + H⁺ are synthesized during non-cyclic photophosphorylation.
- (B) Stroma lamellae have PS I only and lack NADP reductase.
- (C) Grana lamellae have both PS I and PS II.
- (D) Cyclic photophosphorylation involves both PS I and PS II.

NEET 2021

34. Identify the correct statement.

- (A) In capping, methyl guanosine triphosphate is added to the 3' end of hnRNA.
- (B) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.
- (C) The coding strand in a transcription unit is copied to an mRNA.
- (D) Split gene arrangement is characteristic of prokaryotes.

NEET 2021

35. Select the correct pair.

- (A) Large colorless empty cells in the epidermis of grass leaves - Subsidiary cells
- (B) In dicot leaves, vascular bundles are surrounded by large thick-walled cells - Conjunctive tissue
- (C) Cells of medullary rays that form part of cambial ring - Interfascicular cambium
- (D) Loose parenchyma cells rupturing the epidermis and forming a lens-shaped opening in bark - Spongy parenchyma

NEET 2021

36. In the exponential growth equation $N_t = N_0 e^{rt}$, e represents :

- (A) The base of number logarithms
- (B) The base of exponential logarithms
- (C) The base of natural logarithms
- (D) The base of geometric logarithms

NEET 2021

37. What is the role of RNA polymerase III in the process of transcription in eukaryotes ?

- (A) Transcribes rRNAs (28S, 18S and 5.8S)
- (B) Transcribes tRNA, 5s rRNA and snRNA
- (C) Transcribes precursor of mRNA
- (D) Transcribes only snRNAs

NEET 2021

38. Plasmid pBR322 has PstI restriction enzyme site within gene amp^R that confers ampicillin resistance. If this enzyme is used for inserting a gene for β -galactoside production and the recombinant plasmid is inserted in an E.coli strain

- (A) it will not be able to confer ampicillin resistance to the host cell.
- (B) the transformed cells will have the ability to resist ampicillin as well as produce β -galactoside.
- (C) it will lead to lysis of host cell.
- (D) it will be able to produce a novel protein with dual ability.

NEET 2021

39. Match List - I with List - II.

List - I | List - II

(a) S phase | (i) Proteins are synthesized

(b) G₂ phase | (ii) Inactive phase

(c) Quiescent stage | (iii) Interval between mitosis and initiation of DNA replication

(d) G₁ phase | (iv) DNA replication

Choose the correct answer from the options given below.

- (A) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)
- (B) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)
- (C) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
- (D) (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

NEET 2021 · Q113

40. Mutations in plant cells can be induced by :

- (A) Kinetin
- (B) Infrared rays
- (C) Gamma rays
- (D) Zeatin

NEET 2021

41. Which of the following statements is correct ?

- (A) Fusion of two cells is called Karyogamy.
- (B) Fusion of protoplasts between two motile or non-motile gametes is called plasmogamy.
- (C) Organisms that depend on living plants are called saprophytes.
- (D) Some of the organisms can fix atmospheric nitrogen in specialized cells called sheath cells.

42. Match List - I with List - II.**List - I | List - II****(a) Protoplast fusion | (i) Totipotency****(b) Plant tissue culture | (ii) Pomato****(c) Meristem culture | (iii) Somaclones****(d) Micropropagation | (iv) Virus free plants****Choose the correct answer from the options given below.**

(A) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

(B) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(C) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

(D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

NEET 2021

43. Which of the following statements is incorrect ?

(A) During aerobic respiration, role of oxygen is limited to the terminal stage.

(B) In ETC (Electron Transport Chain), one molecule of $\text{NADH} + \text{H}^+$ gives rise to 2 ATP molecules, and one FADH_2 gives rise to 3 ATP molecules.

(C) ATP is synthesized through complex V.

(D) Oxidation-reduction reactions produce proton gradient in respiration.

NEET 2021

44. In some members of which of the following pairs of families, pollen grains retain their viability for months after release ?

(A) Poaceae ; Rosaceae

(B) Poaceae ; Leguminosae

(C) Poaceae ; Solanaceae

(D) Rosaceae ; Leguminosae

NEET 2021

45. DNA fingerprinting involves identifying differences in some specific regions in DNA sequence, called as :

(A) Satellite DNA

(B) Repetitive DNA

(C) Single nucleotides

(D) Polymorphic DNA

NEET 2021

46. Match List - I with List - II.**List - I | List - II****(a) Protein | (i) $\text{C} = \text{C}$ double bonds****(b) Unsaturated fatty acid | (ii) Phosphodiester bonds****(c) Nucleic acid | (iii) Glycosidic bonds****(d) Polysaccharide | (iv) Peptide bonds****Choose the correct answer from the options given below.**

(A) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

(B) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)

(C) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(D) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

NEET 2021

47. Which one of the following organisms bears hollow and pneumatic long bones ?

(A) Neophron

(B) Hemidactylus

(C) Macropus

(D) Ornithorhynchus

NEET 2021

48. Chronic auto immune disorder affecting neuro muscular junction leading to fatigue, weakening and paralysis of skeletal muscle is called as :

- (A) Arthritis
- (B) Muscular dystrophy
- (C) Myasthenia gravis
- (D) Gout

NEET 2021

49. Which one of the following is an example of Hormone releasing IUD ?

- (A) CuT
- (B) LNG 20
- (C) Cu 7
- (D) Multiload 375

NEET 2021

50. Which of the following characteristics is incorrect with respect to cockroach ?

- (A) A ring of gastric caeca is present at the junction of midgut and hind gut.
- (B) Hypopharynx lies within the cavity enclosed by the mouth parts.
- (C) In females, 7th-9th sterna together form a genital pouch.
- (D) 10th abdominal segment in both sexes, bears a pair of anal cerci.

NEET 2021

51. Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli.

