BIOLOGY

BOOKS - MTG BIOLOGY (HINGLISH)

TEST PAPER

Test Paper 1

1. Which of the following statements is correct ?

A. Round worms (aschelminthes) are pseudocoelomates

B. Molluscs are acoelomates

C. Insects are pseudocoelomates

D. Flatworms (platyhelminthes) are coelomates

Answer: A

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2. Which of the following matches is correct ?

A. Cockroach - Crustacea

B. Pila - Pelecypoda

C. Spider - Arachnida

D. Unio - Gastropoda

Answer: C

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3. The type of epithelial cells which line the inner surface of Fallopian tubes, bronchioles and small bronchi are known as

A. squamous epthelium

B. ciliated epithelium

C. columnar epithelium

D. cubical epithelium

Answer: B

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4. In order for the blood to flow right atrium to left ventricle in mammalian heart, it must flow through

A. right ventricle, pulmonary arteries, lungs, pulmonary veins, left atrium

B. right ventricle, pulmonary veins, lungs, pulmonary arteries, left atrium

C. right ventricle, right atrium, lungs, pulmonary veins, left atrium

D. right ventricle,system aorta, lungs, pulmonary veins, left atrium

Answer: A

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5. Which one of the following organisms is correctly matched with its excretory organs?

A. Humans - Kidneys, sebaceous gland and tear glands

B. Earthworm - Pharyngeal, integumentary and septal glands

C. Cockroach - Malpighian tubules and enteric caeca

D. Frog - Kidneys, skin and buccal epithelium

Answer: B

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6. Read the following statements and select the correct option

Statement 1 : When the urine moves through the descending limb, it becomes hypertonic to blood plasma and as it passes through the ascending limb of Henl's loop it becomes hypotonic to blood plasma

Statement : The decending limb is permeable to sodium ions, while the ascending limb is impermeable to sodium ions

A. Both statement 1 and 2 are correct and statement 2 is the correct explanation of statement 1

B. Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1

C. Statement 1 is correct but statement 2 is incorrect

D. Both statements 1 and 2 are incorrect

Answer: C

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7. Which of the following parts of brain constitute the brain stem ?

A. Midbrain and hindbrain

B. Hindbrain and forebrain

C. Forebrain and midbrain

D. Forebrain only

Answer: A

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8. The innermost layer of the humen eye is

A. choroid

B. cornea

C. sclera

D. retina

Answer: D

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9. Select the correct mathcing of a hormone, its source and function

A.

Hormone	Source	Function
Vesopressin	Posterior pituitary	Increase loss of water through ur

B.

Hormone	Source	Function
Norepinephrine	Adrenal medulla	Increase heart beat,rate of rep

C.

Hormone	Source	Function
Glucagon	Beta-cells of lslets of Langerhans	Stimulates glycogen

D.

Hormone	Source	Function
Prolactin	Posterior pituitary	Regulates growth of mammary g

Answer: B

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10. Select the correct sequence of events that occur during the delivery of

O_2 from blood to tissue

P : Absoption of CO_2 by the blood

Q : Reaction of absorbed CO_2 with H_2O to form H_2CO_3 within RBC and its conversion into H^+ and HCO_3 ions

R : Reaction of absorbed CO_2 with H_2O in plasma to form H_2CO_3 and its conversion into H^+ and HCO_3^- ions.

S : Combination of H^+ with heme portion of HbO_2 to release O_2

T : Combination of HCO_3^- with heme portion of HbO_2

to form reduced haemoglobin and release of O_2

A. P,Q,T

B. P,R,S

C. P,Q,S

D. P,R,T

Answer: C

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11. Choose the correct statement

A. The T-wave in an ECG represents excitation of ventricles

B. The sum of P and T waves in a given time period can determine the heart beat rate of an individual.

C. The end of the P-wave marks the end of the systole

D. In a standard ECGs, a person is connected to the machine with three electrical leads

Answer: D

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12. A fall in glomerular filtration rate (GFR) activates

