

**Kerala Medical Entrance – 2005**  
**Biology**

1. The muscle band that remains unchanged during contraction and relaxation of the skeletal muscle is:

- A. I
- B. H
- C. A
- D. Z line
- E. H and Z line

**Ans: - C**

2. Vasopressin stimulates reabsorption of water and reduction of urine secretion. Hence vasopressin is otherwise called:

- A. Sinovial fluid
- B. Neurotransmitter
- C. Antidiuretic hormone
- D. Growth regulating substance
- E. None of the above

**Ans: C**

3. Match item in column A with those given in column B

- | A              | B                     |
|----------------|-----------------------|
| 1. ADH         | a. Pituitary          |
| 2. ACTH        | b. Mineralocorticoid  |
| 3. Aldosterone | c. Diabetes mellitus  |
| 4. Insulin     | d. Diabetes insipidus |
| 5. Adrenaline  | e. Vasodilator        |

- A. 1-a, 2-d, 3-b, 4-c, 5-e
- B. 1-d, 2-b, 3-a, 4-c, 5-e
- C. 1-d, 2-a, 3-b, 4-c, 5-e
- D. 1-d, 2-a, 3-c, 4-b, 5-e
- E. 1-d, 2-a, 3-b, 4-e, 5-c

**Ans: C**

4. Reflex action is controlled by:

- A. Sympathetic nervous system
- B. Autonomic nervous system
- C. Spinal cord
- D. Peripheral nervous system
- E. Carniosacral outflow

**Ans: C**

5. Hypothalamus does not control

- A. Hunger and satiety
- B. Thermoregulation
- C. Ibibido
- D. Creative thinking and consciousness
- E. Osmoregulation

**Ans: D**

6. Match the following human spinal nerves in column I with the number of pairs in column II and choose the correct options:

**Column I**

- a. Cervical nerves
- b. Thoracic nerves
- c. Lumbar nerves
- d. Coccygeal nerves

**Column II**

- a. 5 pairs
- b. 1 pair
- c. 12 pairs
- d. 8 pairs

- A. a = b; b = d; c = a ; d = c
- B. a = d; b = c; c = a; d = b
- C. a = c; b = a; c = b; d = d
- D. a = a; b = d; c = b; d = c
- E. a = d; b = a; c = b; d = c

**Ans: B**

7. A gland which gradually atrophies at the age of 14-16 due to the activities of sex gland is:

- A. Thyroid
- B. Parathyroid
- C. Pancreas
- D. Pineal
- E. Thymus

**Ans: E**

8. Rate of breathing is controlled by:

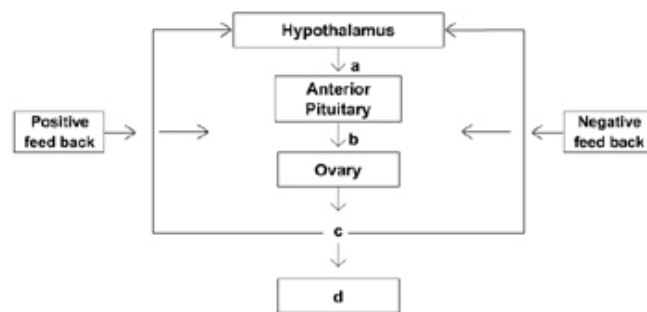
- A. The amount of freely available oxygen
- B. Carbon dioxide
- C. Muscular functions of the body
- D. Stress
- E. All the above

**Ans: Doubtful – E or B**

9. You are watching a horror movie and you notice your heart is beating fast and mouth is dry. It is because of:
- A. Fight and flight response
  - B. Autonomic nervous system
  - C. Sympathetic nervous system
  - D. Parasympathetic nervous system
  - E. Both A and C

**Ans: E**

10. Choose the correct combination of labelling the hormonal control of female reproductive system:



- A. a- GnRH, b – TSH, c –LTH, d- Uterus
- B. a – GnRH, b-LH/FSH, c-Estrogen or Progesterone, d-Uterus
- C. a – GnRH, b-STH, c-LH, d- Uterus
- D. a-GnRH, b-ACTH, c-LH, d-Uterus
- E. a-GnRH, b-LTH, c-Estrogen, d- Uterus

**Ans: B**

11. In sickle cell anaemia the glutamic acid is replaced by:

- A. Proline
- B. Alanine
- C. Serine
- D. Valine
- E. Glycine

**Ans: D**

12. In male's testes are contained in the scrotal sacs because:

- A. Other organs do not make space for the testes in the abdominal cavity
- B. Testes in the abdomen will hamper maturation of sperms
- C. It provides temperature that is slightly lower than body temperature required for formation of functional sperms
- D. It facilitates ejaculation
- E. Testes in the abdomen will accelerate maturation of sperms

**Ans: C**

13. The best HLA (Human leukocyte antigen) match for transplants in order of preference is

- A. Parent > sibling > twin > unrelated donor
- B. Sibling > twin > parent > unrelated donor
- C. Twin > unrelated donor > parent > sibling
- D. Twin > sibling > parent > unrelated donor
- E. Sibling > parent > twin > unrelated donor

**Ans: D**

14. Match the following with correct combination

**Column I**

- a. Hyaluronidase
- b. Corpus luteum
- c. Gastrulation
- d. Capacitation
- e. Colostrum

**Column II**

- 1. Acrosomal reaction
- 2. Morphogenetic movements
- 3. Progesterone
- 4. Mammary gland
- 5. Sperm activation

- A. a - 5, b-2, c - 4, d - 1, e - 3
- B. a - 1, b - 3, c - 2, d - 5, e - 4
- C. a - 3, b - 2, c - 5, d - 4, e - 1
- D. a - 1, b - 2, c - 3, d - 4, e - 5
- E. a - 4, b - 2, c - 5, d - 3, e - 1

**Ans: Doubtful - A or B**

15. Which of these is an *insitu* method of conservation?

- A. National park
- B. Botanical garden
- C. Tissue culture
- D. Genetic engineering
- E. Cryopreservation

**Ans: A**

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

Column I	Column II
a. Electrocardiography	1. To view within the body without cutting through overlying tissues
b. Endoscopy	2. A graphic recording of the electric activity of heart
c. MRI	3. A graphic recording of the electric activity of brain
d. Electroencephalography	4. A technique that gives anatomical images in multiple plains

