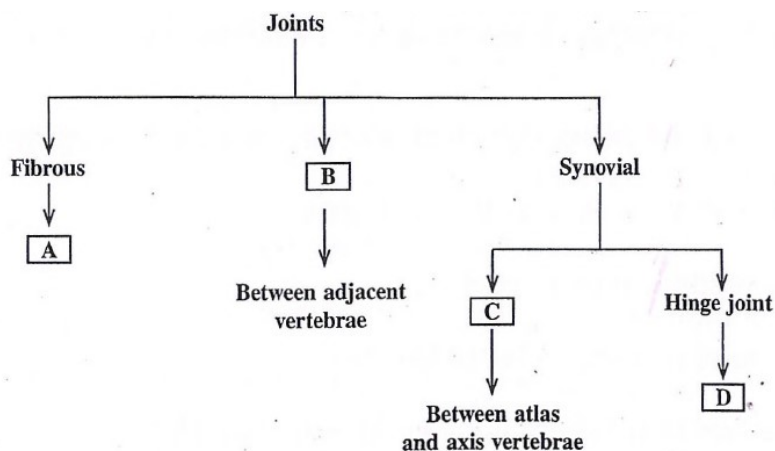


KEY ANSWERS

1	3	16	1	31	3	46	3
2	2	17	2	32	3	47	1
3	2	18	3	33	3	48	3
4	4	19	2	34	4	49	1
5	3	20	2	35	2	50	3
6	2	21	4	36	2	51	2
7	2	22	1	37	2	52	2
8	3	23	4	38	2	53	2
9	1	24	3	39	2	54	4
10	1	25	2,3	40	2	55	4
11	3	26	2	41	3	56	3
12	3	27	2	42	4	57	2
13	3	28	3	43	3	58	4
14	4	29	4	44	3	59	1
15	2	30	3	45	1	60	3

- Identify the flower with polyadelphous condition.
(1) Mustard (2) Chinrose (3) Citrus (4) Pea
- The large empty colourless cells seen on the upper epidermis in grasses which facilitate the curling of leaves to minimise water loss are
1) Guard cells 2) Bulliform cells 3) Subsidiary cells 4) Mesophyll cells
- Find the incorrect statement among the following with respect to digestive system of frog.
1) Food is captured by a bibbed tongue.
2) Oesophagus is a long tube that opens into the stomach and continues as intestine. -
3) Liver secretes bile that is stored in gall bladder. -
4) The undigested solid waste moves into rectum and passes out through cloaca.
- Which of the following is not the function of plasma membrane?
1) Endocytosis 2) Formation of intercellular junctions
3) Secretion 4) DNA synthesis
- A chromosome with an extremely short and a very long arm is called _____.
1) Metacentric 2) Telocentric 3) Acrocentric 4) Submetacentric
- The following statements are the steps in the catalytic action of an enzyme. Arrange them in correct sequence.
a) The active site of the enzyme, now in close proximity of the substrate, breaks the chemical bonds of the substrate and the new enzyme product complex is formed.
b) The substrate binds tightly to the enzyme, inducing a change in the active site of the enzyme.
c) The enzyme releases the products of the reaction and the free enzyme is ready to bind to another molecule of the substrate.
d) The substrate binds to the active site of the enzyme.
(1) c, a, b, d (2) d, b, a, c (3) a, b, c, d (4) d, c, b, a
- A diploid cell which has 8 chromosomes undergoes meiosis and produces 4 daughter cells. What is the number of chromosomes present in each daughter cell formed at the end of meiosis-I?
(1) 8 chromosomes (2) 4 chromosomes (3) 16 chromosomes (4) 32 chromosomes
- Cellulose is an important structural component in plants which is made up of
(1) Fructose (2) Galactose (3) Glucose (4) Sucrose
- In a healthy individual, the Glomerular Filtration Rate (GFR) is _____.
(1) 125 ml/minute (2) 125 ml/hour (3) 126 ml/minute (4) 125 ml/second