A. juxtaglomerular cells to release renin

B. atria of the heart to release ANF

C. adrenal medulla to release adrenanline

D. posterior pituitary to release vasopressin

Answer: A

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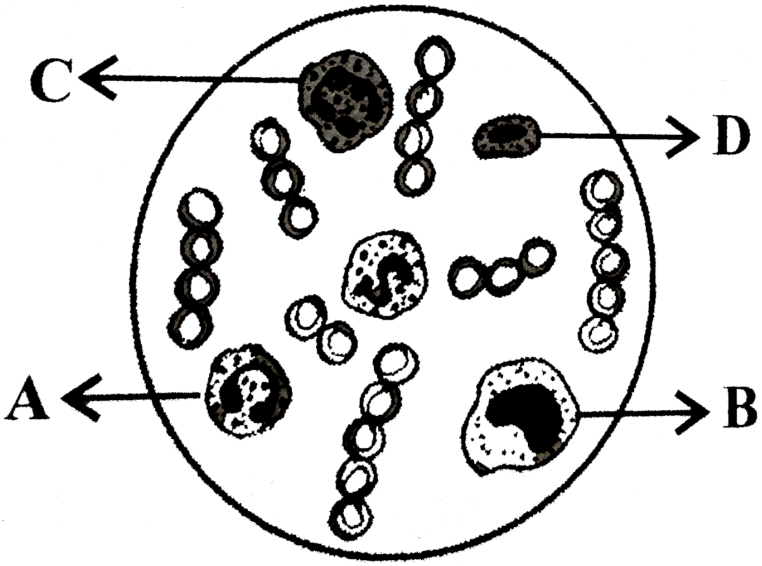
13. Select the correct option regarding the given figure



A. D is eosinophil which is found more in asthama patients

B. B is lymphocyte which helps in blood clotting

C. C is neutrophil which is phagocytic in nature

D. A is monocyte which release histamine, serotonin and heparin

Answer: C

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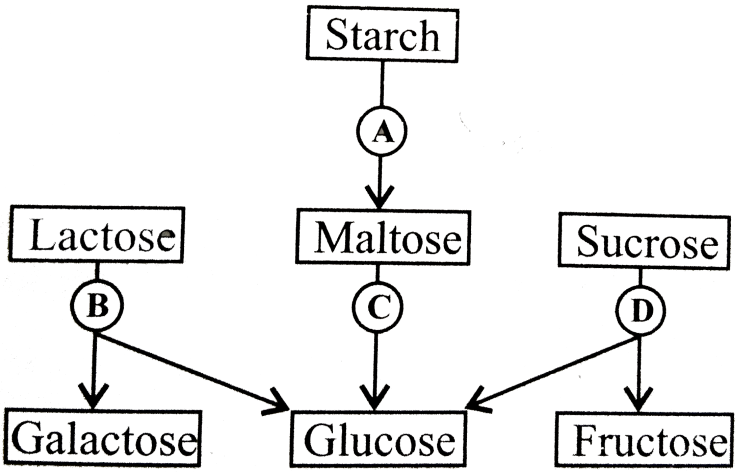
14. The given flowchart shows the fate of carbohydrates during digestion in the human alimentary canal. Identify the enzymes acting at stages indicated as A,B,C and D and selct the correct option.



A. A-amylase, B-maltase, C-lactase,D-invertase

B. A-amylase,B-maltase,C-invertase,D-lactase

C. A-amylase,B-invertase,C-maltase,D-lactase

D. A-amylase,B-lactase,C-maltase,D-invertase

Answer: D

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15. The ability of producing concentrated (hypertonic) urine in vertebrates generally depends on