- (A) High pO_2 , low pCO_2 , less H^+ , lower temperature
- (B) Low pO_2 , high pCO_2 , more H^+ , higher temperature
- (C) High pO_2 , high pCO_2 , less H^+ , higher temperature
- (D) Low pO_2 , low pCO_2 , more H^+ , higher temperature

NEET 2021

52. The organelles that are included in the endomembrane system are :

- (A) Endoplasmic reticulum, Mitochondria, Ribosomes and Lysosomes
- (B) Endoplasmic reticulum, Golgi complex, Lysosomes and Vacuoles
- (C) Golgi complex, Mitochondria, Ribosomes and Lysosomes
- (D) Golgi complex, Endoplasmic reticulum, Mitochondria and Lysosomes

NEET 2021

53. Match List - I with List - II.

List - I | List - II

(a) Metamerism | (i) Coelenterata

(b) Canal system | (ii) Ctenophora

(c) Comb plates | (iii) Annelida

(d) Cnidoblasts | (iv) Porifera

Choose the correct answer from the options given below.

- (A) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
- (B) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
- (C) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)
- (D) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

NEET 2021

54. A specific recognition sequence identified by endonucleases to make cuts at specific positions within the DNA is :

- (A) Degenerate primer sequence
- (B) Okazaki sequences
- (C) Palindromic Nucleotide sequences
- (D) Poly(A) tail sequences

55. Match List - I with List - II.

List - I | List - II

- (a) Cohesion | (i) More attraction in liquid phase
 (b) Adhesion | (ii) Mutual attraction among water molecules
 (c) Surface tension | (iii) Water loss in liquid phase
 (d) Guttation | (iv) Attraction towards polar surfaces

Choose the correct answer from the options given below.

- (A) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
 (B) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)
 (C) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
 (D) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

NEET 2021

56. Which of the following RNAs is not required for the synthesis of protein ?

- (A) mRNA
 (B) tRNA
 (C) rRNA
 (D) siRNA

NEET 2021

57. The partial pressures (in mm Hg) of oxygen (O₂) and carbon dioxide (CO₂) at alveoli (the site of diffusion) are :

- (A) pO₂ = 104 and pCO₂ = 40
 (B) pO₂ = 40 and pCO₂ = 45
 (C) pO₂ = 95 and pCO₂ = 40
 (D) pO₂ = 159 and pCO₂ = 0.3

NEET 2021

58. Which of the following statements wrongly represents the nature of smooth muscle ?

- (A) These muscle have no striations
 (B) They are involuntary muscles
 (C) Communication among the cells is performed by intercalated discs
 (D) These muscles are present in the wall of blood vessels

NEET 2021

59. Match the following :

List - I | List - II

- (a) Physalia | (i) Pearl oyster
 (b) Limulus | (ii) Portuguese Man of War
 (c) Ancylostoma | (iii) Living fossil
 (d) Pinctada | (iv) Hookworm

Choose the correct answer from the options given below.

- (A) (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)
 (B) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)
 (C) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
 (D) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)

NEET 2021

60. Veneral diseases can spread through :

- (a) Using sterile needles
- (b) Transfusion of blood from infected person
- (c) Infected mother to foetus
- (d) Kissing
- (e) Inheritance

Choose the correct answer from the options given below.

- (A) (a), (b) and (c) only
- (B) (b), (c) and (d) only
- (C) (b) and (c) only
- (D) (a) and (c) only

NEET 2021

61. With regard to insulin choose correct options.

- (a) C-peptide is not present in mature insulin.
- (b) The insulin produced by rDNA technology has C-peptide.
- (c) The pro-insulin has C-peptide.
- (d) A-peptide and B-peptide of insulin are interconnected by disulphide bridges.

Choose the correct answer from the options given below.

- (A) (b) and (d) only
- (B) (b) and (c) only
- (C) (a), (c) and (d) only
- (D) (a) and (d) only

NEET 2021

62. The fruit fly has 8 chromosomes ($2n$) in each cell. During interphase of Mitosis if the number of chromosomes at G_1 phase is 8, what would be the number of chromosomes after S phase ?

- (A) 8
- (B) 16
- (C) 4
- (D) 32

NEET 2021

63. Which is the "Only enzyme" that has "Capability" to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes ?

- (A) DNA dependent DNA polymerase
- (B) DNA dependent RNA polymerase
- (C) DNA Ligase
- (D) DNase

NEET 2021

64. In a cross between a male and female, both heterozygous for sickle cell anaemia gene, what percentage of the progeny will be diseased ?

- (A) 50%
- (B) 75%
- (C) 25%
- (D) 100%

NEET 2021

65. Which stage of meiotic prophase shows terminalisation of chiasmata as its distinctive feature ?

- (A) Leptotene
- (B) Zygotene
- (C) Diakinesis
- (D) Pachytene

NEET 2021

66. Read the following statements.

- (a) Metagenesis is observed in Helminths.
- (b) Echinoderms are triploblastic and coelomate animals.
- (c) Round worms have organ-system level of body organization.
- (d) Comb plates present in ctenophores help in digestion.
- (e) Water vascular system is characteristic of Echinoderms.

Choose the correct answer from the options given below.

- (A) (c), (d) and (e) are correct
- (B) (a), (b) and (c) are correct
- (C) (a), (d) and (e) are correct
- (D) (b), (c) and (e) are correct

NEET 2021

67. During the process of gene amplification using PCR, if very high temperature is not maintained in the beginning, then which of the following steps of PCR will be affected first ?