- A. a = 1,      b = 3,      c = 4,      d = 2  
 B. a = 1,      b = 2,      c = 4,      d = 3  
 C. a = 2,      b = 3,      c = 4,      d = 1  
 D. a = 3,      b = 4,      c = 1,      d = 3  
 E. a = 2,      b = 1,      c = 4,      d = 3

**Ans: E**

17. Which one of the following is correctly matched?

- A. Frederick Griffith - discovered the phenomenon of transformation  
 B. Linus Pauling - isolated DNA for the first time  
 C. Francis Crick - proposed one gene one polypeptide hypothesis  
 D. George Beedle - proposed the concept of inborn errors  
 E. Jacob and Monod - proposed the wobble hypothesis

**Ans: A**

18. Match items given in column I with those given in column II

Column I	Column II
A. Rhinoceros	p. Bharatpur
B. Tiger Project in Karnataka	q. Tropical evergreen forest
C. Assemblage protection	r. Kaziranga
D. Silent Valley	s. National park
	t. Bandipur

- A. A = t,      B = r,      C = p,      D = s  
 B. A = q,      B = s,      C = r,      D = q  
 C. A = s,      B = r,      C = q,      D = t  
 D. A = r,      B = t,      C = p,      D = q  
 E. A = p,      B = q,      C = s,      D = r

**Ans: D**

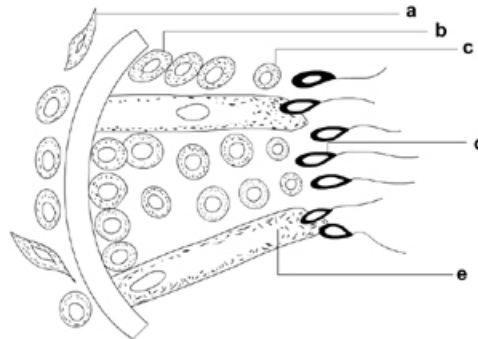
19. Match the items in column A with column B and choose the correct answers given below:

Column A	Column B
A. X-ray Radiography	1. Haematopoetic cells
B. Angioplasty	2. Antigen-antibody interaction
C. Leukemia	3. Wilhelm Roentgen
D. ELISA	4. Coronary atherosclerosis plaque

- A. A-3, B-1, C-2, D-4  
 B. A-3, B-4, C-2, D-1  
 C. A-3, B-4, C-1, D-2  
 D. A-3, B-1, C-4, D-2  
 E. A-3, B-2, C-4, D-1

**Ans: C**

20. Choose the correct combination of labelling of seminiferous tubule of testis



- A. a = sertoli cell; b = spermatogonium; c = spermatid;  
 d = interstitial cell; e = spermatozoa
- B. a = interstitial cell; b = spermatid; c = spermatogonium;  
 d = spermatozoa; e = sertoli cell
- C. a = interstitial cell; b = spermatid; c = spermatozoa;  
 d = spermatogonium; e = sertoli cell
- D. a = interstitial cell; b = spermatogonium; c = spermatozoa;  
 d = spermatid; e = sertoli cell
- E. a = interstitial cell; b = spermatogonium; c = spermatid;  
 d = spermatozoa; e = sertoli cell

**Ans: E**

21. Scientists were able to pinpoint the location of colour processing centers in the visual cortex of the brain by means of:

- A. PET
- B. NMR
- C. CT
- D. X-ray
- E. Ultrasound imaging

**Ans: A**

22. Pure fractions of cellular components can be isolated by:

- A. Chromatography
- B. Scanning electron microscopy
- C. X-ray diffraction
- D. Differential centrifugation
- E. Auto-radiography

**Ans: D**

23. Select the false statement.

- A. Pasteur prepared vaccine against anthrax
- B. Susruta samhita describes the classification of plants and animals
- C. Susruta specialized in rhinoplasty and ophthalmic surgery
- D. Pasteur provided experimental evidence in support of the theory of spontaneous generation
- E. Dhanvantari is regarded as the Father of Ancient Indian Medicine

**Ans: D**

24. Engler and Prantle published a phylogenetic system in the monograph

- A. Die Naturlichen Pflanzenfamilien
- B. Historia plantarum
- C. Species plantarum
- D. Genera plantarum
- E. Origin of species

**Ans: A**

25. Which one of the following is common to both prokaryotes and eukaryotes?

- A. Mitotic apparatus
- B. Histones
- C. Mitochondria
- D. Genetic code
- E. Endoplasmic reticulum

**Ans: D**

26. Vascular bundles are arranged in a ring in the members of family:

- A. Orchidaceae
- B. Iridaceae
- C. Euphorbiaceae
- D. Liliaceae
- E. Palmae

**Ans: C**

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

- a. Trimerous condition of floral whorl is characteristic of dicotyledons
- b. Adiantum is also called walking fern
- c. In gymnosperms the vascular system consists of xylem without vessels and phloem with companion cells
- d. Riccia and Marchantia are liverworts

- A. a – and b- are true and c – and d – are false
- B. a – and c – are true and b – and d – are false
- C. a – and d – are true and b – and c- are false
- D. b – and d – are true and a – and c – are false
- E. b – and c – are true and a – and d – are false

**Ans: D**



28. Match the following with correct combination:

Column I	Column II
a. Anthoceros	1. Alga
b. Adiantum	2. Hornwort
c. Sargassum	3. Gametophyte
d. Prothallus	4. Infrac
e. Asterales	5. Walking fern

- A. a-2, b-5, c-1, d-3, e-4
- B. a-5, b-4, c-3, d-2, e-1
- C. a-5, b-1, c-2, d-4, e-3
- D. a-3, b-2, c-1, d-5, e-4
- E. a-1, b-4, c-3, d-5, e-2

**Ans: A**

29. Identify in order the plants showing alternate, opposite and whorled phyllotaxy.

- A. China rose, Calotropis and Nerium
- B. China rose, Nerium and Calotropis
- C. Nerium, China rose and Calotropis
- D. Nerium, Calotropis and China rose
- E. Calotropis, Nerium and China rose

**Ans: A**

30. The cloves which are used in food preparation are

- A. Seeds
- B. Leaves
- C. Flower buds
- D. Stem tips
- E. Terminal buds

**Ans: C**

31. The pigments phycocyanin and phycoerythrin are present in:

- A. Bacillariophyceae
- B. Archaeobacteria
- C. Eubacteria
- D. Cyanobacteria
- E. Chlorophyceae