A. area of Bowman's capsule epothelium

B. length of the proximal convoluted tobule

C. length of Henle's loop

D. capillary network forming glomerulus

Answer: C

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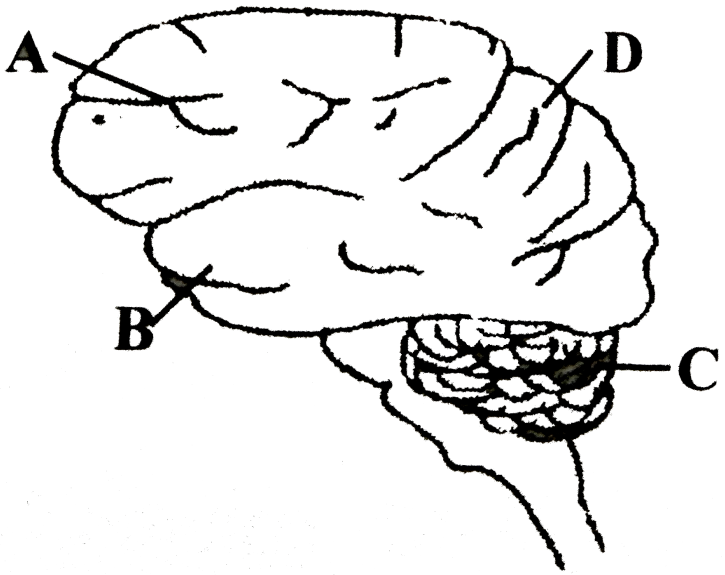
16. Select the incorrect option regarding the given figure



A. D is parietal lobe which registers sensory perceptions

B. A is occipital lobe which decodes and interprets visual information

C. B is temporal lobe which is associated with memory and emotion

D. C is cerebellum which controls muscular activities

Answer: B

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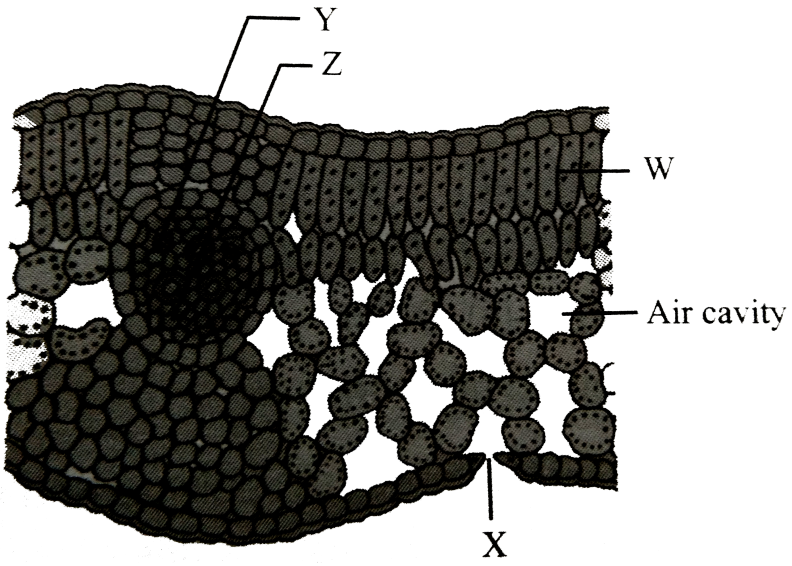
17. Which of the following is correct regarding the given figure ?



