Kerala Medical Entrance Examination 2006
Biology

1. Which of these is mismatched?

   (A) Phaneros - Visible
   (B) Kryptos - Concealed
   (C) Gymmo - Naked
   (D) Bryon - Liverworts
   (E) Trachea - Windpipe

2. Which one of the following group of codons is called as degenerate codons?

   (A) UAA, UAG and UGA
   (B) GUA, GUG, GCA, GCG and GAA
   (C) UUC, UUG, CCU, CAA and CUG
   (D) UUA, UUG, CUU, CUC, CUA and CUG
   (E) AAC, AAG, GAC and CGG

3. Which one of the following is called maiden-hair fern?

   (A) Dryopteris (B) Pteris
   (C) Adiantum (D) Lycopodium (E) Selaginella

4. Bicollateral conjoint vascular bundles have

   (A) Xylem and phloem, which are arranged in an alternate manner on different radii
   (B) Xylem and phloem, which are situated at the same radius and it has two groups of phloem along the two sides of xylem (inside and outside)
   (C) Xylem and phloem in same radius but it has only one group phloem outside the xylem
   (D) Phloem surrounds the xylem tissues
   (E) Xylem surrounds the phloem tissues

5. A typical value of resting membrane potential is

   (A) – 40 mV (B) – 60 mV (C) – 70 mV (D) – 80 mV (E) – 90 mV

6. In cell cycle, DNA replication occurs during

   (A) G_1 phase (B) G_2 phase
   (C) metaphase (D) anaphase (E) S phase

7. Which of the following statements are true / false

a. The blood transports CO_2 comparatively easily because of its higher solubility.

b. Approximately 8.9% of CO_2 is transported being dissolved in the plasma of blood.

c. The carbon dioxide produced by the tissues, diffuses passively into the blood stream and passes into red blood corpuscles and react with water to form H_2CO_3.

d. The oxyhaemoglobin (HbO_2) of the erythrocytes is basic.

e. The chloride ions diffuse from plasma into the erythrocytes to maintain ionic balance.

(A) a, c and e are true, b and d are false.

(B) a, c and e are false, b and d are true

(C) a, b and d are true, c and e are false.

(D) a, b and d are false, c and e are true.

(E) a, b and c are true, d and e are false.

8. Observe the given floral diagram and choose the suitable floral formula from the followings

(A) % ♀ $K_5\ C_5\ A_{10}\ \underline{G}_1$ (B) % ♀ $K_{(5)}\ C_5\ A_{10}\ \underline{G}_1$

(C) % ♀ $K_{(5)}\ C_{1+2+(2)}\ A_{(9)+1}\ \underline{G}_{(1)}$ (D) % ♀ $K_5\ C_{1+2+(2)}\ A_{(9)+1}\ \underline{G}_{(1)}$

(E) % ♀ $K_{(5)}\ C_5\ A_{(9)+1}\ \underline{G}_{(1)}$

9. The shifting cultivation method called jhum belongs to the category of

(A) industrial forestry (B) agro-forestry (C) commercial forestry

(D) social forestry (E) conservation forestry

10. Which of the following statements are true / false?

a. The positive hydrostatic pressure is called turgor pressure.

b. Wall pressure exerts to prevent the increase of protoplasm size.

c. Diffusion is more rapid in liquids than in gases.

d. Diffusion of water through a semi-permeable membrane is called imbibition.

e. Osmosis is movement of substances which takes place along a diffusion gradient.

(A) a and b are true & c, d and e are false.

(B) a and c are true & b, d and e are false.

(C) a and d are true & b, c and e are false.

(D) a and e are true & b, c and d are false.

(E) c, d and e are true & a and b are false.

11. Which is the correct Aristotle's ladder of nature?

(A) Inanimate matter → lower plants → higher plants → zoophyta → entoma → ostracoderma → malacia → malacostraca → fish → oviparous quadrupeds → cetacea → birds → viviparous quadrupeds → humans.

(B) Inanimate matter → lower plants → higher plants → zoophyta → entoma → malacia → malacostraca → ostracoderma → fish → oviparous quadrupeds → cetacean → birds → viviparous quadrupeds → humans.

(C) Inanimate matter → lower plants → higher plants → zoophyta → malacia → malacostraca → ostracoderma → fish → oviparous quadrupeds → cetacea → birds → viviparous quadrupeds → humans.

(D) Inanimate matter → lower plants → higher plants → zoophyta → entoma → ostracoderma → malacostraca → malacia → fish → cetacea → oviparous quadrupeds → birds → viviparous quadrupeds → humans.

(E) Inanimate matter → lower plants → higher plants → zoophyta → entoma → ostracoderma → malacia → malacostraca → fish → cetacea → birds → oviparous quadrapeds → viviparous quadrupeds → humans.

12. Which one is correctly matched?

(A) Vitamin E – Thiamine
(B) Vitamin D – Riboflavin
(C) Vitamin B_1 – Tocopherol
(D) Vitamin A – Calciferol
(E) Vitamin B_{12} – Cyanocobalamine

13. Match the entries in column I with those in column II and choose the correct answer from the following

Column I	Column II
a- Uremia	1- excess of protein level in urine
b- Hematuria	2- presence of high ketone bodies in urine
c- Ketonuria	3- presence of blood cells in urine
d- Glycosuria	4- presence of glucose in urine
e- Proteinuria	5- presence of urea in urine

(A) a–5, b–3, c–2, d–4, e–1
(B) a–4, b–5, c–3, d–2, e–1
(C) a–5, b–3, c–4, d–2, e–1
(D) a–3, b–5, c–2, d–1, e–4
(E) a–2, b–1, c–3, d–4, e–5

14. Select the false statement

(A) In rats the teeth are heterodont and thecodont
(B) In female rats, the urinary and genital apertures are located above anus
(C) In female rats, six pairs of nipples are present on the ventral surface of the trunk
(D) In rats, 12 pairs of cranial nerves and 33 pairs of spinal nerves are present
(E) In rats, the gestation period is 22 – 23 days

15. Red rot of sugarcane and white rust of radish are respectively caused by

(A) Albugo candida and Cercospora .
(B) Colletotrichum and Fusarium
(C) Pythium and Phytophthora
(D) Albugo candida and Puccinia graminis
(E) Colletotrichum and Albugo candida

16. Which of the following processes make direct use of oxygen?

(A) Glycolysis
(B) Fermentation
(C) Electron transport
(D) Krebs citric acid cycle
(E) Hydrolysis

17. Match the following items in column I with column II and choose the correct answer

Column I	Column II
a- Arsenic	1- Minamata disease
b- Nitrate	2- Itai-Itai
c- Mercury	3- Blue-baby syndrome
d- Cadmium	4- Skeletal fluorosis
e- Fluoride	5- Black-foot disease

(A) a–2, b–3, c–5, d–1, e–4 (B) a–5, b–3, c–1, d–2, e–4
(C) a–3, b–4, c–5, d–1, e–2 (D) a–5, b–4, c–3, d–2, e–1
(E) a–2, b–5, c–4, d–3, e–1