- (A) Annealing
- (B) Extension
- (C) Denaturation
- (D) Ligation

NEET 2021

68. Identify the incorrect pair.

- (A) Alkaloids - Codeine
- (B) Toxin - Abrin
- (C) Lectins - Concanavalin A
- (D) Drugs - Ricin

NEET 2021

69. Persons with 'AB' blood group are called as "Universal recipients". This is due to :

- (A) Absence of antigens A and B on the surface of RBCs
- (B) Absence of antigens A and B in plasma
- (C) Presence of antibodies, anti-A and anti-B, on RBCs
- (D) Absence of antibodies, anti-A and anti-B, in plasma

NEET 2021

70. Which one of the following belongs to the family Muscidae ?

- (A) Fire fly
- (B) Grasshopper
- (C) Cockroach
- (D) House fly

NEET 2021

71. The centriole undergoes duplication during :

- (A) S-phase
- (B) Prophase
- (C) Metaphase
- (D) G₂ phase

NEET 2021

72. Receptors for sperm binding in mammals are present on :

- (A) Corona radiata
- (B) Vitelline membrane
- (C) Perivitelline space
- (D) Zona pellucida

NEET 2021

73. Which enzyme is responsible for the conversion of inactive fibrinogens to fibrins ?

- (A) Thrombin
- (B) Renin
- (C) Epinephrine
- (D) Thrombokinase

NEET 2021

74. Match List - I with List - II.

List - I | List - II

(a) *Aspergillus niger* | (i) Acetic Acid

(b) *Acetobacter aceti* | (ii) Lactic Acid

(c) *Clostridium butylicum* | (iii) Citric Acid

(d) *Lactobacillus* | (iv) Butyric Acid

Choose the correct answer from the options given below.

- (A) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
- (B) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
- (C) (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)
- (D) (a)-(iv), (b)-(ii), (c)-(i), (d)-(iii)

NEET 2021 · Q147

75. Match Column - I with Column - II.

Column - I | Column - II

(a) *Nitrococcus* | (i) Denitrification

(b) *Rhizobium* | (ii) Conversion of ammonia to nitrite

(c) *Thiobacillus* | (iii) Conversion of nitrite to nitrate

(d) *Nitrobacter* | (iv) Conversion of atmospheric nitrogen to ammonia

Choose the correct answer from options given below.

- (A) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)
- (B) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)
- (C) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
- (D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

NEET 2021

76. Erythropoietin hormone which stimulates R.B.C. formation is produced by :

- (A) Alpha cells of pancreas
- (B) The cells of rostral adenohypophysis
- (C) The cells of bone marrow
- (D) Juxtaglomerular cells of the kidney

NEET 2021

77. Match List - I with List - II.

List - I | List - II

(a) Vaults | (i) Entry of sperm through Cervix is blocked

(b) IUDs | (ii) Removal of Vas deferens

(c) Vasectomy | (iii) Phagocytosis of sperms within the Uterus

(d) Tubectomy | (iv) Removal of fallopian tube

Choose the correct answer from the options given below.

- (A) (a)-(iv), (b)-(ii), (c)-(i), (d)-(iii)
- (B) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
- (C) (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)
- (D) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

NEET 2021

78. If Adenine makes 30% of the DNA molecule, what will be the percentage of Thymine, Guanine and Cytosine in it ?

- (A) T : 20 ; G : 30 ; C : 20
- (B) T : 20 ; G : 20 ; C : 30
- (C) T : 30 ; G : 20 ; C : 20
- (D) T : 20 ; G : 25 ; C : 25

NEET 2021

79. Identify the types of cell junctions that help to stop the leakage of the substances across a tissue and facilitation of communication with neighbouring cells via rapid transfer of ions and molecules.

- (A) Gap junctions and Adhering junctions, respectively.
- (B) Tight junctions and Gap junctions, respectively.
- (C) Adhering junctions and Tight junctions, respectively.
- (D) Adhering junctions and Gap junctions, respectively.

NEET 2021

80. Which one of the following statements about Histones is wrong ?

- (A) Histones are organized to form a unit of 8 molecules.
- (B) The pH of histones is slightly acidic.
- (C) Histones are rich in amino acids - Lysine and Arginine.
- (D) Histones carry positive charge in the side chain.

NEET 2021

81. Which of these is not an important component of initiation of parturition in humans ?

- (A) Increase in estrogen and progesterone ratio
- (B) Synthesis of prostaglandins
- (C) Release of Oxytocin
- (D) Release of Prolactin

NEET 2021

82. Match List - I with List - II.

List - I | List - II

(a) Allen's Rule | (i) Kangaroo rat

(b) Physiological adaptation | (ii) Desert lizard

(c) Behavioural adaptation | (iii) Marine fish at depth

(d) Biochemical adaptation | (iv) Polar seal

Choose the correct answer from the options given below.

- (A) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)
- (B) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)
- (C) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
- (D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

NEET 2021

83. Match List - I with List - II.

List - I | List - II

(a) Filariasis | (i) Haemophilus influenzae

(b) Amoebiasis | (ii) Trichophyton

(c) Pneumonia | (iii) Wuchereria bancrofti

(d) Ringworm | (iv) Entamoeba histolytica

Choose the correct answer from the options given below.

- (A) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)
- (B) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)
- (C) (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)
- (D) (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)

84. Sphincter of oddi is present at :

- (A) Ileo-caecal junction
- (B) Junction of hepato-pancreatic duct and duodenum
- (C) Gastro-oesophageal junction
- (D) Junction of jejunum and duodenum

NEET 2021

85. Statement I : The codon 'AUG' codes for methionine and phenylalanine.

Statement II : 'AAA' and 'AAG' both codons code for the amino acid lysine.

In the light of the above statements, choose the correct answer from the options given below.

- (A) Both Statement I and Statement II are true
- (B) Both Statement I and Statement II are false
- (C) Statement I is correct but Statement II is false
- (D) Statement I is incorrect but Statement II is true

NEET 2021

86. Match List - I with List - II.

List - I | List - II

(a) Scapula | (i) Cartilaginous joints

(b) Cranium | (ii) Flat bone

(c) Sternum | (iii) Fibrous joints

(d) Vertebral column | (iv) Triangular flat bone

Choose the correct answer from the options given below.