A. W shows palisade parenchyma having chloroplasts arranged in layers

B. Z shows phloem

C. As water evaporates from X, it results in pulling of water, molecule by molecule form Y

D. All of these

Answer: D

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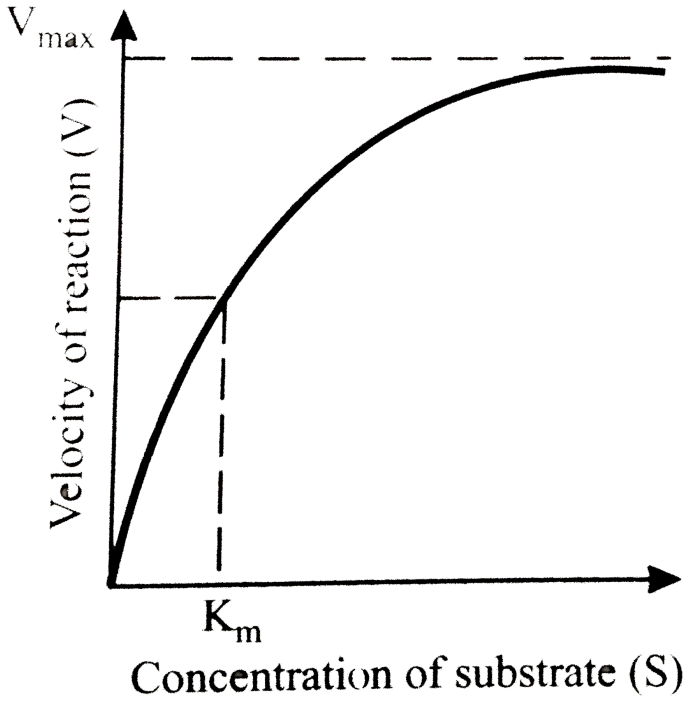
18. At optimum temperature and pH, time required to reach maximum velocity of a reaction is 8 seconds, then what will be the time when substrate concentration is K_m ?



A. 4 sec

B. 16 sec

C. 1 sec

D. 2 sec

Answer: A

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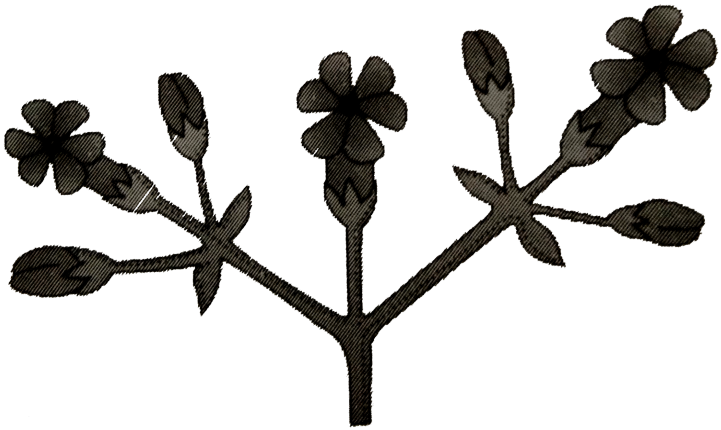
19. What type of inflorescence does the given figure show ?



A. Uniparous cyme

B. Biparous cyme

C. Multiparous

D. Racemose

Answer: B

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20. Which of the following is the correct hierarchial sequence ?

A. Phylum-Class-Order-Family

B. Genus-Species-Order-Family

C. Phylum-Division-Family-Class

D. Division-Order-Class-Genus

Answer: A

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21. Match column I with column II and select the correct option from the codes given below.

	Column I		Column II
A.	Rhizopus	(i)	Ascomycetes
B.	Penicillium	(ii)	Basidiomycetes
C.	Ustilago	(iii)	Deuteromycetes
D.	Alternaria	(iv)	Phycomycetes

A. A-(iv),B-(iii),C-(i),D-(ii)

B. A-(ii),B-(iii),C-(iv),D-(i)

C. A-(iv),B-(i),C-(ii),D-(iii)

D. A-(iii),B-(iv),C-(ii),D-(i)

Answer: C

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22. The thick filament in muscles is polymerised protein of

A. meromyosins

B. actins

C. troponins

D. tropomyosins

Answer: A

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23. Consider the following four statements (i),(ii),(iii) and (iv)

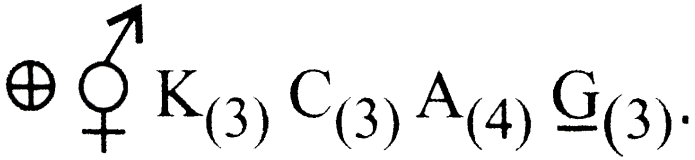
(i) In vexillary aestivation, the large posterior petal is called standard, two lateral ones are called wings and two small anterior petals are termed as keel