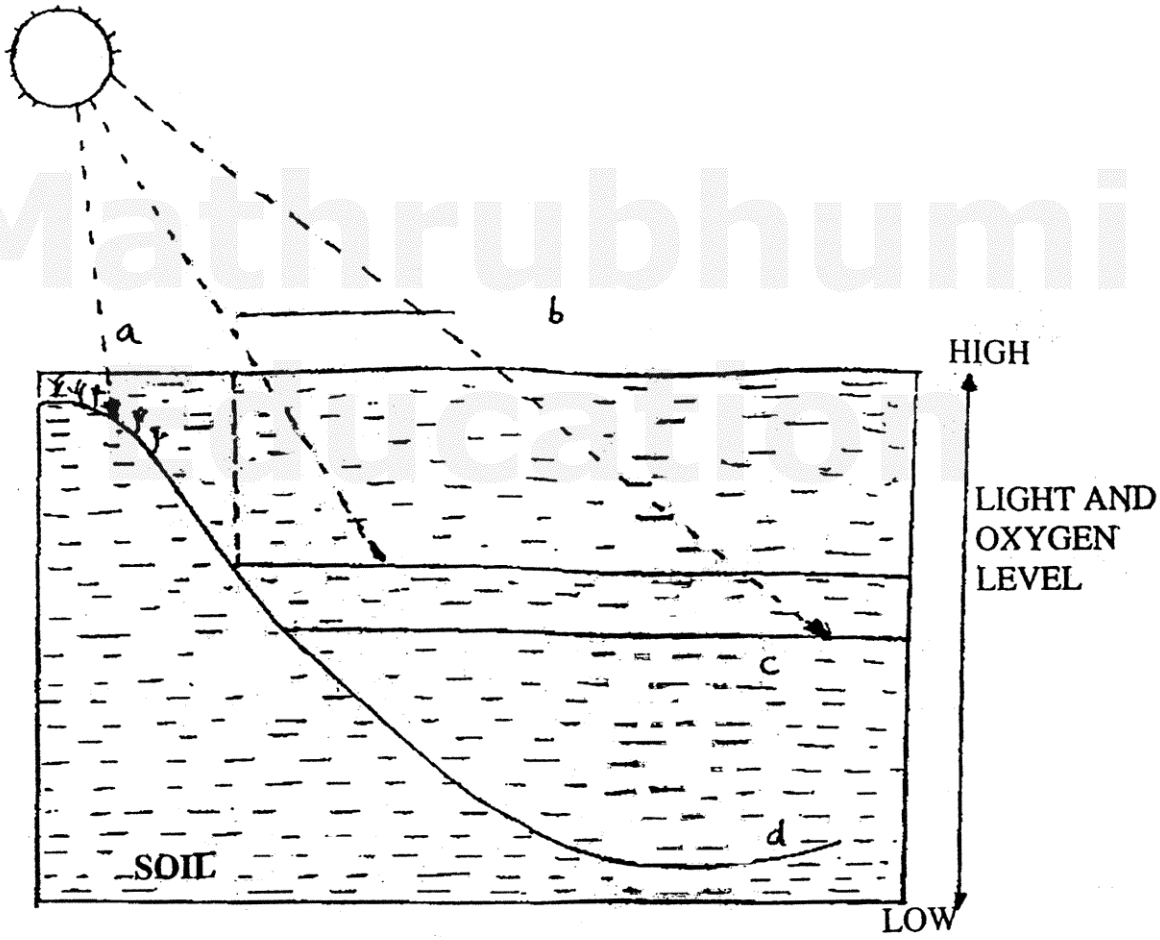
18. Which of the following statement is true?
(A) All living members of class cyclostomata are parasites on some fishes
(B) There are about 2,000 species in the class osteichthyes
(C) Ciona belongs to the subphylum cephalochordata
(D) Arthropods are diplobastic animals
(E) Ascaris lumbricoides is a flat worm

19. The large, empty and colourless cells present at intervals on the upper surface of grass leaf are called
(A) Bulliform cells (B) Palisade parenchyma
(C) Spongy parenchyma (D) Accessory cells
(E) Passage cells

20. Phenyl ketonuria, Huntington's disease and sickle cell anaemia are caused respectively due to disorders associated with
(A) Chromosome 7, chromosome 11 and chromosome 12.
(B) Chromosome 11, chromosome 4 and chromosome 12.
(C) Chromosome 7, chromosome 12 and chromosome 11.
(D) Chromosome 4, chromosome 7 and chromosome 11.
(E) Chromosome 12, chromosome 4 and chromosome 11.

21. Which of the following is a pseudocoelomate animal?
(A) Aurelia (B) Planaria
(C) Nereis (D) Aplysia (E) Wuchereria

22. Choose the correct combination of labelling of the zones in water in a lake



(A) a- Limnetic zone, b -Profundal zone, c - Littoral zone, d- Benthic zone
(B) a- Littoral zone, b- Benthic zone, c- Profundal zone, d- Limnetic zone
(C) a- Littoral zone. b - Limnetic zone, c- Profundal zone, d- Benthic zone
(D) a- Limnetic zone, b- Littoral zone, c- Benthic zone, d- Profundal zone
(E) a -Littoral zone, b- Profundal zone, c- Benthic zone, d- Limnetic zone

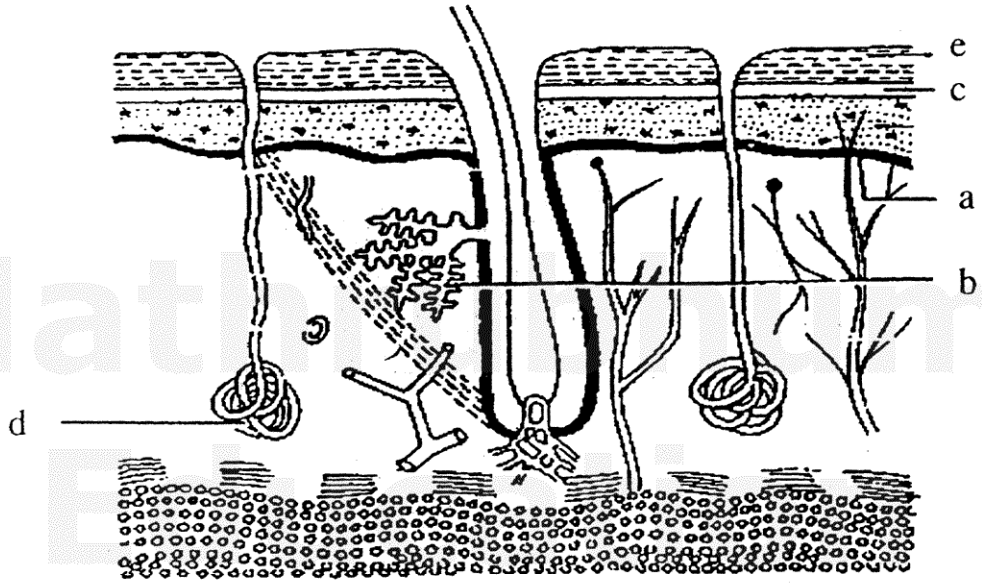
23. Which of the following vaccines are injected to babies at the age of 1½, 2½ and 3½ months?

(A) DTP-Hib and Polio
(B) Polio and BCG
(C) BCG and DTP-Hib
(D) BCG and Hepatitis B
(E) Polio and Hepatitis B

24. The enzyme that reduces the tension during the unwinding of DNA helix in front of the replication fork is

(A) Topoisomerase
(B) Helicase
(C) Ligase
(D) Polymerase
(E) Endonuclease

25.



In the diagram given above, parts labelled as 'a', 'b', 'c', 'd' and 'e' respectively represent

(A) Stratum granulosum, sweat gland, stratum germinativum, sebaceous gland and stratum corneum.