- (A) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
- (B) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
- (C) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)
- (D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

NEET 2021

87. The Adenosine deaminase deficiency results into :

- (A) Dysfunction of Immune system
- (B) Parkinson's disease
- (C) Digestive disorder
- (D) Addison's disease

NEET 2021

88. Assertion (A) : A person goes to high altitude and experiences 'altitude sickness' with symptoms like breathing difficulty and heart palpitations.

Reason (R) : Due to low atmospheric pressure at high altitude, the body does not get sufficient oxygen.

In the light of the above statements, choose the correct answer from the options given below.

- (A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- (B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- (C) (A) is true but (R) is false
- (D) (A) is false but (R) is true

NEET 2021

89. Match List - I with List - II.

List - I | List - II

(a) Adaptive radiation | (i) Selection of resistant varieties due to excessive use of herbicides and pesticides

(b) Convergent evolution | (ii) Bones of forelimbs in Man and Whale

(c) Divergent evolution | (iii) Wings of Butterfly and Bird

(d) Evolution by anthropogenic action | (iv) Darwin Finches

Choose the correct answer from the options given below.

(A) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

(B) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)

(C) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(D) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)

NEET 2021

90. Following are the statements with reference to 'lipids'.

(a) Lipids having only single bonds are called unsaturated fatty acids.

(b) Lecithin is a phospholipid.

(c) Trihydroxy propane is glycerol.

(d) Palmitic acid has 20 carbon atoms including carboxyl carbon.

(e) Arachidonic acid has 16 carbon atoms.

Choose the correct answer from the options given below.

(A) (a) and (b) only

(B) (c) and (d) only

(C) (b) and (c) only

(D) (b) and (e) only

NEET 2021

91. During muscular contraction which of the following events occur ?

(a) 'H' zone disappears

(b) 'A' band widens

(c) 'I' band reduces in width

(d) Myosine hydrolyzes ATP, releasing the ADP and Pi

(e) Z-lines attached to actins are pulled inwards

Choose the correct answer from the options given below.

(A) (a), (c), (d), (e) only

(B) (a), (b), (c), (d) only

(C) (b), (c), (d), (e) only

(D) (b), (d), (e), (a) only

NEET 2021

92. Following are the statements about prostomium of earthworm.

(a) It serves as a covering for mouth.

(b) It helps to open cracks in the soil into which it can crawl.

(c) It is one of the sensory structures.

(d) It is the first body segment.

Choose the correct answer from the options given below.

(A) (a), (b) and (c) are correct

(B) (a), (b) and (d) are correct

(C) (a), (b), (c) and (d) are correct

(D) (b) and (c) are correct

93. Succus entericus is referred to as :

- (A) Pancreatic juice
- (B) Intestinal juice
- (C) Gastric juice
- (D) Chyme

94. Which of the following is not an objective of Biofortification in crops ?

- (A) Improve protein content
- (B) Improve resistance to diseases
- (C) Improve vitamin content
- (D) Improve micronutrient and mineral content

95. Dobson units are used to measure thickness of :

- (A) CFCs
- (B) Stratosphere
- (C) Ozone
- (D) Troposphere

96. Which of the following is not a step in Multiple Ovulation Embryo Transfer Technology (MOET) ?

- (A) Cow is administered hormone having LH like activity for super ovulation
- (B) Cow yields about 6-8 eggs at a time
- (C) Cow is fertilized by artificial insemination
- (D) Fertilized eggs are transferred to surrogate mothers at 8-32 cell stage

Answer key and explanations

1. Answer: (D) Respiration losses

Net primary productivity is what remains of gross primary productivity after the producers' own respiration losses are subtracted, so R stands for respiration. Radiant energy is the input that drives GPP, not something subtracted from it.

2. Answer: (A) Resource partitioning

Competing species can coexist by resource partitioning, using the same resource in different ways, places or times, as MacArthur showed for warblers feeding in different parts of the same tree. Competitive release is the expansion of a species once its competitor is removed, not a coexistence mechanism.

3. Answer: (A) Species A (–) ; Species B (0)

In amensalism one species is harmed while the other is neither benefited nor harmed, giving the (–, 0) pattern. The (+, 0) pattern is commensalism and (+, +) is mutualism.

4. Answer: (A) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

Actively dividing cells make up meristematic tissue, a tissue of one cell type is a simple tissue, a tissue made of different cell types (xylem, phloem) is complex vascular tissue, and dead cells with very thick walls and a narrow lumen are sclereids. Hence (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii).

5. Answer: (C) Punnett square

The Punnett square, devised by Reginald C. Punnett, is the checkerboard diagram that shows gametes of both parents and the zygote combinations of the F₁ and F₂ generations. The other names are not real genetic terms.

6. Answer: (B) Bright orange bands

Ethidium bromide intercalates into DNA and fluoresces under UV light, so the separated DNA fragments are seen as bright orange bands. They are not visible as bands without the stain and UV exposure.

7. Answer: (D) Some Liverworts

Gemmae are green, multicellular asexual buds formed in gemma cups on the thalli of some liverworts such as Marchantia. Mosses reproduce vegetatively by fragmentation and budding of the secondary protonema, not by gemmae in cups.

8. Answer: (C) Plasticity

The ability of plants to follow different developmental pathways in response to environment or phase of life, as in heterophylly of cotton or buttercup, is called plasticity. Flexibility and elasticity are not the botanical terms used for this.