(ii) The floral formula for Liliaceae is

$$\mathrm{Br} \oplus \male\ \mathrm{P}_{(3+3)}\ \mathrm{A}_{3+3}\ \underline{\mathrm{G}}_{(3)}\cdot$$

(iii) In pea flower, the stamens are monadelphous

(iv) The floral formula for Solanceae is



The correct statement are

A. (i) and (iii)

B. (i) and (ii)

C. (ii) and (iii)

D. (iii) and (iv)

Answer: B

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24. The release of chemical messenger from synaptic vesucles is under the influence of which of these ion (s) ?

A. Cl^-

B. Fe^{++} and S^{++}

C. Ca^{++}

D. Mg^{++} and Sr^{++}

Answer: C

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25. Which of the following statements is true ?

A. The collenchyma occurs in layers below the epidermis in monocotyledonous plants

B. Sclernchyma cells are usually dead and without protoplasts

C. Xylem parenchyma cells are living and thin walled and their cell walls are made up of lignin

D. The companion cells are specialised sclerenchymatous cells

Answer: B

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26. Leguminous plants are able to fix atmospheric nitrogen through the process of symbiotic nitrogen fixation. Which one of the following statements is not correct for this process of nitrogen fixation ?

A. Leghaemoglobin scavenges oxygen and is pinkish in colour

B. Nodules acts as sites for nitrogen fixation

C. The enzyme nitrogenase catalyses the conversion of atmospheric N_2 to NH_3

D. Nitrogenase is insensitive to oxygen

Answer: D

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27. Which of the following is wrongly matched ?

A. Sorghum - Kranz anatomy

B. PEP carboxylase - Mesophyll cells

C. Blackman - Law of limiting factors

D. PS II = P_{700}

Answer: D

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28. Consider the following statements

(A) Plant cells have centrioles which are absent in almost all animal cells

(B) Ribosomes are the site of protein synthesis

(C) The middle lamella is a layer made of calcium carbonate which holds the different neighbouring cells together

(D) In animal cell, steroidal hormones are synthesised by smooth endoplasmic reticulum

Of the above statements

A. (A) and (B) only are correct

B. (C) and (D) only are correct

C. (B) and (D) only are correct

D. (A) and (D) only are correct

Answer: C

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29. Arrange the steps of catalytic action of an enzyme in order and select the correct option

I. The enzyme releases the products of the reaction and the enzyme is free to bind to another substrate

II. The active site of enzyme is in close proximity of the substrate and breaks the chemical bonds of the substrate

III. The binding of substrate induces the enzyme to alter its shape fitting more tightly around substrate.

VI. The substrate binds to the active site of the enzyme

A. IV,II,II,I

B. III,II,I,IV

C. IV,II,I,II

D. II,I,IV,III

Answer: A

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30. Some vascular bundles are described as open because these

A. are surrounded by pericycle but no endodermis

B. are capable of producing secondary xylem and phloem

C. possess conjunctive tissue between xylem and phloem

D. are not surrounded by pericycle

Answer: B

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31. The active component of photosystem-I is composed of

A. chlorophyll-a with absorption peak at 680 nm

B. chlorophyll-a with absorption peak at 700 nm

C. chlorophyll-b with absorption peak at 680 nm

D. chlorophyll-a and chlorophyll-b with absorption peak ay 700 nm

Answer: B

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32. Energy released during movement of electrons through the photosystems in photosynthesis is used to drive protons across the membrane against concentration gradient. As a result the protons accumulate in

A. thylakoid lumen

B. stoma of chloroplast

C. matrix of mitochondrion

D. none of these

Answer: A

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33. What is the role NAD^+ in cellular respiration ?