(B) Stratum granulosum, sebaceous gland, stratum germinativum, sweat gland and stratum corneum.

(C) Stratum germinativum, sweat gland, stratum lucidium, sebaceous gland and stratum corneum.

(D) Stratum corneum, sweat gland, stratum lucidium, sebaceous gland and stratum germinativum.

(E) Stratum germinativum, sebaceous gland, stratum lucidium, sweat gland and stratum corneum.

26. Match the followings in column I with column II and choose the correct combination

Column I	Column II
a. Xylem vessels	1. Store food materials.
b. Xylem trachieds	2. Obliterated lumen.
c. Xylem fibre	3. Perforated plates.
d. Xylem parenchyma	4. Chisel-like ends.

(A) a–4, b–3, c–2, d–1

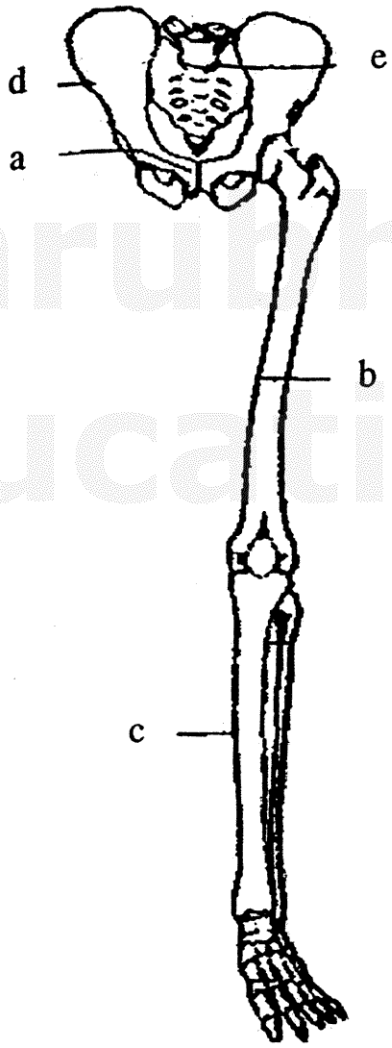
(B) a–3, b–2, c–1, d–4

(C) a–2, b–1, c–4, d–3

(D) a–1, b–2, c–3, d–4

(E) a–3, b–4, c–2, d–1

27. Consider the diagram given below



Parts labelled as 'a', 'b', 'c', 'd', and 'e' respectively indicate

(A) Ilium, Femur, Tibia, Pubis and Sacrum
(B) Pubis, Tibia, Femur, Ilium and Sacrum
(C) Ilium, Femur, Tibia, Pubis and Sacrum
(D) Pubis, Tibia, Femur, Ilium and Sacrum
(E) Pubis, Femur, Tibia, Ilium and Sacrum

28. The hormones that initiates ejection of milk, stimulates milk production and growth of ovarian follicles are respectively known as

(A) PRL, OT and LH
(B) OT, PRL and FSH
(C) LH, PRL and FSH
(D) PRH, OT and LH
(E) PRH, OT and FSH

29. In the classification of plants, the term cladistics refers to the
(A) Phylogenetic classification (B) Sexual classification
(C) Artificial classification (D) Natural classification
(E) Binomial classification

30. The method of inducing early flowering by pretreatment of seeds with a certain low temperature is called
(A) Photoperiodism (B) Abscission
(C) Vernalisation (D) Phototaxis (E) Chemotropism

31. Match the following

a. Red algae	1. Marchantia
b. Liver wort	2. Pinus
c. Walking fern	3. Polysiphonia
d. Gymnosperm	4. Adiantum

(A) a – 1, b – 2, c – 4, d – 3 (B) a – 2, b – 4, c – 3, d – 1
(C) a – 2, b – 3, c – 1, d – 4 (D) a – 3, b – 1, c – 4, d – 2
(E) a – 3, b – 2, c – 1, d – 4

32. In heart cells, which one serves as a second messenger, speeding up muscle cell contraction in response to adrenaline
(A) cAMP (B) cGMP (C) GTP (D) ATP (E) AMP

33. Match the following and choose the correct combination from the options given

Column I	Column II
a. Potassium	1. Constituent of ferredoxin
b. Sulphur	2. Involved in stomatal movement
c. Molybdenum	3. Needed in the synthesis of auxin
d. Zinc	4. Component of nitrogenase

(A) a – 2, b – 1, c – 4, d – 3 (B) a – 1, b – 2, c – 3, d – 4
(C) a – 4, b – 3, c – 2, d – 1 (D) a – 1, b – 3, c – 4, d – 2
(E) a – 3, b – 4, c – 1, d – 2

34. Hypothyroidism in adults and hyperparathyroidism will respectively lead to
(A) Myxoedema and Cretinism
(B) Grave's disease and Hashimoto's disease
(C) Myxoedema and Osteitis fibrosa cystica
(D) Addison's disease and Cretinism
(E) Cretinism and Osteitis fibrosa cystica

35. The distribution of two or more specific molecules within a cell can be studied by using
(A) Dark field microscope
(B) Flourescent microscope
(C) Phase contrast microscope
(D) Interference contrast microscope
(E) Bright field microscope

36. Which one of the following is not a device used to control a particulate matter?
(A) Arresters
(B) Scrubbers
(C) Filters
(D) Electrostatic precipitator
(E) Incinerator

37. The accumulation of protein called amyloid β peptide in human brain causes
(A) Addison's disease
(B) Huntington's disease
(C) Alzheimer's disease
(D) Motor-neuron disease
(E) Parkinson's disease

38. The technique that was employed to produce haploids of Datura was
(A) meristem culture
(B) anther culture
(C) embryo culture
(D) protoplast culture
(E) callus culture

39. SCID is caused by defective gene coding for the enzyme called
(A) adenosine transaminase
(B) guanosine transaminase
(C) adenosine deaminase
(D) guanosine deaminase
(E) adenosine transferase

40. The leaves are modified into tendrils, hooks, pitcher and bladder in the following plants respectively
(A) Sweet pea, Cat's nail, *Nepenthes*, *Utricularia*
(B) Sweet pea, Cat's nail, *Utricularia*, *Nepenthes*
(C) *Nepenthes*, Cat's nail, Sweet pea, *Utricularia*
(D) *Nepenthes*, Sweet pea, Cat's nail, *Utricularia*
(E) *Utricularia*, *Nepenthes*, Cat's nail, Sweet pea

41. The science of ageing is referred to as
(A) Developmental Biology
(B) Ontogeny
(C) Phylogeny
(D) Gerontology
(E) Oncology

42. Match the item in column I with column II and choose the correct answer

Column I	Column II
a. Microspermae	1. Alismaceae
b. Epigynae	2. Liliaceae
c. Calycinae	3. Iridaceae
d. Apocarpae	4. Orchidaceae
e. Coronarieae	5. Palmae

(A) a–2, b–3, c–4, d–5, e–1 (B) a–3, b–4, c–5, d–1, e–2
(C) a–4, b–3, c–5, d–1, e–2 (D) a–1, b–2, c–3, d–4, e–5
(E) a–5, b–4, c–3, d–2, e–1

43. How many of the twenty two amino acids are essential amino acids for children?

(A) 6 (B) 8 (C) 10 (D) 7 (E) 11

44. One of the following endocrine gland functions as a biological clock and a neurosecretory transducer

(A) Adrenal gland (B) Thyroid gland
(C) Pineal gland (D) Thymus gland (E) Pituitary gland