9. Answer: (A) Mature sieve tube elements possess a conspicuous nucleus and usual cytoplasmic organelles.

Mature sieve tube elements lose their nucleus and are controlled by the companion cells, so saying they have a conspicuous nucleus is incorrect. Microbodies occur in both plant and animal cells, the perinuclear space separates the two nuclear membranes, and nuclear pores allow two-way traffic of RNA and proteins.

10. Answer: (A) 8-nucleate and 7-celled

The mature embryo sac has 8 nuclei but only 7 cells: three antipodals, two synergids, one egg cell and one large central cell holding two polar nuclei. The two polar nuclei sharing one cell is why the cell count is one less than the nuclear count.

11. Answer: (C) 2, 4-D

2,4-D is a synthetic auxin widely used as a herbicide to kill broad-leaved dicot weeds, leaving monocot crops unharmed. IAA and IBA are natural auxins and NAA is used mainly for rooting and preventing fruit drop.

12. Answer: (C) Red algae

Carrageen is a hydrocolloid obtained commercially from red algae (Rhodophyceae). Brown algae yield algin instead.

13. Answer: (C) Anaphase II

In meiosis the centromere splits only at anaphase II, letting the sister chromatids move to opposite poles. At anaphase I the homologous chromosomes separate while each centromere stays intact.

14. Answer: (B) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

Lenticels are openings in the bark for gaseous exchange, cork cambium is phellogen, secondary cortex is phelloderm, and cork cells have suberin deposited in their walls. Hence (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii).

15. Answer: (D) Leaf

The photoperiodic stimulus is perceived by the leaves, which then send a signal to the shoot apex where flowers form. The shoot apex is where flowering happens, not where light duration is sensed.

16. Answer: (B) Chara

Chara is monoecious: the male globule and the female oogonium develop on the same plant. Papaya, Marchantia polymorpha and Cycas circinalis bear male and female structures on separate plants, so they are dioecious.

17. Answer: (A) Metacentric

A chromosome whose centromere lies in the middle, giving two equal arms, is metacentric. A sub-metacentric centromere lies slightly away from the middle, giving one shorter and one longer arm.

18. Answer: (C) Purification of isolated protein

PCR amplifies nucleic acid sequences, which is used in molecular diagnosis, gene amplification and detecting gene mutations. It does not act on proteins, so it cannot purify an isolated protein.

19. Answer: (D) Heterosporous

Selaginella and Salvinia produce two kinds of spores, small microspores and large megaspores, so they are heterosporous. Homosporous plants produce only one kind of spore.

20. Answer: (C) (a)-Replication; (b)-Transcription; (c)-Translation; (d)-Protein

In the central dogma DNA copies itself by replication, is transcribed into mRNA, and mRNA is translated into protein. Transduction is transfer of DNA by viruses and is not a step of the central dogma.

21. Answer: (B) Pyramid of biomass in sea is generally upright.

In the sea the standing biomass of phytoplankton is smaller than that of the fishes feeding on them, so the pyramid of biomass is generally inverted, not upright. The pyramid of energy is always upright and the grassland pyramid of numbers is upright, so those statements are correct.

22. Answer: (A) Ectocarpus

Brown algae store food as laminarin or mannitol, and Ectocarpus is a brown alga. Gracilaria is a red alga storing floridean starch, while Volvox and Ulothrix are green algae storing starch.

23. Answer: (B) DNA

After the cell is lysed and RNA, proteins and other molecules are removed with enzymes, adding chilled ethanol makes the purified DNA come out of solution as fine threads. RNA is removed earlier by ribonuclease, not precipitated at this step.

24. Answer: (D) Genetic drift

When a small group breaks away and its allele frequencies change by chance, the new population ends up with a different gene pool; this chance change is genetic drift, and the founder effect is a case of it. Natural selection changes allele frequencies because of fitness differences, not by chance.

25. Answer: (C) Pea

In pea the ten stamens form two bundles (nine fused plus one free), so they are diadelphous. China rose has monadelphous stamens (one bundle) and citrus has polyadelphous stamens (many bundles).

26. Answer: (B) Amino acids, glucose

Amino acids and glucose are primary metabolites used in basic metabolism like respiration and protein synthesis. Morphine and codeine (alkaloids), vinblastin and curcumin (drugs) and rubber and gums are secondary metabolites.

27. Answer: (C) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

Cristae are infoldings of the inner mitochondrial membrane, thylakoids are flattened membranous sacs in the stroma of plastids, the centromere is the primary constriction of a chromosome, and cisternae are the disc-shaped sacs of the Golgi apparatus. Hence (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii).

28. Answer: (B) Gene therapy

Introducing or targeting genes in a person's cells or tissues to correct a genetic defect and treat disease is gene therapy. Molecular diagnosis only detects a disease, and biopiracy is the unauthorised use of bio-resources.

29. Answer: (A) Xenogamy

Xenogamy is transfer of pollen from the anther of one plant to the stigma of a different plant, so it brings genetically different pollen. Geitonogamy is transfer between flowers of the same plant and is genetically like self-pollination.

30. Answer: (A) Denaturation, Annealing, Extension

Each PCR cycle first denatures the double-stranded DNA by heat, then lets the primers anneal to the single strands, and finally extends the primers using a thermostable DNA polymerase. Extension cannot come before annealing because the polymerase needs a primer to start.

31. Answer: (C) Standing state

The amount of nutrients such as carbon, nitrogen, phosphorus and calcium present in the soil at a given time is the standing state. Standing crop is the mass of living material present at each trophic level, not soil nutrients.

32. Answer: (B) Oxaloacetic acid

Sorghum is a C_4 plant, and in C_4 plants PEP carboxylase fixes CO_2 into the four-carbon oxaloacetic acid as the first stable product. Phosphoglyceric acid is the first stable product only in C_3 plants.