**Ans: D**

32. How many female flowers occur in a Cyathium?

- A. One
- B. Two
- C. Three
- D. Four
- E. Many

**Ans: A**

33. Pulvinus condition is seen in:

- A. Calotropis
- B. Ocimum
- C. Legume plants
- D. Alstonia
- E. Ficus

**Ans: C**

34. The receptacle is flattened at the top and bears numerous sessile flowers in centripetal order in:

- A. Cyathium
- B. Catkin
- C. Umbel
- D. Capitulum
- E. Verticillaster

**Ans: Doubtful – E or D**

35. Drupes are called stony fruits because they have

- A. Hard epi and mesocarp
- B. Hard mesocarp
- C. Hard meso and endocarp
- D. Hard epicarp
- E. Hard endocarp

**Ans: E**

36. Match the names of plants given under column I with the families to which they belong given under column II. Choose the answer, which gives the correct combinations of the alphabets

Column I	Column II
Plant name	Family name
A. Hibiscus rosasinensis	p. Poaceae
B. Oryza sativa	q. Malvaceae
C. Tridax procumbensis	r. Fabaceae
D. Crotalaria juncea	s. Liliaceae
E. Gloriosa superba	t. Asteraceae

- A. A = q,      B = t,      C = p,      D = s,      E = r  
 B. A = t,      B = p,      C = s,      D = q,      E = r  
 C. A = r,      B = s,      C = p,      D = r,      E = q  
 D. A = q,      B = p,      C = t,      D = r,      E = s  
 E. A = s,      B = p,      C = q,      D = s,      E = r

**Ans: D**

37. Which of the following feature is absent in the family Asteraceae?

- A. Cypsela fruit  
 B. Capitulum inflorescence  
 C. Hypogynous flowers  
 D. Syngenesious anthers  
 E. Pappus calyx

**Ans: C**

38. Casparian strip is made up of:

- A. Lignin  
 B. Pectin  
 C. Suberin  
 D. Cellulose  
 E. Starch

**Ans: C**

39. Which of the following are not characteristic feature of fabaceae?

- A. Tap root system, compound leaves and raceme inflorescence  
 B. Flowers actinomorphic, twisted aestivation and gamopetalous  
 C. Stamens ten, introrse, basifixed and ditheous  
 D. Monocarpellary, ovary superior and bent stigma  
 E. Fruit is legume

**Ans: B**

40. The phloem of Angiosperms differs from that of other vascular plants by the presence of

- A. Vessels
- B. Companion cells
- C. Tylosoides
- D. Albuminous cells
- E. Secretory cells

**Ans: B**

41. Fascicular, interfascicular and extrastelar cambium together constitute:

- A. Ground meristem
- B. Apical meristem
- C. Intercalary meristem
- D. Lateral meristem
- E. Primary meristem

**Ans: D**

42. Fat is stored in the plant cells in

- A. Lysosome
- B. Sphaerosome
- C. Microsome
- D. Peroxisome
- E. Macrophage

**Ans: B**

43. Which of the following is characteristic of phospholipids of plasma membrane?

- A. One non-polar head and two polar tails
- B. One polar head and two non-polar tails
- C. Two non-polar heads and one polar tail
- D. Two polar heads and one non-polar tail
- E. Two polar heads and two polar tails

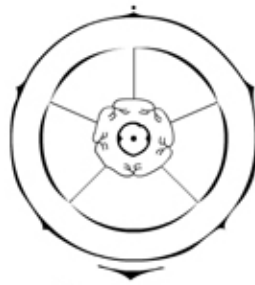
**Ans: B**

44. Which of the following is the unit of measurement of water potential?

- A. Watts
- B. Joule
- C. Pascal
- D. Litre
- E. Cubic centimeter

**Ans: C**

45. Three floral diagrams are given here. Their respective families are assigned in the answer key. Find out the families to which these diagrams belong to



$\oplus \odot K_{\infty} P_{5+5} C_{(5)} A_{(5)} G_{(2)}$



$\oplus \odot K_{(5)} C_{(5)} A_{(5)} G_{(2)}$



$\oplus \odot K_{2+2} C_4 A_{2+4} G_{(2)}$

- |                    |                 |                  |
|--------------------|-----------------|------------------|
| A. a = Liliaceae,  | b = Asteraceae, | c = Solanaceae   |
| B. a = Asteraceae, | b = Solanaceae, | c = Brassicaceae |
| C. a = Asteraceae, | b = Fabaceae,   | c = Poaceae      |
| D. a = Poaceae,    | b = Solanaceae, | c = Asteraceae   |
| E. a = Solanaceae, | b = Poaceae,    | c = Fabaceae     |

**Ans: B**

46. Read the following statements and identify the correct options given:

- In prokaryotic cell, the nuclear membrane, chloroplast, mitochondria, microtubules and different kinds of pili are absent
- In eukaryotic cell, the nuclear membrane, chloroplast, mitochondria, microtubules and pili are present
- In prokaryotic cell the ribosome is of 70S type and in mitochondria of eukaryotic animal cell the ribosome is of 80S type

- a – and b – are wrong and c – is correct
- a – is correct and b - and c – are wrong
- a – and b are correct and c is wrong
- a – and c – are correct and b – is wrong
- a, b and c are wrong

**Ans: A**

47. In which of the following UV radiation with a filter is provided in order to protect one's own eyes?

- Phase contrast microscopy
- Fluorescent microscopy
- Dark field microscopy
- Electron microscopy
- Differential interference contrast microscopy

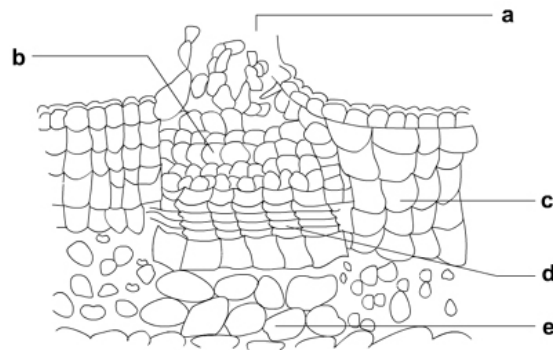
**Ans: B**

48. The number of NADPH molecules that are used during the conversion of carbon dioxide into one molecule of glucose is:

- A. 1
- B. 4
- C. 6
- D. 8
- E. 12

**Ans: E**

49. Choose the correct combination of labelling a lenticel:



- A. a = pore, b = secondary cortex, c = cork cambium, d = cork, e = complimentary cells
- B. a = pore, b = cork cambium, c = secondary cortex, d = cork, e = complimentary cells
- C. a = pore, b = cork, c = complimentary cells, d = cork cambium, e = secondary cortex
- D. a = pore, b = complimentary cells, c = cork, d = cork cambium, e = secondary cortex
- E. a = pore, b = cork, c = cork cambium, d = secondary cortex, e = complimentary cells