10. A hormone that initiates flowering and synchronising fruit set in pineapples is _____
- 1) Ethylene 2) Abscissic Acid 3) Auxins 4) Gibberellins
11. Identify the incorrect statement regarding respiratory system in man.
- (1) Lungs are covered by double-layered membrane called pleura.
 (2) The alveoli are surrounded by rich blood. capillaries.
 (3) The trachea, bronchi and bronchioles are supported by 'O' shaped cartilaginous rings.
 (4) The right, lung is slightly larger than the left lung.
12. Consider the following statements with respect to ECG [Electrocardiogram] and choose the correct answer.
 Statement I: 'P' wave represents the depolarisation of ventricles.
 Statement II: 'T' wave represents the repolarisation of ventricles.
- (1) Statement I and Statement II are wrong.
 (2) Statement I is correct but Statement II is wrong.
 (3) Statement I is wrong but Statement II is correct.
 (4) Statement I and Statement II are correct.
13. Aldosterone from adrenal cortex stimulates the reabsorption of water and Na^+ from _____
- (1) Proximal Convoluted Tubule (PCT) (2) Ascending limb of loop of Henle
 (3) Distal Convoluted Tubule (DCT) (4) Descending limb of loop of Henle
14. Observe the flowchart with reference to joints and their examples.



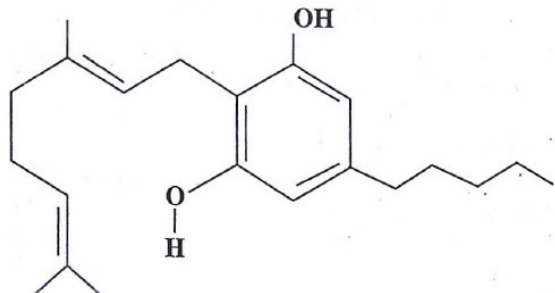
- Choose the correct option that matches with the letters given in the boxes.
- (1) A - Cartilaginous joint, B - Pivot joint, C - Knee joint, D - Cranial sutures
 (2) A - Pivot joint, B - Knee joint, C - Cranial sutures, D - Cartilaginous joint
 (3) A - Saddle joint, B - Cranial sutures, C - Cartilaginous joint, D - Pivot joint p
 (4) A - Cranial sutures, B - Cartilaginous joint, C - Pivot joint, D - Knee joint
15. Unipolar neurons are found usually in the embryonic stage. They have
- 1) One axon and one dendrite 2) Cell body and one axon
 3) Cell body with one axon and many dendrites 4) Neither axon nor dendrites
16. Gastrin is a hormone secreted by gastrointestinal (GI) tract, which stimulates the secretion of
- 1) Hydrochloric acid and pepsinogen (2) Pancreatic enzymes and bile juice
 (3) Water and bicarbonate ions (4) Bicarbonate ions and pepsinogen
17. Choose the correct sequence of wall layers in a microsporangium of an angiosperm.
- (1) Epidermis, Middle layer, Endothecium, Tapetum
 (2) Epidermis, Endothecium, Middle layer, Tapetum
 (3) Epidermis, Tapetum, Middle layer, Endothecium
 (4) Epidermis, Middle layer, Tapetum, Endothecium

18. Which of the following statement is/are correct for cleistogamous flowers?

- a) They have exposed anthers and stigma -
- b) They produce assured seed set
- c) They need pollinators for pollination
- d) Variations in traits are not seen in next generation

- 1) Only Statement (b) is correct
- 2) Statements (a) and (c) are correct
- 3) Statements (b) and (d) are correct
- 4) Statements (b) and (c) are correct

19. Identify the drug molecule from the skeletal structure shown below



- 1) Opioid
- 2) Cannabinoid
- 3) Coca-alkaloids
- 4) Morphine

20. Identify the correct path of milk secretion by the mammary, glands.

- (1) Alveoli → mammary duct → ampulla → mammary tubule → lactiferous ducts
- (2) Alveoli → mammary tubules → mammary duct → ampulla → lactiferous ducts
- (3) Alveoli → ampulla → mammary duct → mammary tubules → lactiferous ducts
- (4) Alveoli → lactiferous ducts → mammary duct → ampulla → mammary tubule