33. Answer: (D) Cyclic photophosphorylation involves both PS I and PS II.

Cyclic photophosphorylation uses only PS I, with electrons cycling back to it so that only ATP is made, so the statement that it involves both photosystems is incorrect. Non-cyclic photophosphorylation makes both ATP and $NADPH + H^+$, and stroma lamellae carry only PS I and lack NADP reductase.

34. Answer: (B) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.

In bacteria, RNA polymerase associates transiently with the rho factor to terminate transcription. Capping adds methyl guanosine triphosphate to the 5' end, the template strand (not the coding strand) is copied, and split genes are typical of eukaryotes.

35. Answer: (C) Cells of medullary rays that form part of cambial ring - Interfascicular cambium

Medullary ray cells lying next to the intrafascicular cambium become meristematic and form the interfascicular cambium, completing the cambial ring. Large empty colourless cells of grass epidermis are bulliform cells, the thick-walled cells around dicot leaf bundles form the bundle sheath, and loose cells forming the lens-shaped bark opening are complementary cells of a lenticel.

36. Answer: (C) The base of natural logarithms

In the exponential growth equation $N_t = N_0 e^{rt}$, e is the base of natural logarithms, about 2.71828. The other phrases are not standard names of a logarithm base.

37. Answer: (B) Transcribes tRNA, 5s rRNA and snRNA

In eukaryotes RNA polymerase III transcribes tRNA, 5S rRNA and snRNAs. RNA polymerase I makes the 28S, 18S and 5.8S rRNAs and RNA polymerase II makes hnRNA, the precursor of mRNA.

38. Answer: (A) it will not be able to confer ampicillin resistance to the host cell.

PstI cuts inside the ampicillin resistance gene, so inserting a foreign gene there disrupts it by insertional inactivation and the recombinant plasmid can no longer make the host resistant to ampicillin. The transformed cells therefore cannot both resist ampicillin and express the new gene.

39. Answer: (C) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

S phase is when DNA replicates, G₂ is when proteins needed for mitosis are made, the quiescent stage (G₀) is an inactive phase, and G₁ is the interval between mitosis and the start of DNA replication. Hence (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii).

40. Answer: (C) Gamma rays

Mutations in plants can be induced by chemicals or by radiation such as gamma rays, which is used in mutation breeding. Kinetin and zeatin are cytokinins, not mutagens, and infrared rays are not used for this.

41. Answer: (B) Fusion of protoplasts between two motile or non-motile gametes is called plasmogamy.

Fusion of the protoplasm of two motile or non-motile gametes is plasmogamy, which is correct. Fusion of two nuclei (not two cells) is karyogamy, organisms on dead matter are saprophytes, and nitrogen-fixing cells of cyanobacteria are heterocysts, not sheath cells.

42. Answer: (B) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

Protoplast fusion of potato and tomato gave the pomato, plant tissue culture relies on totipotency, meristem culture gives virus-free plants, and micropropagation produces genetically identical somaclones. Hence (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii).

43. Answer: (B) In ETC (Electron Transport Chain), one molecule of NADH + H⁺ gives rise to 2 ATP molecules, and one FADH₂ gives rise to 3 ATP molecules.

In the electron transport chain one NADH + H⁺ yields 3 ATP and one FADH₂ yields 2 ATP, so the statement has the numbers swapped and is incorrect. Oxygen acts only at the end as the final electron acceptor, and ATP is made by complex V (ATP synthase) using the proton gradient.

44. Answer: (D) Rosaceae ; Leguminosae

Pollen of some members of Rosaceae, Leguminosae and Solanaceae stays viable for months. In Poaceae such as rice and wheat pollen loses viability within about 30 minutes, so any pair containing Poaceae is wrong.

45. Answer: (B) Repetitive DNA

DNA fingerprinting looks for differences in regions of repetitive DNA, where short stretches are repeated many times and the number of repeats differs between people. Satellite DNA is one type of repetitive DNA, so repetitive DNA is the broader, textbook answer.

46. Answer: (A) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

Amino acids in proteins are linked by peptide bonds, unsaturated fatty acids have C = C double bonds, nucleotides in nucleic acids are joined by phosphodiester bonds, and sugars in polysaccharides by glycosidic bonds. Hence (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii).

47. Answer: (A) Neophron

Hollow, air-filled (pneumatic) long bones are a feature of birds, and Neophron is a bird (vulture). Hemidactylus is a lizard, while Macropus (kangaroo) and Ornithorhynchus (platypus) are mammals with solid bones.

48. Answer: (C) Myasthenia gravis

Myasthenia gravis is an autoimmune disorder of the neuromuscular junction causing fatigue, weakening and paralysis of skeletal muscle. Muscular dystrophy is a genetic degeneration of muscle, and arthritis and gout affect joints.

49. Answer: (B) LNG 20

LNG-20 releases a progestogen (levonorgestrel), so it is a hormone-releasing IUD like Progestasert. CuT, Cu7 and Multiload 375 are copper-releasing IUDs.

50. Answer: (A) A ring of gastric caeca is present at the junction of midgut and hind gut.

In cockroach a ring of 6–8 gastric caeca lies at the junction of the foregut and midgut, not midgut and hindgut, so that statement is incorrect. The junction of midgut and hindgut carries the Malpighian tubules instead.

51. Answer: (A) High pO_2 , low pCO_2 , less H^+ , lower temperature

At the alveoli, high pO_2 , low pCO_2 , fewer H^+ ions (higher pH) and lower temperature all favour binding of oxygen to haemoglobin. The opposite set of conditions, found in tissues, favours release of oxygen.

52. Answer: (B) Endoplasmic reticulum, Golgi complex, Lysosomes and Vacuoles

The endomembrane system is the group of organelles that work in coordination: endoplasmic reticulum, Golgi complex, lysosomes and vacuoles. Mitochondria, chloroplasts and peroxisomes are not part of it, and ribosomes have no membrane.