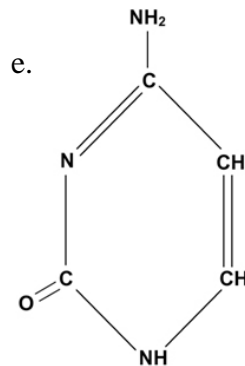
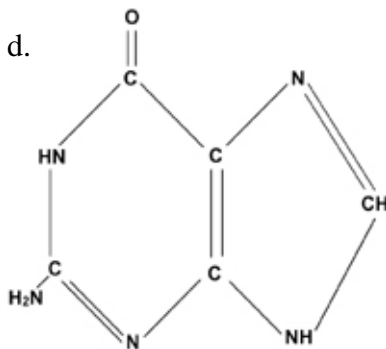
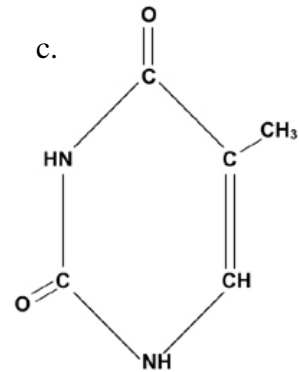
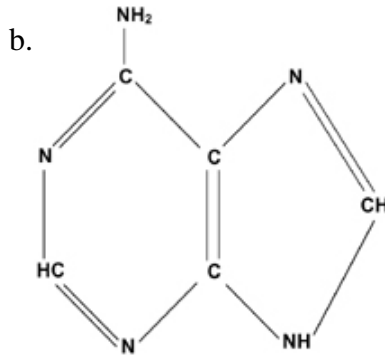
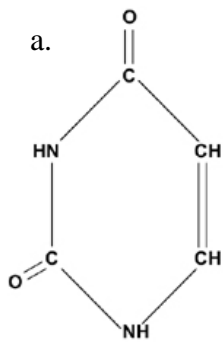
**Ans: D**

50. The skull of frog is:

- A. Tricondylic
- B. Monocondylic
- C. Dicondylic
- D. Non-condylic
- E. Polycondylic

**Ans: C**

51. The following diagrams represent the nitrogenous bases of nucleic acid molecules. Identify the correct combination



- A. a = Uracil;    b = Adenine,    c = Thymine,    d = Guanine,    e = Cytosine  
 B. a = Uracil,    b = Guanine,    c = Cytosine,    d = Adenine,    e = Thymine  
 C. a = Thymine,    b = Adenine,    c = Cytosine,    d = Guanine,    e = Uracil  
 D. a = Uracil,    b = Guanine,    c = Uracil,    d = Adenine,    e = Cytosine  
 E. a = Thymine,    b = Guanine,    c = Uracil,    d = Adenine,    e = Cytosine

**Ans: A**

52. DNA duplication takes place during

- A. Cell division phase  
 B. Entire interphase  
 C. Only in G<sub>1</sub> phase  
 D. Only in G<sub>2</sub> phase  
 E. Only in S phase

**Ans: E**

53. Jacob and Monod named some enzymes as allosteric whose activity is regulated by:

- A. End product
- B. Substrate
- C. A byproduct
- D. Coenzyme
- E. Cofactor

**Ans: Doubtful** – C or A

54. Match the following and choose the correct combination from the option given

Cell organelle	Function
a. Endoplasmic reticulum	1. Take part in cellular respiration
b. Free ribosome	2. Take part in osmoregulation and excretion
c. Mitochondrion	3. Synthesis of lipids
d. Contractile vacuole	4. Synthesize non-secretory proteins

- A. a = 3,            b = 4,            c = 1,            d = 2
- B. a = 1,            b = 2,            c = 4,            d = 3
- C. a = 3,            b = 4,            c = 2,            d = 1
- D. a = 3,            b = 2,            c = 1,            d = 4
- E. a = 2,            b = 1,            c = 3,            d = 4

**Ans: A**

55. If R, Q is 0.6 in a respiratory metabolism, it would mean that:

- A. Carbohydrates are used as respiratory substrate
- B. Organic acids are used as respiratory substrate
- C. The oxidation of the respiratory substrate consumed more oxygen than the amount of CO<sub>2</sub> released
- D. The oxidation of the respiratory substrate consumed less oxygen than the amount of CO<sub>2</sub> released
- E. The reaction is anaerobic

**Ans: Doubtful** – D or C

56. Pick out the correct statements:

- a. Synapsis of homologous chromosomes takes place during prophase I of meiosis
- b. Division of centromeres takes place during anaphase I of meiosis
- c. Spindle fibres disappear completely in telophase of mitosis
- d. Nucleoli reappear at telophase I of meiosis

- A. a –only            B. c – only            C. a and b only            D. a, c and d only
- E. a and c only

**Ans: Doubtful** – E or D



57. Single turn of citric acid cycle yields:

- A. 2 FADH<sub>2</sub>, 2NADH<sub>2</sub>, 2GTP
- B. 1FADH<sub>2</sub>, 2NADH<sub>2</sub>, 1GTP
- C. 1FADH<sub>2</sub>, 3NADH<sub>2</sub>, 1GTP
- D. 1FADH<sub>2</sub>, 4NADH<sub>2</sub>, 1GTP
- E. 1FADH<sub>2</sub>, 1NADH<sub>2</sub>, 2GTP

**Ans: C**

58. Match the following:

Column I	Column II
1. Hypotonic	a. Water
2. Hypertonic	b. Sucrose
3. Solute	c. Lower tonicity
4. Solvent	d. Higher tonicity

- A. 1 - a, 2 - b, 3 - c, 4 - d
- B. 1 - d, 2 - b, 3 - a, 4 - c
- C. 1 - c, 2 - d, 3 - b, 4 - a
- D. 1 - c, 2 - a, 3 - b, 4 - d
- E. 1 - d, 2 - b, 3 - c, 4 - a

**Ans: C**

59. Which of the following gene clusters in bacteria is responsible for nitrogen fixation?

- A. nod, nif, fix
- B. nod, ndf, nfx
- C. nod, nix, nfx
- D. ndx, nif, fix
- E. ndx, nif, nix

**Ans: A**

60. Match the words in column I with the phrases in column II. Choose the answer which gives the correct combination of the alphabets of the columns:

Column I	Column II
A. Magnesium	p. Found in some amino acids
B. Sulphur	q. Not important for plants
C. Iodine	r. Structural component of chlorophyll
D. Manganese	s. Component of sugar
	t. Required for enzyme activity

- A. A = r,            B = s,            C = q,            D = p
- B. A = r,            B = p,            C = q,            D = s
- C. A = r,            B = p,            C = q,            D = t
- D. A = s,            B = r,            C = p,            D = t
- E. A = s,            B = q,            C = p,            D = s

**Ans: C**

61. Choose the correct statement:

- A. The C<sub>4</sub> plants do not have Rubisco
- B. Carboxylation of RuBP leads to the formation of PGA and Phosphoglycolate
- C. Carboxylation of phosphoenol pyruvate results in the formation of C<sub>4</sub> acids
- D. Decarboxylation of C<sub>4</sub> acids occur in the mesophyll cells
- E. In CAM plants Calvin's cycle reactions occur during night

**Ans: C**

62. Match the name of the scientists given under column I with their important contributions given under column II. Choose the answer which gives correct combination of the alphabets

Column I	Column II
A. Peter Mitchell	p. Law of limiting factor
B. Blackmann	q. Dark reaction
C. Daniel Arnon	r. Photosynthetic phosphorylation
D. Melvin Calvin	s. Chemiosmotic hypothesis
	t. Mass flow hypothesis

- A. A = s   B = p   C = r   D = q
- B. A = q   B = p   C = r   D = s
- C. A = r   B = q   C = p   D = s
- D. A = p   B = s   C = q   D = r
- E. A = s   B = r   C = q   D = p

**Ans: A**

63. Match the following with correct combination

- |                        |                     |
|------------------------|---------------------|
| a. Carboxylation       | 1. Oxygen evolution |
| b. Phosphorylation     | 2. Photorespiration |
| c. Photolysis of water | 3. Rubisco          |
| d. Phosphoglycolate    | 4. Chemosynthesis   |
| e. Nitrosomonas        | 5. ATP              |
- A. a-1   b-2   c-3   d-4   e-5
  - B. a-3   b-5   c-1   d-2   e-4
  - C. a-2   b-3   c-5   d-4   e-1
  - D. a-1   b-3   c-4   d-2   e-5
  - E. a-5   b-4   c-3   d-2   e-1

**Ans: B**

64. Which of the following statement is/are true?

- A. Endothecium lies behind epidermis
- B. Fusion of egg with male gamete is called apogamy
- C. Synergids are haploid
- D. The point at which funicle touches the ovule is raphe

- A. b and d only
- B. a and b only
- C. a and d only
- D. a and c only
- E. b and c only

**Ans: D**

65. The stress hormone that helps plants respond to drought is:

- A. Auxins
- B. Abscisic acid
- C. Cytokinin
- D. Ethylene
- E. Gibberellins

**Ans: B**

66. Match the growth regulators in column I with the processes in column II and choose the correct combination from the options given

Column I	Column II
A. Auxin	1. Colouring test in lemon
B. Gibberellin	2. Cell division test in plants
C. Cytokinin	3. Avena curvature test
D. Ethylene	4. Dwarf corn test

- A. a = 1   b = 4   c = 2   d = 3
- B. a = 4   b = 3   c = 1   d = 2
- C. a = 2   b = 1   c = 4   d = 3
- D. a = 4   b = 3   c = 1   d = 2
- E. a = 3   b = 4   c = 2   d = 1

**Ans: E**

67. In Electron Transport System (ETS) which of the following cytochrome reacts with oxygen?

- A. Cyt b   B. Cyt a<sub>3</sub>   C. Cyt b<sub>6</sub>   D. Cyt f   E. Cyt b<sub>3</sub>

**Ans: B**

68. a – Cytokinins suppress the synthesis of chlorophyll  
 b – Auxins control apical dominance  
 c – Gibberellins promote shoot elongation  
 d – Abscisic acid enabling seeds to withstand desiccation  
 Which of the above statements are correct?

- A. a and b only
- B. b and c only
- C. a and c only
- D. b, c and d only
- E. c and d only

**Ans: D**

69. The process in which haploid embryo is formed from haploid egg without fertilization is called

- A. Apospory
- B. Agamospermy
- C. Apogamy
- D. Vegetative reproduction
- E. Adventive polyembryony

**Ans: B**

70. Different types of interactions and the nature of interactions between species A and B are given in column I and II respectively. Choose the correct answer from the answer key where they are matched

Column I	Column II
a. Mutualism	p. Beneficial to A, no effect for B
b. Competition	q. Beneficial to both A and B
c. Parasitism	r. Beneficial to A and inhibitory for B
d. Predation	s. Beneficial to A and harmful to B
e. Commensalism	t. Harmful to both A and B

- A. a = t    b = s    c = p    d = q    e = r
- B. a = p    b = r    c = q    d = t    e = s
- C. a = q    b = t    c = s    d = r    e = p
- D. a = r    b = p    c = q    d = s    e = t
- E. a = s    b = q    c = t    d = p    e = r

**Ans: C**

71. In autogenic succession:

- A. Early and continued dominance of autotrophic organism takes place like green plants
- B. Replacement of existing communities cause largely by any other external condition
- C. Early dominance of heterotrophs takes place such as bacteria, fungi and other animals
- D. Community itself modifies its own environment thus causing its own replacement by new communities
- E. Starts with previously built up substrata with already existing matter

**Ans: D**

72. Which of the following are correctly matched?

- |                                 |   |                           |
|---------------------------------|---|---------------------------|
| 1. Arsenic poisoning            | - | black-foot disease        |
| 2. Secondary effluent treatment | - | biological process        |
| 3. Pyrolysis                    | - | solid soil waste disposal |
| 4. Tubifex                      | - | water pollution indicator |
| 5. Biomagnification             | - | degradable pollutants     |

- A. 1, 2, 3 and 5
- B. 1, 3, 4 and 5
- C. 2, 3, 4 and 5
- D. 1, 2, 4 and 5
- E. 1, 2, 3 and 4

**Ans: E**

73. Which of the following is wrongly matched?

- |                          |   |                            |
|--------------------------|---|----------------------------|
| A. Humus                 | - | Abiotic component          |
| B. Rhizobium             | - | Free-living nitrogen fixer |
| C. Phosphorous cycle     | - | Sedimentary                |
| D. <i>Shorea robusta</i> | - | Tropical deciduous forest  |
| E. <i>Cedrus deodara</i> | - | Coniferous forest          |