45. Which of the following is a simplified equation of photosynthesis?

(A) $CO_2+2H_2O \xrightarrow[\text{Chlorophyll}]{\text{light energy}} C_5H_{10}O_4 + H_2O + O_2 \uparrow$

(B) $CO_2+2H_2O \xrightarrow[\text{Chlorophyll}]{\text{light energy}} (CH_2O)_n + O_2 \uparrow$

(C) $CO_2+2H_2O \xrightarrow[\text{Chlorophyll}]{\text{light energy}} C_3H_6O_3 + CO_2 + O_2 \uparrow$

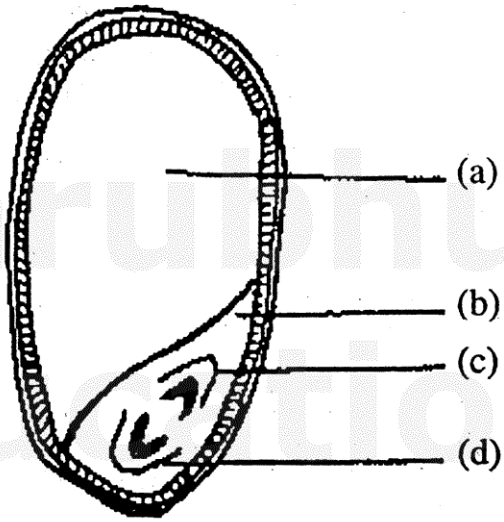
(D) $CO_2+2H_2O \xrightarrow[\text{Chlorophyll}]{\text{light energy}} (CH_2O)_n + H_2O + O_2 \uparrow$

(E) $CO_2+2H_2O \xrightarrow[\text{Chlorophyll}]{\text{light energy}} C_6H_{12}O_6 + O_2 \uparrow$

46. Pleiotropic gene

(A) Controls only one phenotype
(B) Controls several phenotypes
(C) Masks the expression of another non-allelic gene
(D) Inhibits crossing over
(E) Promotes crossing over

47. The diagram represents the L.S of monocot seed. Choose the correct combination of labelling



(A)	(a) Alerone layer	(b) Scutellum	(c) Coleoptile	(d) Coleorhiza
(B)	(a) Seed coat	(b) Scutellum	(c) Coleoptile	(d) Coleorhiza
(C)	(a) Epithelium	(b) Scutellum	(c) Coleoptile	(d) Coleorhiza
(D)	(a) Endosperm	(b) Scutellum	(c) Coleoptile	(d) Coleorhiza
(E)	(a) Endosperm	(b) Scutellum	(c) Plumule	(d) Radicle

48. Major radiation of mammals, birds and pollinating insects took place in which epoch

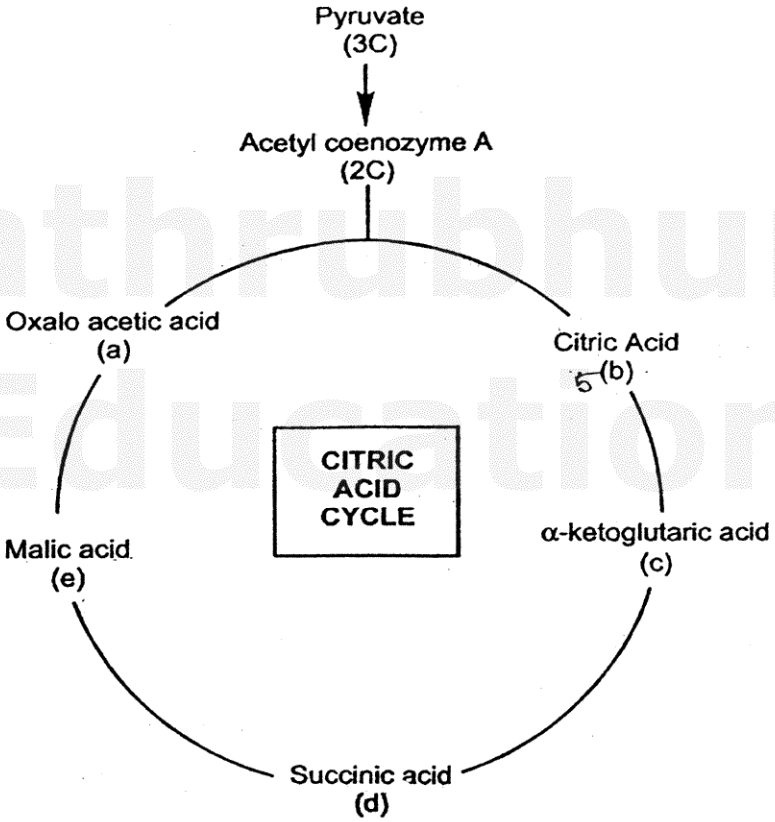
(A) Oligocene (B) Eocene (C) Pliocene
(D) Paleocene (E) Miocene

49 Match the items in column I with column II and choose the correct answer

Column I	Column II
a. Phototaxis	1. Circular movement of protoplasm with response to warm condition
b. Thermotaxis	2. downward movement of floral organs (closing flower)
c. Chemotaxis	3. downward movement of leaf (drooping leaf)
d. Hyponasty	4. movement of anthrozoids towards archegonia
e. Seismonasty	5. movement of Chlamydomonas

(A) a–5, b–1, c–4, d–2, e–3 (B) a–4, b–5, c–1, d–2, e–3
(C) a–2, b–3, c–4, d–5, e–1 (D) a–2, b–5, c–1, d–4, e–3
(E) a–5, b–4, c–3, d–2, e–1

50. Choose the correct combination of labelling the number of carbon compounds in the substrate molecules, involved in the citric acid cycle



(A) (a) 4C, (b) 6C, (c) 5C, (d) 4C, (e) 4C
(B) (a) 6C, (b) 5C, (c) 4C, (d) 3C, (e) 2C
(C) (a) 2C, (b) 3C, (c) 4C, (d) 5C, (e) 6C
(D) (a) 4C, (b) 5C, (c) 6C, (d) 4C, (e) 4C
(E) (a) 4C, (b) 6C, (c) 4C, (d) 4C, (e) 4C

51. Match the hormone in column I with their function in column II

Column I	Column II
a. FSH	1. Prepare endometrium for implantation.
b. LH	2. Develops female secondary sexual characters.
c. Progesterone	3. Contraction of uterine wall.
d. Estrogen	4. Development of corpus luteum.
	5. Maturation of graffian follicle.