21. Match items in Column-I with Column-II and choose the correct option.

Column-I

Column-II

- a) Acrosome
- b) Head
- c) Middle piece
- d) Tail
- i) Contains numerous mitochondria which produce energy
- ii) Facilitates sperm motility
- iii) Filled with enzymes that help in fertilization.
- iv) Contains elongated haploid nucleus

Codes:

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

22. Which of the following does NOT produce seminal plasma?

- (1) Epididymis
- (2) Bulbourethral glands
- (3) Seminal vesicles
- (4) Prostate gland

23. Which of the following Sexually Transmitted Infections (STIs) are not completely curable?

- (1) AIDS, Genital warts
- (2) Chlamydia, Gonorrhoea
- (3) Genital warts, Hepatitis B
- (4) AIDS, Genital herpes

24. Which of the following statements is NOT true about 'Saheli'?

- 1) It is a non-steroidal preparation
- 2) It is a 'once-a-week' pill
- 3) It has low contraceptive value
- 4) It has fewer side effects

25. A woman, unable to conceive after many years of regular unprotected coitus, went to a specialized clinic. On complete examination, the woman was found to be normal, while the male partner was diagnosed with infertility and was unable to inseminate the female due to low sperm count. Suggest the appropriate Assisted Reproductive Technology (ART).

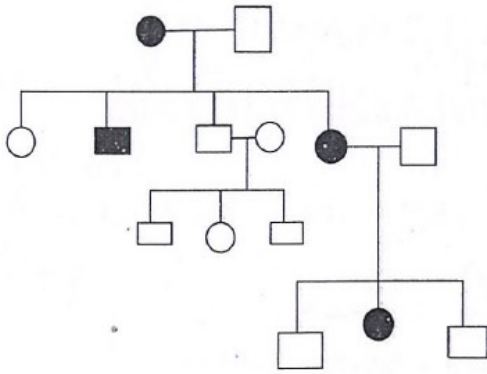
- 1) ZIFT - Zygote Intra Fallopian Transfer
- 2) IUI - Intra Uterine Insemination
- 3) AI - Artificial Insemination
- 4) GIFT - Gamete Intra Fallopian Transfer

26. The genotypes of husband and wife are $I^A I^B$ and $I^A I^O$. Among the blood groups of their children, how many different genotypes and phenotypes are possible?
- 1) 4 genotypes and 4 phenotypes 2) 4 genotypes and 3 phenotypes
3) 3 genotypes and 4 phenotypes 4) 2 genotypes and 3 phenotypes
27. The classical example of point mutation is
(1) Haemophilia (2) Sickle cell anaemia (3) Cystic fibrosis (4) Phenyl ketonuria
28. Read the following statements.
Statement I: In a typical test cross, an Organism showing a dominant phenotype is crossed with the recessive parent.
Statement II: The ratio of organisms showing dominant and recessive traits in F_1 generation of a test cross indicates that the organism with unknown genotype is homozygous dominant.
Choose the correct option.
(1) Both Statement I and Statement II are true
(2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false
(4) Statement I is false but Statement II is true
29. Thalassaemia and Sickle cell anaemia are due to a problem in globin molecule synthesis.
Select the correct statement.
(1) Sickle cell anaemia is due to a quantitative problem of globin molecule.
(2) Both are due to qualitative defects in globin chain synthesis.
(3) Both are due to quantitative defects in globin chain synthesis.
(4) Thalassaemia is due to less synthesis of globin molecules
30. Who amongst the following scientist/s had no contribution in the development of the double-helix model for the structure of DNA?
(1) Maurice Wilkins (2) Rosalind Franklin (3) Meselson and Stahl (4) Erwin Chargaff
31. In a DNA molecule, cytosine is 28%. Calculate the percentage of adenine.
(1) 56% (2) 36% (3) 22% (4) 18%
32. Arrange the below given steps of DNA fingerprinting in sequence by selecting the appropriate option.
a) Digestion of DNA by restriction endonucleases
b) Autoradiography
c) Blotting of DNA fragments to nitrocellulose membrane
d) Isolation of DNA
e) Separation of DNA fragments by electrophoresis
(1) (a), (e), (d), (c), (b) (2) (e), (a), (d), (b), (c) (3) (d), (a), (e), (c), (b) (4) (c), (b), (a), (e), (d)
33. Select the statement which is 'NOT' true about Big Bang Theory.
(1) Big Bang Theory explains the origin of Universe.
(2) As Universe expanded, the temperature came down.
(3) Hydrogen and Helium gases formed before the explosion.
(4) The gases condensed under gravitation, formed the galaxies.
34. According to Hugo De Vries, speciation is due to _____
(1) Accumulation of small variations
(2) Intraspecific breeding
(3) Interspecific breeding
(4) Single-step large mutation