**Ans: Doubtful** – A or B

74. CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and CFCs are called greenhouse gases, because they can absorb:

- A. Ultraviolet radiation
- B. Long wave infrared radiation
- C. Visible light radiation
- D. X-rays radiation
- E.  $\gamma$  - rays radiation

**Ans: B**

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

Column I	Column II
a. Anabaena	1. Bio herbicide
b. Nicotine	2. Insect hormones
c. Phytophthora palmivora	3. Natural insecticide
d. Pheromones	4. Biofertilizer

- A. a = 4   b = 3   c = 1   d = 2
- B. a = 2   b = 1   c = 3   d = 4
- C. a = 3   b = 1   c = 2   d = 4
- D. a = 1   b = 2   c = 3   d = 4
- E. a = 3   b = 2   c = 4   d = 1

**Ans: A**

76. In plant succession when climax is reached, the net productivity:

- A. Continues to increase
- B. Becomes halved
- C. Becomes stable
- D. Becomes zero
- E. Becomes 10%

**Ans: C**

77. Which of the following is wrongly matched?

- A. Temperature zone - 20 – 40° latitude
- B. Hypolimnion - thermal stratification in lakes
- C. Ozone layer - stratosphere
- D. Profundal zone - dark zone
- E. Ectotherms - cold-blooded animals

**Ans: A**

78. The transition zone between two communities is known as:

- A. Ecotone
- B. Keystone
- C. Edge effect
- D. Critical link species
- E. Edge species

**Ans: A**

79. The species of plants that play a vital role in controlling the relative abundance of other species in a community are called:

- A. Edge species
- B. Link species
- C. Keystone species
- D. Pioneer species
- E. Successional species

**Ans: C**

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

Column I	Column II
a – DDT	1. CO, CO <sub>2</sub>
b – PAN	2. Smog
c – Acid rain	3. Biological magnification
d – Global warming	4. SO <sub>2</sub>

- A. a = 4   b = 3   c = 2   d = 1
- B. a = 1   b = 3   c = 2   d = 4
- C. a = 2   b = 3   c = 4   d = 1
- D. a = 3   b = 2   c = 4   d = 1
- E. a = 3   b = 4   c = 1   d = 2

**Ans: D**

81. Two species, which are morphologically almost identical, but they do not interbreed. Such species are called:

- A. Evolutionary species
- B. Sibling species
- C. Polytypic species
- D. Evolutionary trend
- E. Race

**Ans: B**

82. Select the pair that does not match

- A. Species are not immutable - Lamarck
- B. Allopatric - Separated by space
- C. Darwin's finches - Unique to Galapagos
- D. Hugo de Vries - Evolution is discontinuous
- E. Coacervates - Aggregates of organic compounds bound by an organic membrane

**Ans: Doubtful – A or E**

83. Which of the following is not properly matched?

- A. Explant - excised plant part used for callus formation
- B. Cytokinins - root initiation in callus
- C. Somatic embryo - embryo produced from a vegetative cell
- D. Anther culture - haploid plants
- E. Callus - undifferentiated mass of cells

**Ans: B**

84. Both in callus and suspension cultures commonly used auxin is

- A. Naphthalene Acetic acid
- B. Indole – 3 – Butyric acid
- C. 2,4,5 – Trichlorophenoxy Acetic acid
- D. Dichlorophenoxy Acetic acid (2, 4-D)
- E. Abscisic acid

**Ans: D**

85. Which of the following statements is false?

- A. Male round worm is smaller than female
- B. Earthworms are hermaphrodites
- C. Echinoderms are protostomous coelomates
- D. Human teeth are anatomically comparable to scales of shark
- E. Hair is a derivative of skin

**Ans: C**

86. Match the following column I with column II

Column I	Column II
1. Darwin	a. Use and disuse theory
2. Lamarck	b. Origin of species
3. Hugo de Vries	c. Origin of life
4. A.I. Oparin	d. Mutation theory

- A. 1 – a 2 – b 3 – c 4 – d
- B. 1 – b 2 – c 3 – d 4 – a
- C. 1 – b 2 – a 3 – c 4 – d
- D. 1 – d 2 – a 3 – b 4 – c
- E. 1 – b 2 – a 3 – d 4 – c

**Ans: E**



87. 'Triploblastic, unsegmented, acoelomate exhibiting bilateral symmetry and reproducing both asexually and sexually, with some parasitic forms'. The above description is characteristic of the phylum:

- A. Annelida
- B. Ctenophora
- C. Cnidaria
- D. Porifera
- E. Platyhelminthes

**Ans: E**

88. Match the following column I with column II and choose the correct combination from the options given

Column I	Column II
a. Earthworm	1. Gizzard
b. Cockroach	2. Caecum
c. Frog	3. Clitellum
d. Rat	4. Cloaca

- A. a = 1   b = 2   c = 4   d = 3
- B. a = 3   b = 1   c = 4   d = 2
- C. a = 2   b = 1   c = 3   d = 4
- D. a = 3   b = 1   c = 2   d = 4
- E. a = 1   b = 3   c = 4   d = 2

**Ans: B**

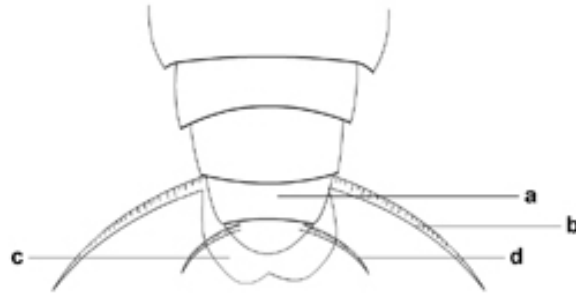
89. Match item in column A with those given in column B

Column A	Column B
a. Limbless reptile	1. Lamprey
b. Jawless vertebrate	2. Salamander
c. Amphibian	3. Snake
d. Cartilaginous fish	4. Shark
e. Flightless bird	5. Ostrich

- A. a-1,   b-2,   c-3,   d-4,   e-5
- B. a-2,   b-1,   c-3,   d-4,   e-5
- C. a-3,   b-1,   c-2,   d-4,   e-5
- D. a-4,   b-2,   c-3,   d-1,   e-5
- E. a-5,   b-2,   c-3,   d-4,   e-1