(A) a – 5, b – 4, c – 1, d – 2
(B) a – 4, b – 5, c – 2, d – 1
(C) a – 4, b – 3, c – 2, d – 5
(D) a – 5, b – 1, c – 2, d – 4
(E) a – 4, b – 2, c – 3, d – 5

52. Match the entries in column I with those in column II and choose the correct combination from the options given

Column I	Column II
a. Diencephalon	1. Cerebellum
b. Telencephalon	2. Medulla
c. Myelencephalon	3. Amygdala
d. Metencephalon	4. Thalamus

(A) a – 4, b – 3, c – 1, d – 2
(B) a – 3, b – 4, c – 1, d – 2
(C) a – 4, b – 3, c – 2, d – 1
(D) a – 1, b – 2, c – 3, d – 4
(E) a – 4, b – 1, c – 2, d – 3

53. Which one of the following sequence represents m-RNA coded from a DNA segment with base pairs as

GA GC GCACA
CT CG CGTGT

(A) GAGCGCACA
(B) CUCCGCUGU
(C) CTCGCGTGT
(D) CUCCGCUCC
(E) CUCGUGUGU

54. Natality is the characteristic of a population which means

(A) The total number of individuals present per unit area at a given time
(B) The increase in number of individuals in a population under given environmental conditions
(C) Loss of individuals due to death in a population under given environmental conditions
(D) The movement of individuals into and out of population
(E) Each population has three different age groups

55. Match column I with column II and select the correct option given below

Column I	Column II
a. Aerobic	1. Frankia
b. Cyanobacteria	2. Azospirillum
c. Casuarina	3. Clostridium
d. Tropical grasses	4. Aulosira
	5. Azotobacter

(A) a – 4, b – 3, c – 2, d – 1
(B) a – 3, b – 5, c – 4, d – 2
(C) a – 2, b – 1, c – 3, d – 5
(D) a – 5, b – 3, c – 4, d – 1
(E) a – 5, b – 4, c – 1, d – 2

56. Match the following and choose the correct combination from the options given

a. Walter Sutton	1. Discovered penicillin
b. Thomas Hunt Morgan	2. Discovered the chromosomal basis of heredity
c. James Watson	3. Described the phenomena of linkage and crossing over
d. Alexander Fleming	4. Discovered the double helical structure of DNA

(A) a–1, b–4, c–2, d–3 (B) a–2, b–3, c–1, d–4
(C) a–3, b–2, c–1, d–4 (D) a–2, b–3, c–4, d–1
(E) a–4, b–1, c–2, d–3

57. The plant triticale is a / an
(A) Allopolyploid (B) Autopolyploid
(C) Diploid (D) Haploid (E) Tetraploid

58. Transfer of DNA bands from an agrose gel to a nitrocellulose or nylon membrane is referred to as
(A) Western transfer (B) Northern transfer
(C) Eastern transfer (D) Gene transfer (E) Southern transfer

59. Which leucocytes releases heparin and histamines in the blood
(A) eosinophil (B) basophil
(C) neutrophil (D) lymphocytes (E) monocytes

60. The number of vertebrae present in cervical, thoracic, lumbar, sacral and coccyx regions respectively are
(A) 12,7,5,1,1 (B) 1,7,5,12,1 (C) 7,5,1,12,1
(D) 7,12,5,1,1 (E) 5,12,7,1,1

61. The Calvin cycle proceeds in three stages
1. Reduction, during which carbohydrate is formed at the expense of the photochemically made ATP and NADPH
2. Regeneration, during which the carbon dioxide acceptor ribulose-1, 5-biphosphate is formed
3. Carboxylation, during which carbon dioxide combines with ribulose-1, 5-biphosphate

Identify the correct sequence
(A) 3 – 1 – 2 (B) 3 – 2 – 1
(C) 1 – 2 – 3 (D) 2 – 1– 3 (E) 1 – 3 – 2

62. Which of the following statements is / are not true?

a. One ATP molecule yields 32 kJ of energy

b. Pentose Phosphate Pathway was discovered by Dickens

c. When tripalmitin is used as a substrate, the R.Q. is 0.7

d. Energy released by one molecule of glucose on complete oxidation corresponds to 1292 kJ

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

(C) a and d only (D) a, c and d only (E) c only

63. Which of the following statements are false?

a. Most cells are tiny and their volume ranges from 1 to 1000 nm^3.

b. Some cells have the microvilli to increase the absorptive surface area.

c. All cells arise from pre-existing cells.

d. In plants, translocation of solutes is performed by xylem vessels and trachieds.

e. According to cell theory all cells arise from abiotic material.

(A) a, c and e are false (B) a, d and e are false

(C) b, c and d are false (D) c, d and e are false

(E) a, b and c are false

64. Match the items in column I with column II and choose the correct answer

Column I	Column II
a- Apple	1- Outer portion of receptacle
b- Coconut	2- Fleshly thalamus
c- Jack fruit	3- Thalamus & pericarp
d- Guava	4- Endosperm
e- Pineapple	5- Bract, perianth & seeds

(A) a–2, b–3, c–4, d–5, e–1 (B) a–5, b–3, c–1, d–4, e–2

(C) a–2, b–3, c–1, d–5, e–4 (D) a–2, b–4, c–5, d–3, e–1

(E) a–5, b–4, c–3, d–2, e–1

65 The decoding and interpretation of visual information is carried out by which part of the brain

(A) Cerebellum (B) Frontal lobe

(C) Parietal lobe (D) Temporal lobe (E) Occipital lobe

66. Which of the following statements is / are not true?

a. Cork cambium is otherwise called phellogen

b. Cork is otherwise called phellem

c. Secondary cortex is otherwise called periderm

d. Cork cambium, cork and secondary cortex are collectively called phelloderm

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

67. Human skin colour is controlled by several gene pairs. Let us assume here that there are just three gene pairs on different chromosomes and that for each pair there are two alleles - an incompletely dominant one that codes for melanin deposition and an incompletely recessive one that codes for no melanin deposition. If a very dark skinned person marries a very light skinned woman, what will be the chance that their offspring will have very dark skin?

(A) 0 (B) 1/4 (C) 5/8 (D) 9/64 (E) 3/64

68. Match the following

a. Bacteria	1. synthesis and storage of lipids
b. Sphaerosomes	2. idiogram
c. Chloroplasts	3. glycocalyx
d. Karyotype	4. thylakoids

(A) a – 3, b – 2, c – 4, d – 1 (B) a – 3, b – 1, c – 2, d – 4
(C) a – 4, b – 3, c – 2, d – 1 (D) a – 1, b – 2, c – 3, d – 4
(E) a – 3, b – 1, c – 4, d – 2

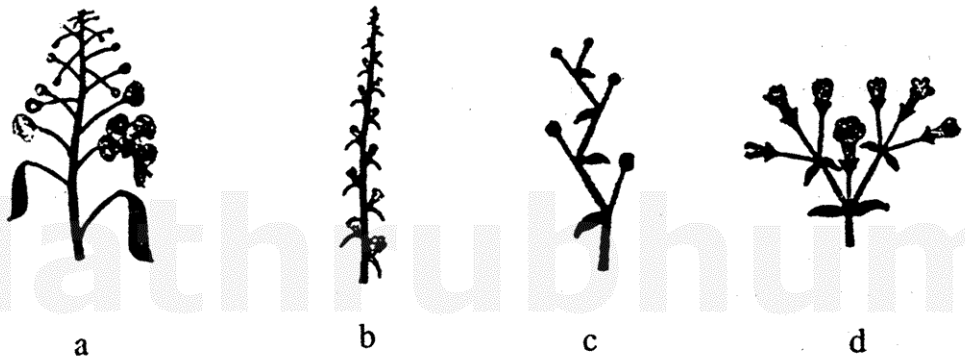
69. The bacterial cell wall is made up of

(A) Cellulose (B) Hemicellulose
(C) Cellulose and hemicellulose (D) Peptidoglycan
(E) Glycogen

70. Which of the following is not correctly matched?

(A) Chlamydomonas – Unicellular flagellated
(B) Laminaria – Flattened leaf like thallus
(C) Chlorella – Unicellular non-flagellated
(D) Spirogyra – Filamentous structure
(E) Volvox – Colonial form non-flagellated