A. It functions as an enzyme

B. It functions as an electron carrier

C. It is a nucleotide source for ATP synthesis

D. It is the final electron acceptor for anaerobic respiration

Answer: B

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34. Human vertebral column of 33 vertebrae and _____ bones

A. 33

B. 26

C. 27

D. 29

Answer: B

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35. For a plasmolysed cell, which equation is correct ?

A. DPD = OP + TP

B. DPD = - TP

C. DPD = OP

D. DPD = OP - TP

Answer: C

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36. With reference to enzymes, which one of the following statements is true ?

A. Apoenzyme = Holoenzyme + Coenzyme

B. Holoenzyme = Aponzyme + Coenzyme

C. Coenzyme = Apoenzyme + Holoenzyme

D. Holoenzyme = Coenzyme - Apoenzyme

Answer: B

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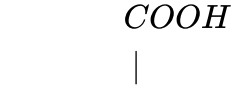
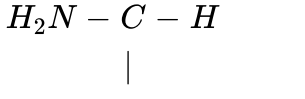
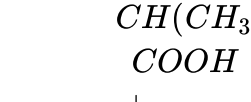
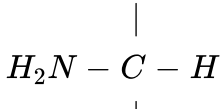
37. Which one of the following is a basic amino acid ?

A. 

B. 

C. 

D. 

Answer: B

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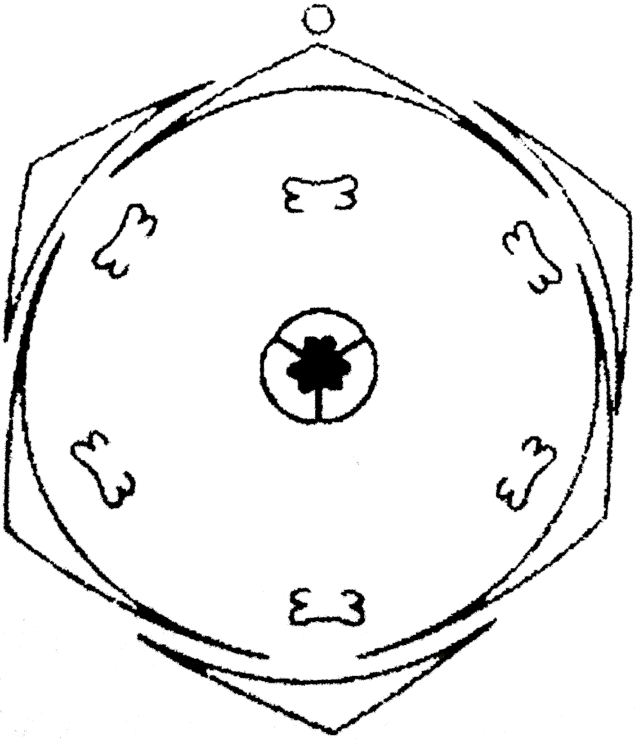
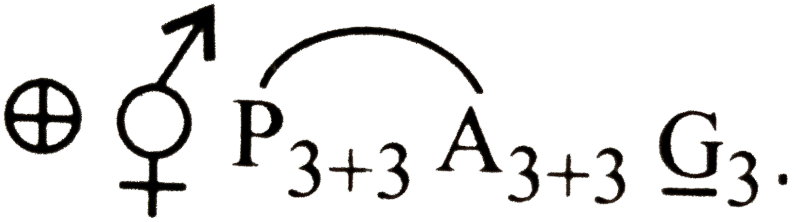
38. Which of the following is/are the characteristics of the family whose floral diagram is given ?