**Ans: C**

90. The diagram represents the reproductive organ of male cockroach. Choose the correct combination of labelling



- A. a - 8<sup>th</sup> Sternum,      b - Anal Cercus,      c - 10<sup>th</sup> Tergum,      d - Anal style  
 B. a - 10<sup>th</sup> Tergum,      b - Anal Cercus,      c - Anal style,      d - 8<sup>th</sup> Sternum  
 C. a - Anal style,      b - Anal Cercus,      c - 10<sup>th</sup> Tergum,      d - 8<sup>th</sup> Sternum  
 D. a - 8<sup>th</sup> Sternum,      b - Anal style Cercus,      c - 10<sup>th</sup> Tergum,      d - Anal Cercus  
 E. a - Anal Cercus,      b - 8<sup>th</sup> Sternum,      c - 10<sup>th</sup> Tergum,      d - Anal style

**Ans: A**

91. Dr. Khorana and his colleagues synthesized an RNA molecule with repeating sequence of UG N bases (UG UG UG UG UG UG). It produced a tetrapeptide with alternating sequence of cysteine and valine. It proves that codons for cysteine and valine is:

- A. UGU and GUU  
 B. UGU and GUG  
 C. UUG and GGU  
 D. GUG and UGU  
 E. GUU and UGU

**Ans:**

92. Match the items in column A with column B and choose the correct answers given below:

Column A	Column B
1. Neuron	a. Ossein
2. Bone matrix	b. Nissl bodies
3. RBC of man	c. Antibodies
4. Lymphocytes	d. Non-nucleated

- A. 1 -d    2 -b    3 -c    and    4 -a  
 B. 1 -d    2 -a    3 -c    and    4 -b  
 C. 1 -d    2 -b    3 -a    and    4 -c  
 D. 1 -b    2 -a    3 -d    and    4 -c  
 E. 1 -b    2 -d    3 -a    and    4 -c

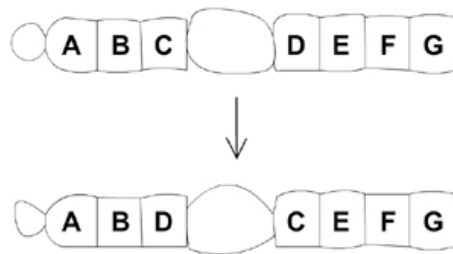
**Ans: D**

93. Inter-vertebral disc consists of a shock absorber connective tissue known as:

- A. Hyaline cartilage
- B. Elastic cartilage
- C. Fibro cartilage
- D. Reticulo cartilage
- E. Calcified cartilage

**Ans: C**

94. The type of chromosomal aberration indicated in the diagram shows:



- A. Interstitial translocation
- B. Reciprocal translocation
- C. Pericentric inversion
- D. Paracentric inversion
- E. Interstitial deletion

**Ans: C**

95. Some of the inhibitors of bacterial protein synthesis and their effect are listed in column I and column II below. Match them and choose the correct option from answer key:

Column I	Column II
a. Chloramphenicol	p. inhibits binding of aminoacyl tRNA to ribosome
b. Erythromycin	q. inhibits interaction between tRNA and mRNA
c. Neomycin	r. inhibits initiation of translation
d. Streptomycin	s. inhibits peptidyl transferase activity
e. Tetracycline	t. inhibits translocation of mRNA along ribosomes

- A. a – p    b – q    c – r    d – t    e – s
- B. a – r    b – p    c – t    d – s    e – q
- C. a – q    b – r    c – s    d – p    e – t
- D. a – s    b – t    c – q    d – r    e – p
- E. a – t    b – s    c – p    d – q    e – r

**Ans: D**

96. Blackening of urine when exposed to air is a metabolic disorder in human beings. This is due to:

- A. Phenylalanine
- B. Tyrosine
- C. Valine replacing glutamine
- D. Glutamine replacing valine
- E. Homogentisic acid

**Ans: E**

97. Phenylketonuria is a genetic disorder of

- A. Trisomic condition
- B. Monosomic condition
- C. Autosomal dominant gene
- D. Autosomal recessive gene
- E. X-linked

**Ans: D**

98. In a given DNA segment ATG ACC AGG ACC CCA ACA, the first base gets mutated. The effect of this on coding by this DNA segment will result in

- A. Complete change in the type as well as sequence of amino acids
- B. Change in the first amino acid only
- C. No change in the sequence
- D. One amino acid less in the protein
- E. No coding

**Ans: B**

99. Which of the following is incorrectly paired?

- A. Sry gene - X chromosome
- B.  $2n - 2$  - Nullisomic
- C. Nucleoid - Prokaryote
- D. Polytene chromosome - Drosophila
- E. Trisomy - Down's syndrome

**Ans: A**

100. The Barr body is observed in

- A. Basophils of male
- B. Neutrophil of female
- C. Basophil of female
- D. Eosinophils
- E. Neutrophils of male

**Ans: B**

101. Match the following and choose the correct combination from the options given:

Column I	Column II
a. <i>Escherichia Coli</i>	1. nif gene
b. <i>Rhizobium meliloti</i>	2. Digestive hydrocarbons of crude oil
c. <i>Bacillus thuringiensis</i>	3. Human insulin production
d. <i>Pseudomonas putida</i>	4. Biocontrol of fungal disease
	5. Biodegradable insecticide

- A. a = 3   b = 1   c = 5   d = 4
- B. a = 1   b = 2   c = 3   d = 4
- C. a = 2   b = 1   c = 3   d = 4
- D. a = 4   b = 3   c = 1   d = 2
- E. a = 3   b = 1   c = 5   d = 2

**Ans: E**

102. Choose the correct statement with reference to 'Dolly':

- A. She was created by taking nucleus from unfertilized eggs and cytoplasm from unfertilized eggs
- B. She was created by taking nucleus from udder cells and cytoplasm from unfertilized eggs
- C. She was created by taking cytoplasm from udder cell and nucleus from unfertilized egg
- D. She was created by taking cytoplasm from udder cell and nucleus from fertilized egg
- E. She was created inside the test tube

**Ans: B**

103. Neoteny refers to:

- A. Development of gonads
- B. Pre-adult animal
- C. Metamorphosis
- D. Retention of larval or embryonic trait in the adult body
- E. Precocious development

**Ans: D**

104. In earthworm the dorsal wall of the intestine from the 26<sup>th</sup> segment to 95<sup>th</sup> segment forms a median internal fold called:

- A. Trochophore
- B. Typhlosole
- C. Clitellum
- D. Trachea
- E. Nephridium

**Ans: B**

105. Find the incorrect statement

- A. Gene therapy is a genetic engineering technique used to treat disease at molecular level by replacing defective genes with normal genes
- B. Calcitonin is a medically useful recombinant product in the treatment of infertility
- C. Bt toxin is biodegradable insecticide obtained from *Bacillus thuringiensis*
- D. Trichoderma sp. is a biocontrol agent for fungal disease of plants
- E. Totipotency is the potential ability of a cell to develop into a complete plant