71. Find out the correct sequence of labelling of diagram given below



a b c d

(A) a- spike, b- raceme, c- dichasial cyme, d- monochasial cyme
(B) a- raceme, b- spike, c- monochasial cyme, d- dichasial cyme
(C) a- dichasial cyme, b- monochasial cyme, c- raceme, d- spike
(D) a- spike, b- dichasial cyme, c- monochasial cyme, d- raceme
(E) a- raceme, b- dichasial cyme, c- spike, d- monochasial cyme

72. Which of the following is used in eye inflammation and for curing night blindness?

(A) *Atropa belladonna* (B) *Cichorium intybus*
(C) *Eclipta alba* (D) *Emilia sonchifolia*
(E) *Centipeda orbicularis*

73. The correct sequence of arrangements of segments in the leg of cockroach is

(A) Tibia, Trochanter, Femur, Tarsus and Coxa
(B) Trochanter, Coxa, Tibia, Femur and Tarsus
(C) Coxa, Femur, Trochanter, Tibia and Tarsus
(D) Coxa, Trochanter, Femur, Tibia and Tarsus
(E) Trochanter, Coxa, Femur, Tarsus and Tibia

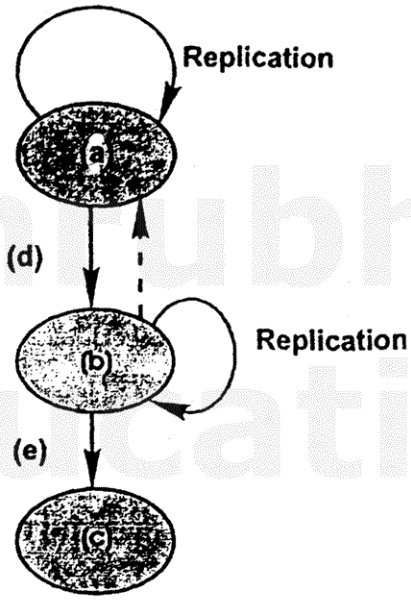
74. A transplant between individuals of the same species, but with different MHC/HLA alleles is

(A) Autograft (B) Isograft (C) Xenograft
(D) Allograft (E) Autologus graft

75. The technique of DNA finger printing was pioneered and perfected by

(A) Alec Jeffreys (B) Francois Jacob
(C) Jacques Monad (D) Beadle & Tatum (E) Garrod

76. The diagram represents the "central dogma" of molecular biology. Choose the correct combination of labelling



(A) (a) Protein (b) RNA (c) DNA (d) Translation (e) Transcription
(B) (a) RNA (b) DNA (c) Protein (d) Transcription (e) Translation
(C) (a) Transcription (b) Translation (c) Protein (d) DNA (e) RNA
(D) (a) DNA (b) RNA (c) Protein (d) Translation (e) Transcription
(E) (a) DNA (b) RNA (c) Protein (d) Transcription (e) Translation

77. Which of the following strategy is not a correct approach to reduce global warming?

(A) Reducing the green house gas emission by limiting the use of fossil fuels
(B) Increase the vegetation cover particularly the forest for photosynthetic utilization of CO_2
(C) Minimizing the use of nitrogen fertilizers in agriculture for reducing N_2O emission
(D) Increasing the use of air conditioners, refrigeration unit and production of plastic foams and propellants in aerosal spray cans
(E) Developing substitutes for chlorofluorocarbons

78. Which one is a critically endangered animal species

(A) *Antelope cervicapra* (B) *Sus salvanius*
(C) *Ailurus fulgens* (D) *Calotes versicolor* (E) *Hyla*

79. (a) The type of regeneration in hydra is known as epimorphosis.
(b) Members of reptiles such as lizards exhibit autotomy.
(c) Regeneration of limb in amphibians involves morphallaxis.

Of these statements
(A) (a) and (b) are false but (c) is true.
(B) (b) and (c) are false but (a) is true.
(C) (b) and (c) are true but (a) is false.
(D) (a) and (c) are true but (b) is false.
(E) (a) and (c) are false but (b) is true.

80. Match the following with correct combination

Column I		Column II
a.	Mutualism	1. Tiger and deer
b.	Commensalism	2. *Cuscuta* on *Cissus*
c.	Parasitism	3. Sucker fish and shark
d.	Predation	4. Crab and sea anemone

(A) a – 1, b – 2, c – 3, d – 4
(B) a – 4, b – 3, c – 2, d – 1
(C) a – 1, b – 3, c – 2, d – 4
(D) a – 2, b – 3, c – 1, d – 4
(E) a – 4, b – 2, c – 3, d – 1

81. The respiratory quotient (RQ) or respiratory ratio is

(A) $RQ = \frac{\text{Volume of } O_2 \text{ evolved}}{\text{Volume of } CO_2 \text{ consumed}}$
(B) $RQ = \frac{\text{Volume of } O_2 \text{ consumed}}{\text{Volume of } CO_2 \text{ evolved}}$
(C) $RQ = \frac{\text{Volume of } CO_2 \text{ consumed}}{\text{Volume of } O_2 \text{ evolved}}$
(D) $RQ = \frac{\text{Volume of } CO_2 \text{ evolved}}{\text{Volume of } O_2 \text{ consumed}}$
(E) $RQ = \frac{\text{Volume of } CO_2 \text{ consumed}}{\text{Volume of } O_2 \text{ consumed}}$

82. The process of reverse transcription was brought to light by the work of
(A) George Beadle and Edward Tatum
(B) Garrod
(C) H. M. Temin and D. Baltimore
(D) R. W. Holley and Grover
(E) Marshall and W. Nirenberg

83. Match the items in column I with items in column II and choose the correct answer

Column I	Column II
a. Triglyceride	1. animal hormones
b. Membrane lipid	2. feathers and leaves
c. Steroid	3. phospholipids
d. Wax	4. fat stored in form of droplets

(A) a–4, b–3, c–1, d–2 (B) a–2, b–3, c–4, d–1
(C) a–3, b–4, c–1, d–2 (D) a–4, b–1, c–2, d–3 (E) a–4, b–3, c–2, d–1

84. Match the items in column I with column II and choose the correct answer

Column I	Column II
a. Sap vacuole	1. Contain digestive enzyme
b. Contractile vacuole	2. Store metabolic gases
c. Food vacuole	3. Osmoregulation
d. Air vacuole	4. Store lipids
e. Sphaerosomes	5. Store and concentrate mineral salts & nutrients

(A) a–5, b–3, c–1, d–2, e–4 (B) a–2, b–3, c–4, d–5, e–1
(C) a–5, b–2, c–3, d–1, e–4 (D) a–5, b–3, c–2, d–4, e–1
(E) a–4, b–1, c–3, d–5, e–2

85. Which of the following statements are true / false

a. In Torpedo the electric organs are capable of generating strong electric shock to paralyze the prey
b. Bony fishes use pectoral, pelvic, dorsal, anal and caudal fins in swimming
c. Amphibian skin is moist and has thick scales
d. Birds are poikilothermous animals
e. The most unique mammalian characteristic is the presence of milk producing mammary glands by which the young ones are nourished

(A) a, b and c are true; d, e are false
(B) a, b and e are true; c and d are false
(C) a, d and e are true; b and c are false
(D) a, b and d are false; c and e are true
(E) only d is true; a, b, c and e are false