53. Answer: (C) (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

Metamerism is typical of Annelida, the canal system of Porifera, comb plates of Ctenophora, and cnidoblasts of Coelenterata. Hence (a)-(iii), (b)-(iv), (c)-(ii), (d)-(i).

54. Answer: (C) Palindromic Nucleotide sequences

Restriction endonucleases recognise palindromic nucleotide sequences, which read the same on both strands in the 5'→3' direction, and cut at specific positions within them. Okazaki fragments and poly-A tails are unrelated to restriction sites.

55. Answer: (A) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

Cohesion is the mutual attraction among water molecules, adhesion is attraction of water to polar surfaces, surface tension arises because water molecules are attracted more to each other in the liquid phase than to the gas phase, and guttation is loss of water in liquid form. Hence (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii).

56. Answer: (D) siRNA

mRNA carries the code, tRNA brings amino acids and rRNA forms the ribosome, so all three are needed to make protein. siRNA works in RNA interference to silence genes, not in protein synthesis.

57. Answer: (A) $pO_2 = 104$ and $pCO_2 = 40$

Alveolar air has pO_2 of 104 mm Hg and pCO_2 of 40 mm Hg. The values 159 and 0.3 are for atmospheric air, and 40 and 45 are for deoxygenated blood.

58. Answer: (C) Communication among the cells is performed by intercalated discs

Intercalated discs are found in cardiac muscle, where they let the cells contract as a unit, so attributing them to smooth muscle is wrong. Smooth muscle is non-striated, involuntary and found in the walls of blood vessels and other hollow organs.

59. Answer: (C) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

Physalia is the Portuguese man of war, Limulus (king crab) is a living fossil, Ancylostoma is the hookworm, and Pinctada is the pearl oyster. Hence (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i).

60. Answer: (C) (b) and (c) only

Sexually transmitted infections can spread through transfusion of infected blood and from an infected mother to the foetus. Sterile needles carry no infection, and kissing and inheritance are not routes of spread, so only (b) and (c) apply.

61. Answer: (C) (a), (c) and (d) only

Pro-insulin carries an extra C-peptide that is removed to give mature insulin, whose A and B chains are joined by disulphide bridges. Eli Lilly's rDNA insulin was made by producing the A and B chains separately and joining them, so it has no C-peptide; hence (a), (c) and (d).

62. Answer: (A) 8

In S phase the DNA content doubles but the chromosome number does not change, because each chromosome simply comes to have two sister chromatids. So a cell with 8 chromosomes in G_1 still has 8 after S phase; 16 is the count of chromatids, not chromosomes.

63. Answer: (B) DNA dependent RNA polymerase

In bacteria a single DNA-dependent RNA polymerase catalyses initiation (with the sigma factor), elongation and termination (with the rho factor) of transcription. DNA-dependent DNA polymerase acts in replication, not transcription.

64. Answer: (C) 25%

Sickle cell anaemia is autosomal recessive, so $Hb^A Hb^S \times Hb^A Hb^S$ gives $1 Hb^A Hb^A : 2 Hb^A Hb^S : 1 Hb^S Hb^S$. Only the $Hb^S Hb^S$ quarter is diseased, i.e. 25%; the 50% heterozygotes are carriers, not patients.

65. Answer: (C) Diakinesis

Terminalisation of chiasmata, the movement of chiasmata toward the chromosome ends, is the distinctive feature of diakinesis, the last stage of prophase I. Crossing over takes place in pachytene and synapsis in zygotene.

66. Answer: (D) (b), (c) and (e) are correct

Echinoderms are triploblastic coelomates, roundworms have organ-system level organisation, and the water vascular system is characteristic of echinoderms, so (b), (c) and (e) are correct. Metagenesis occurs in cnidarians, not helminths, and comb plates of ctenophores help in locomotion, not digestion.

67. Answer: (C) Denaturation

The first step of PCR, denaturation, needs a very high temperature (about 94 °C) to separate the two DNA strands, so it is affected first if that temperature is not reached. Ligation is not a PCR step at all.

68. Answer: (D) Drugs - Ricin

Ricin, like abrin, is a toxin, so pairing it with drugs is incorrect. Codeine is an alkaloid, abrin a toxin and concanavalin A a lectin, so those pairs are correct.

69. Answer: (D) Absence of antibodies, anti-A and anti-B, in plasma

People with AB blood have both A and B antigens on their RBCs and therefore make neither anti-A nor anti-B antibodies in plasma, so donor RBCs of any group are not attacked. The antigens are present, not absent, on their RBCs.

70. Answer: (D) House fly

The housefly, *Musca domestica*, belongs to the family Muscidae of order Diptera. Grasshopper and cockroach belong to other insect orders and the firefly is a beetle.

71. Answer: (A) S-phase

In animal cells, as DNA replicates in the nucleus during S phase, the centriole duplicates in the cytoplasm. By prophase the duplicated centrioles are already moving to the poles.

72. Answer: (D) Zona pellucida

The sperm binds to receptors on the zona pellucida of the ovum, and this binding sets off changes in the zona that block entry of more sperm. The corona radiata is the outer cell layer that the sperm must pass through first.

73. Answer: (A) Thrombin

Thrombin converts soluble inactive fibrinogen into fibrin threads that form the clot. Thrombokinase acts one step earlier, converting prothrombin into thrombin.

74. Answer: (A) (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)

Aspergillus niger produces citric acid, *Acetobacter aceti* acetic acid, *Clostridium butylicum* butyric acid, and *Lactobacillus lactic acid*. Hence (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii).

75. Answer: (A) (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

Nitrococcus oxidises ammonia to nitrite, *Rhizobium* fixes atmospheric nitrogen into ammonia, *Thiobacillus* carries out denitrification, and *Nitrobacter* oxidises nitrite to nitrate. Hence (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii).