52. The Annual Net Primary Productivity on land and ocean respectively are _____ and _____ billion tons.

- (1) 170, 107 (2) 115, 55 (3) 55, 115 4) 107, 170

53. In a practical examination, the below given pedigree chart was given as spotter for identification. The students identified the pedigree chart as _____



- (1) Autosomal recessive (2) Autosomal dominant
 (3) Sex-linked dominant 4) Sex-linked recessive

54. Given below are two statements.

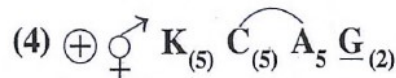
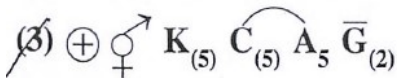
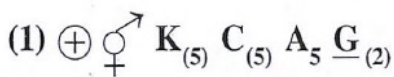
Statement I: There is less species biodiversity in tropical latitudes than in temperate region

Statement II: Tropical environments unlike temperate ones are less seasonal, relatively more constant and predictable.

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

- (1) Both Statement I and Statement II are true
 (2) Both Statement I and Statement II are false
 (3) Statement I is true, but Statement II is false
 (4) Statement I is false, but Statement II is true

55. A student was given a bisexual, actinomorphic pentamerous, gamosepalous and gamopetalous with 5 stamens in epipetalous condition and bicarpillary syncarpous superior ovary and asked to state the floral formula. Which one of the following is the correct floral formula for the given flower?



56. A student was asked to identify a permanent slide of mitosis. He made the following observations.

- (i) Splitting of centromere and formation of daughter chromatids.
 (ii) Chromatids are migrating towards the opposite poles.

The stage would be

- (1) Metaphase (2) Telophase (3) Anaphase (4) Prophase

57. With respect to binomial nomenclature, identify the incorrect statement.

- 1) Biological names are generally in Latin and written in Italics
 2) The first word in the name represents specific epithet and the second component denotes genus.
 3) Both the words in the name when handwritten are separately underlined.
 4) The first word starts with capital letter, while the second word starts with small letter.

58. Organism 'X' is a multicellular, heterotrophic, eukaryote with a chitinous cell wall. In which kingdom will you place it?

- (1) Monera (2) Animalia (3) Protista (4) Fungi

59. Read the following statements about Funaria and select the options which are correct.

- a) Gametophyte is the dominant plant body.
- b) The sporophyte is differentiated into foot, seta and capsule.
- c) The gemmae are asexual, green, multicellular buds found on the thallus.
- d) The sporophyte has independent existence.

(1) a and b (2) a and c (3) b and c (4) c and d

60. Match the animals given in List-I with their excretory organs in List-II

List-I	List-II
(a) Leech	(i) Flame cells
(b) Locust	(ii) Proboscis gland
(c) Liver fluke	(iii) Nephridia
(d) Balanoglossus	(iv) Malpighian tubules

Choose the correct option from the following.

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