86 Allosteric modulation is due to the inhibition action of enzyme by

(A) Competitive inhibition
(B) Substrate concentration
(C) Products of reaction
(D) Enzyme concentration
(E) Non competitive inhibition

87. Premature leaf fall is due to deficiency of

(A) Phosphorus
(B) Nitrogen
(C) Calcium
(D) Potassium
(E) Sulphur

88. Haustoria are found in

(A) Cuscuta
(B) Vanda
(C) Heritiera
(D) Dahlia
(E) Mirabilis

89. The disease root-knot of brinjal is caused by

(A) Fusarium udum
(B) Phytophthora infestans
(C) Meloidogyne incognita
(D) Pseudomonas rubilieneans
(E) Xanthomonas citri

90. Match list – I with list – II and select the correct option given below

List – I	List – II
(a) Lantana camara	(1) Anticancer drug
(b) Magnolia	(2) Papaver somniferum
(c) Yew tree	(3) Cinchona ledgeriana
(d) Morphine	(4) Exotic species
	(5) Primitive genus

(A) (a) – (3), (b) – (4), (c) – (5), (d) – (2)
(B) (a) – (4), (b) – (5), (c) – (1), (d) – (2)
(C) (a) – (2), (b) – (3), (c) – (1), (d) – (4)
(D) (a) – (4), (b) – (5), (c) – (3), (d) – (2)
(E) (a) – (2), (b) – (5), (c) – (4), (d) – (1)

91. The internal buds of fresh water sponges are otherwise called

(A) Choanocyte (B) Gemmule

(C) Osculum (D) Blastula (E) Gastrula

92. The digestive enzyme that is not found in human pancreatic juice is

(A) nucleotidase (B) nuclease

(C) trypsin (D) lipase (E) amylase

93. Which of the following groups of plants are propagated through underground root?

(A) Bryophyllum & kalanchoe

(B) Ginger, potato, onion & zamikand

(C) Pistia, chrysanthemum & pineapple

(D) Sweet potato, asparagus, tapioca & dahlia

(E) Agave, wild jam & oxalis

94. Name the elements which occur in nucleic acid macromolecule

(A) C, H, O, N, S (B) C, O, N. S

(C) C, O, P, S (D) C, H, O, N, P (E) H, O, P

95. In the 4th, 5th and 6th segments of earthworm, lying above pharyngeal mass and connected with pharyngeal glands are found small, red coloured follicular bodies called

(A) septal glands (B) blood glands

(C) salivary glands (D) nephridia (E) intestinal caecae

96. Some plants have a habit of harbouring ants to save the plants from damage by other animals which is known as

(A) Entomophily (B) Myrmecophily
(C) Anemophily (D) Hydrophily (E) Zoophily

97. Which of the following subunit of ribosome is composed of 23S rRNA and a 5S rRNA + 32 different proteins?

(A) 50 S (B) 70 S (C) 30 S (D) 60 S (E) 40 S

98. Solenoid is a structure of

(A) Nucleosomal organization with 10 nm thickness
(B) Condensed chromatin fibre with 30 nm diameter
(C) Highly condensed form of chromatid with 300 nm thickness
(D) Well organized chromatid with 700 nm thickness
(E) Well organized chromosome with 1400 nm thickness

99. Select the false statement

(A) Scientists who study and contribute to the classification of organisms are known as systematists
(B) Carolus Linnaeus developed the first scientific system of naming species
(C) A Five Kingdom arrangement of organisms was introduced by R.H. Whittaker
(D) Genus is a group of species which are related and have less characters in common as compared to species
(E) Phycomycetes are called club fungi because of a club shaped end of mycelium known as basidium

100. The simple polyhydroxy ketone molecule containing 3-7 carbons is a

(A) disaccharide (B) monosaccharide
(C) polysaccharide (D) dipeptide (E) polypeptide

101. Choose the wrongly matched pair from the following

(A) Auxins – "to grow"
(B) Gibberellins – Gibberella fujikurai
(C) Cytokinins – Herring sperm DNA
(D) Abscissic acid – Flowering hormone
(E) Ethylene – Gas hormone

102. The gas mixture used by Miller in his experiment comprised

(A) CH_4, CO_4, N_2, H_2O (B) NH_3, CO_2, H_2O, N_2

(C) CH_2, NH_3, N_2, H_2O (D) CH_4, NH_3, H_2, H_2O (E) CH_2, N_2, NH_3, H_2O

103. Find out the correct order of succession levels in Xerarch

(A) Lichen moss stage, Annual herb stage, Perennial herb stage, Scrub stage, Forest

(B) Annual herb stage, Perennial herb stage, Lichen moss stage, Scrub stage, Forest

(C) Perennial herb stage, Annual herb stage, Lichen moss stage, Scrub stage, Forest

(D) Scrub stage, Forest, Annual herb stage, Perennial herb stage, Lichen moss stage

(E) Forest, Scrub stage, Annual herb stage, Perennial herb stage, Lichen moss stage

104. Which one of the following statements is false?

(A) Psychoactive drugs have the ability to alter the activity of the nervous system

(B) Adolescence is marked by accelerated physical growth, development of reproductive organs and changes in functioning of the neuro endocrine system

(C) Hallucinogen can alter a person's thoughts, feelings and perceptions

(D) Mescaline is a stimulant

(E) Depression is a mood disorder characterized by hopelessness, sadness, decline in interest, energy, concentration and changes in sleep pattern and appetite

105. Match the following

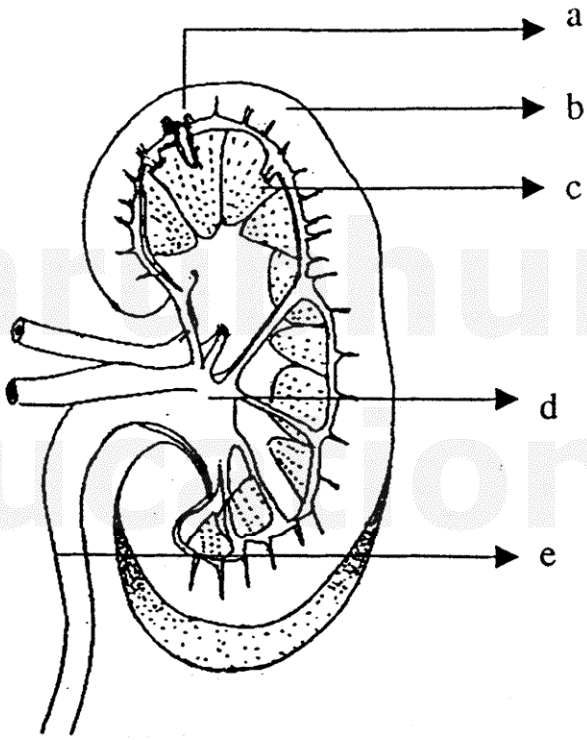
a. Zoophily	1. Pollination by birds
b. Ornithophily	2. Pollination by insects
c. Entomophily	3. Pollination by bats
d. Chiropterophily	4. Pollination by animals

(A) a – 3, b – 2, c – 1, d – 4 (B) a – 1, b – 2, c – 3, d – 4

(C) a – 4, b – 1, c – 2, d – 3 (D) a – 4, b – 2, c – 1, d – 3

(E) a – 4, b – 2, c – 3, d – 1

106. Refer the following diagram and identify the parts of a kidney indicated



(A) a = cortex, b = nephron, c = pelvis, d = medulla, e = ureter
(B) a = cortex, b = medulla, c = nephron, d = pelvis, e = ureter
(C) a = nephron, b = cortex, c = medulla, d = ureter, e = pelvis
(D) a = nephron, b = cortex, c = medulla, d = pelvis, e = ureter
(E) a = nephron, b = ureter, c = pelvis, d = medulla, e = cortex

107. The method which yields the best pictorial form and does not expose the patient to potentially harmful ionizing radiations is

(A) X-ray Radiography
(B) Angiography
(C) Computed Tomography
(D) Magnetic Resonance Imaging
(E) Positron Emission Tomography

108. Statements

1. Carbonic anhydrase is present in the erythrocytes.
2. In erythrocytes the carbon dioxide combine with water and is transported.