76. Answer: (D) Juxtaglomerular cells of the kidney

The juxtaglomerular cells of the kidney produce erythropoietin, which stimulates RBC formation in the bone marrow. The bone marrow is where RBCs are made, not where the hormone is produced.

77. Answer: (B) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)

Vaults are barriers that block sperm entry through the cervix, IUDs increase phagocytosis of sperms in the uterus, vasectomy removes a part of the vas deferens, and tubectomy removes a part of the fallopian tube. Hence (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv).

78. Answer: (C) T : 30 ; G : 20 ; C : 20

By Chargaff's rule $A = T$ and $G = C$, so if A is 30% then T is also 30%. The remaining 40% is shared equally, giving $G = 20\%$ and $C = 20\%$.

79. Answer: (B) Tight junctions and Gap junctions, respectively.

Tight junctions seal neighbouring cells together and stop substances leaking across a tissue, while gap junctions connect the cytoplasm of adjoining cells for rapid transfer of ions and small molecules.

Adhering junctions only cement cells together.

80. Answer: (B) The pH of histones is slightly acidic.

Histones are rich in the basic amino acids lysine and arginine, so they carry positive side-chain charges and are basic, not slightly acidic. Eight histone molecules form the histone octamer of the nucleosome.

81. Answer: (D) Release of Prolactin

Parturition is triggered by foetal and placental signals that raise the estrogen to progesterone ratio, release oxytocin and cause prostaglandin synthesis, producing strong uterine contractions. Prolactin acts on milk production and is not part of the trigger for birth.

82. Answer: (C) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

Polar seals with short limbs illustrate Allen's rule, the kangaroo rat's water conservation is a physiological adaptation, the desert lizard's basking and burrowing is behavioural, and deep-sea fish with special enzymes show biochemical adaptation. Hence (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii).

83. Answer: (B) (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

Filariasis is caused by *Wuchereria bancrofti*, amoebiasis by *Entamoeba histolytica*, pneumonia by *Haemophilus influenzae* (and *Streptococcus pneumoniae*), and ringworm by *Trichophyton*. Hence (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii).

84. Answer: (B) Junction of hepato-pancreatic duct and duodenum

The sphincter of Oddi guards the opening of the common hepato-pancreatic duct into the duodenum. The ileo-caecal junction has the ileo-caecal valve and the gastro-oesophageal junction the cardiac sphincter.

85. Answer: (D) Statement I is incorrect but Statement II is true

AUG codes only for methionine (it is also the start codon); phenylalanine is coded by UUU and UUC, so Statement I is false. AAA and AAG both code for lysine, showing degeneracy of the code, so Statement II is true.

86. Answer: (D) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

The scapula is a large triangular flat bone, the cranial bones are joined by fibrous (immovable) joints, the sternum is a flat bone, and vertebrae are joined by cartilaginous joints. Hence (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i).

87. Answer: (A) Dysfunction of Immune system

Adenosine deaminase is needed for the immune system to work, and its deficiency causes severe combined immunodeficiency; it was the first disease treated by gene therapy. Parkinson's and Addison's diseases have no link with this enzyme.

88. Answer: (A) Both (A) and (R) are true and (R) is the correct explanation of (A)

At high altitude the low atmospheric pressure means less oxygen enters the body, which causes altitude sickness with breathlessness and palpitations. So both the Assertion and the Reason are true, and the Reason explains the Assertion.

89. Answer: (A) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

Darwin's finches show adaptive radiation, wings of butterfly and bird are analogous organs showing convergent evolution, forelimbs of man and whale are homologous organs showing divergent evolution, and resistance after heavy herbicide and pesticide use is evolution by anthropogenic action. Hence (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i).

90. Answer: (C) (b) and (c) only

Lecithin is a phospholipid and glycerol is trihydroxy propane, so (b) and (c) are true. Fatty acids with only single bonds are saturated, palmitic acid has 16 carbons and arachidonic acid has 20, so (a), (d) and (e) are false.

91. Answer: (A) (a), (c), (d), (e) only

During contraction myosin heads hydrolyse ATP, releasing ADP and P_i , and pull the actin filaments so the Z-lines move inward, the I band shortens and the H zone disappears; so (a), (c), (d) and (e) occur. The A band keeps its length, so its widening does not occur.

92. Answer: (A) (a), (b) and (c) are correct

The prostomium is a lobe that covers the mouth, works as a wedge to open cracks in the soil, and is sensory, so (a), (b) and (c) are correct. It is not the first body segment; the first segment is the peristomium, which bears the mouth.

93. Answer: (B) Intestinal juice

Succus entericus is the intestinal juice, formed by secretions of the brush border cells and goblet cells of the small intestine. Chyme is the acidic food mass leaving the stomach, not a secretion.

94. Answer: (B) Improve resistance to diseases

Biofortification aims to raise nutritional quality: protein content and quality, oil quality, vitamin content and micronutrient and mineral content. Disease resistance is a goal of plant breeding in general, not of biofortification.

95. Answer: (C) Ozone

The thickness of the ozone layer, from ground to top of the atmosphere, is measured in Dobson units. CFCs are the chemicals that deplete ozone, not what Dobson units measure.

96. Answer: (A) Cow is administered hormone having LH like activity for super ovulation

In MOET the cow is given a hormone with FSH-like activity, not LH-like activity, to induce superovulation, so that step is wrong. The cow then yields 6–8 eggs, is mated or artificially inseminated, and embryos at the 8–32 cell stage are transferred to surrogate mothers.

Questions as set in the AIPMT/NEET papers conducted by CBSE and NTA. Answers checked and explanations written by the RankUp team. RankUp is not affiliated with CBSE or NTA.