**Ans: B**

106. Match the following nutritional/vitamin deficiencies in column I with the causes/deficiencies in column II and choose the correct option from the answer key

Column I	Column II
a. Kwashiorkor	p. Iron
b. General anaemia	q. Menadione
c. Dermatitis	r. Protein
d. Marasmus	s. Pyridoxine
e. Bleeding	t. Biotin

- A. a = p   b = t   c = q   d = r   e = s
- B. a = t   b = q   c = r   d = s   e = p
- C. a = q   b = r   c = s   d = p   e = t
- D. a = r   b = p   c = t   d = s   e = q
- E. a = r   b = s   c = p   d = t   e = q

**Ans: D**

107. Match the disorders given in column I with symptoms under column II. Choose the answer which gives the correct combination of alphabets with numbers

Column I	Column II
a. Asthma	1. Inflammation of nasal tract
b. Bronchitis	2. Spasm of tracheal muscle
c. Rhinitis	3. Fully blown out alveoli
d. Emphysema	4. Inflammation of bronchi
	5. Cough with blood stained sputum

- A. a = 4   b = 2   c = 5   d = 1  
 B. a = 5   b = 3   c = 2   d = 1  
 C. a = 3   b = 1   c = 5   d = 4  
 D. a = 2   b = 4   c = 1   d = 3  
 E. a = 3   b = 1   c = 4   d = 2

**Ans: D**

108. Which of the following statements are wrong?

- a. Leucocytes disintegrate in the spleen and liver  
 b. RBC, WBC and blood platelets are produced by bone marrow  
 c. Neutrophils bring about destruction and detoxification of toxins of protein origin  
 d. The important function of lymphocytes is to produce antibodies

- A. a and b only  
 B. a and d only  
 C. a and c only  
 D. b and c only  
 E. b and d only

**Ans: C**

109. A list of animals is given below. Identify the animals with open circulatory system and choose the correct answer.

- a. Ascidia                      b. Cockroach                      c. Earthworm  
 d. Prawn                        e. Silverfish                        f. Snail                                g. Squid

- A. b, d, f  
 B. a, b, d, f  
 C. c, d, e, g  
 D. b, d, e, f  
 E. a, b, d, f, g

**Ans: D**

110. The correct pathway for the synthesis of skin pigment is:

- A. Tyrosine - Melanin - Dopaquinone - Dopa
- B. Tyrosine - Dopa - Dopaquinone - Melanin
- C. Dopa - Tyrosine - Dopaquinone - Melanin
- D. Tyrosine - Dopa - Melanin - Dopaquinone
- E. Tyrosine - Dopaquinone- Dopa - Melanin

**Ans: B**

111. In the lac operon, the structural genes are switched off when,

- A. Repressor binds to the operator
- B. Repressor binds to the promotor
- C. Repressor binds to the regulator
- D. Repressor binds to the inducer
- E. Repressor binds to the allolactose

**Ans: A**

112. Rhythmic heartbeat is maintained by a highly specialized excitatory and conductive system. The correct sequence of events will be

- A. Atrio-ventricular node – bundle of His – Sino-atrial node – network of Purkinje fibres
- B. Network of Purkinje fibres – Atrio-ventricular node – Sino-atrial node – bundle of His
- C. Atrio-ventricular node – Sino-atrial node – bundle of His – Purkinje fibres
- D. Sino-atrial node – Atrio-ventricular node – bundle of His – Purkinje fibres
- E. Sino-atrial node – Atrio-ventricular node – Purkinje fibres – bundle of His

**Ans: D**

113. Juxta glomerular cells of renal cortex synthesizes an enzyme called

- A. ADH
- B. Oxytocin
- C. Renin
- D. Urochrome
- E. Glucocorticoids

**Ans: C**



114. What happens when the pacemaker is non-functional?

- A. Only the auricles will contract rhythmically
- B. The cardiac muscles do not contract in a coordinated manner rhythmically
- C. Only ventricles will contract rhythmically
- D. Cardiac muscle will contract in a coordinated manner rhythmically
- E. Auricles and ventricles contract simultaneously

**Ans: B**

115. Okazaki fragments are joined in a correct sequence by,

- A. DNA polymerase I
- B. DNA ligase
- C. RNA polymerase
- D. Primase
- E. Helicase

**Ans: B**

116. In *Drosophila*, gene for white-eye mutation is also responsible for depigmentation of body parts. Thus a gene that controls several phenotypes is called:

- A. Oncogene
- B. Epistatic gene
- C. Hypostatic gene
- D. Pleiotropic gene
- E. Sex-linked gene

**Ans: D**

117. Which one of the following techniques is employed in human genetic counselling?

- A. Serological technique
- B. Polyploidy
- C. Pedigree analysis
- D. Genetic engineering
- E. Amniocentesis

**Ans: C**

118. Which of the following statements is/are true?

- a. Urine is hypertonic in distal convoluted tubule
- b. When the urine passes into the collecting tubule, it becomes hypotonic
- c. Urine is isotonic in proximal convoluted tubule
- d. Urine becomes more and more hypotonic as it passes through the Henle's loop

- A. a and d only
- B. a, b and c only
- C. b and c only
- D. c only
- E. a only

**Ans: D**

119. Match the excretory functions in section I with the parts of the excretory system in section II. Choose the correct combination from among the answers given

<b>Section I (Function)</b>	<b>Section II (Parts of Excretory systems)</b>
1. Ultra filtration	a. Henle's loop
2. Concentration of urine	b. Ureter
3. Transport of urine	c. Urinary bladder
4. Storage of urine	d. Malpighian corpuscle
	e. Proximal convoluted tubule

- A. 1 = d 2 = a 3 = b 4 = c
- B. 1 = d 2 = c 3 = b 4 = a
- C. 1 = e 2 = d 3 = a 4 = c
- D. 1 = e 2 = d 3 = a 4 = b
- E. 1 = d 2 = a 3 = c 4 = b

**Ans: A**

120. Which of the following is not paired correctly?

- A. Myxoedema - Swollen facial tissues
- B. Cretinism - Mentally retarded
- C. Grave's disease- Exophthalmos
- D. Parathyroid - Tetany
- E. Insulin - Raise blood glucose

**Ans: E**