(A) statement 1 is correct and is responsible for statement 2
(B) statement 1 is not correct but statement 2 is correct
(C) both statements 1 and 2 are wrong
(D) statement 1 is correct but not involved in statement 2
(E) statement 1 is correct and statement 2 is wrong

109. Microphagial nutrition occurs in

(A) amphioxus (B) insects
(C) paramoecium (D) hydra (E) euglena

110. Match the following

(a)	Neutrophil	(1)	single large nucleus
(b)	Eosinophil	(2)	2 to 3 lobed nucleus
(c)	Basophil	(3)	kidney shaped nucleus
(d)	Lymphocyte	(4)	2 to 7 lobed nucleus
(e)	Monocyte	(5)	bilobed nucleus

(A) (a) – (4), (b) – (1), (c) – (3), (d) – (5), (e) – (2)
(B) (a) – (2), (b) – (5), (c) – (1), (d) – (4), (e) – (3)
(C) (a) – (4), (b) – (5), (c) – (2), (d) (1), (e) – (3)
(D) (a) – (2), (b) – (4), (c) – (5), (d) – (3), (e) – (1)
(E) (a) (1), (b) – (4), (c) – (3), (d) – (2), (e) – (5)

111. Which one of the following acts as an inducer in the regulatory mechanism of operon model?

(A) Fructose (B) Glucose
(C) Galactose (D) Lactose (E) Sucrose

112. Which of the following statement is true with regard to the light reaction of photosynthetic mechanism in plants?

(A) Chlorophyll *a* occurs with peak absorption at 680 nm in photosystem I and at 700 nm in photosystem II
(B) Magnesium and sodium ions are associated with photolysis of water molecules.
(C) O_2 is evolved during cyclic photophosphorylation.
(D) Photosystems I and II are both involved in non-cyclic photophosphorylation.
(E) Both ATP and $NADPH_2$ are formed during cyclic photophosphorylation.

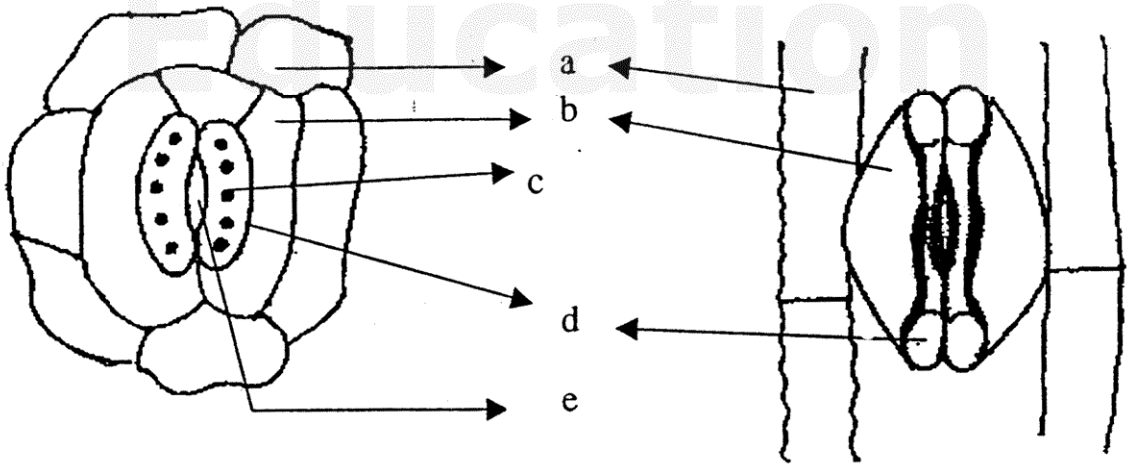
113. In the double helix model of DNA, how far is each base pair from the next base pair?

(A) 3.4 nm (B) 0.34 nm
(C) 2.0 nm (D) 34 nm
(E) 0.034 nm

114. Which Act was formulated in the year 1986?

(A) The Insecticide Act
(B) The Water (Prevention and Control of Pollution) Act
(C) The Air (Prevention and Control of Pollution) Act
(D) The Noise (Prevention and Control of Pollution) Act
(E) The Environment (Protection) Act

115. Choose the correct combination of labelling of stomatal apparatus of dicot and monocot leaves



(A) a = epidermal cells, b = subsidiary cells
c = chloroplast, d = guard cells, e = stomatal aperture
(B) a = epidermal cells, b = guard cells
c = chloroplast, d = subsidiary cells, e = stomatal aperture
(C) a = epidermal cells, b = subsidiary cells
c = chloroplast, d = stomatal aperture, e = guard cells
(D) a = subsidiary cells, b = epidermal cells
c = chloroplast, d = stomatal aperture, e = guard cells
(E) a = guard cells, b = epidermal cells
c = stomatal aperture, d = subsidiary cells, e = chloroplast

116. An allergic reaction is initiated by antibodies of

(A) IgG Group
(B) IgM Group
(C) IgA Group
(D) IgD Group
(E) IgE Group

117. Genetic maps of chromosomes are based on the frequency of

(A) non-disjunction
(B) translocation
(C) dominance
(D) genetic recombination
(E) chromosomal aberration

118. Which of the following statements is / are not true?

a. In Urochordata, notochord is present only in larval tail.
b. In Cephalochordata, notochord extends from head to tail region.
c. Branchiostoma belongs to Hemichordata.
d. Only one Class of living members, Class Cyclostomata represents the Super Class Agnatha.

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

119. Match the following in column I with column II and choose the correct combination

Column I		Column II
a. Termination	-	1. Aminoacyl tRNA synthetase
b. Translation	-	2. Okazaki fragments
c. Transcription	-	3. GTP dependent release factor
d. DNA replication	-	4. RNA polymerase

(A) a – 2, b – 3, c – 1, d – 4
(B) a – 1, b – 4, c – 2, d – 3
(C) a – 3, b – 1, c – 4, d – 2
(D) a – 4, b – 2, c – 1, d – 3
(E) a – 2, b – 4, c – 1, d – 3

120. Match the following simple epithelial tissues in column I with their occurrence in column II and choose the correct combination from the options given

Column I	Column II
a. Squamous	1. Intestinal glands
b. Cuboidal	2. Trachea
c. Columnar	3. Ovary
d. Ciliated	4. Blood vessels
e. Pseudo stratified	5. Bronchioles

(A) a – 1, b – 2, c – 4, d – 3, e – 5
(B) a – 5, b – 4, c – 2, d – 1, e – 3
(C) a – 4, b – 5, c – 1, d – 2, e – 3
(D) a – 4, b – 3, c – 1, d – 2, e – 5
(E) a – 4, b – 3, c – 1, d – 5, e – 2