(i) Aloe, Asparagus and Colchicum belong to this family

(ii) Flower is zygomorphic

(iii) Floral formula is



(iv) Fruits are berry or capsule

A. (i),(ii) and (iii)

B. (iii) only

C. (i) only

D. (i),(iii) and (iv)

Answer: D

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39. In cockroaches, digestive juice is secreted by the

A. gizzard

B. Malpighian tubules

C. hepatic caeca

D. oesophagus

Answer: C

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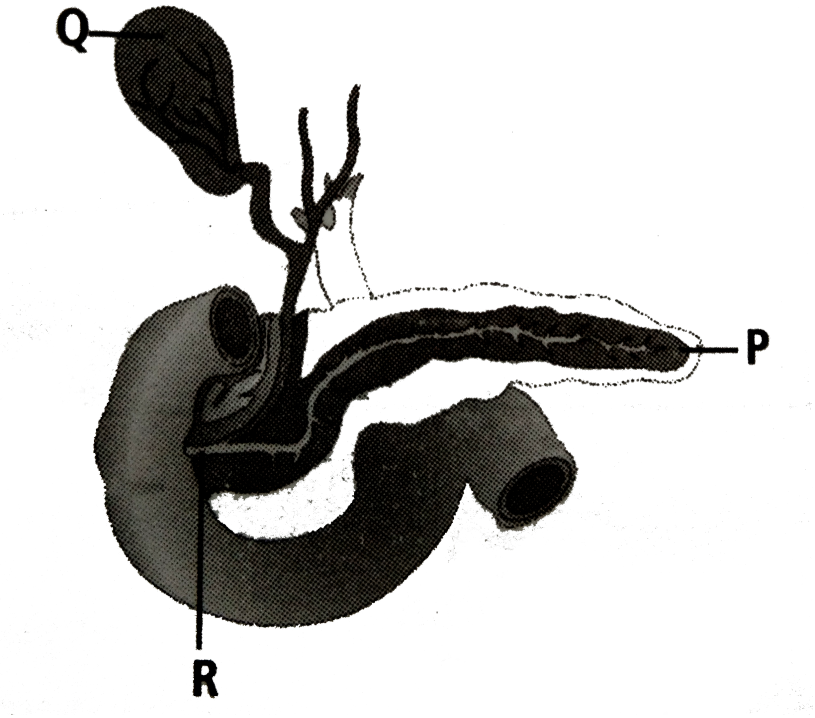
40. Select an incorrect option regarding the given figure



A. P is a compound gland with exocrine and endocrine sections

B. R is formed from duct of gall bladder along with the hepatic duct

C. R is guarded by a sphincter of Odii

D. Q stores bile which is actually produced in liver

Answer: B

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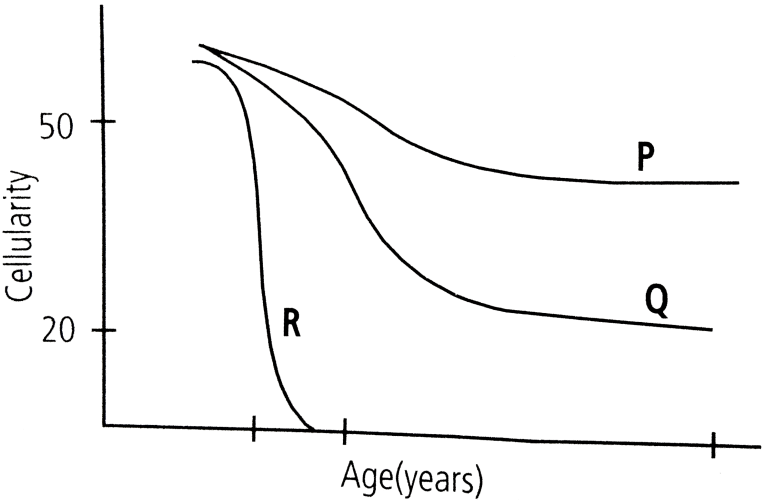
41. Characteristic features of different blood vessels in the body are shown. What does P,Q and R represent ?



A. P : Total area Q : Velocity R : Blood pressure

B. P : Blood pressure Q : Velocity R : Total area

C. P : Velocity Q : Total area R : Blood pressure

D. P : Total area Q : Blood pressure R : Velocity

Answer: B

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42. Photosynthesis in C_4 plants is relatively less limited by atmospheric CO_2 levels because

A. effective pumping of CO_2 into bundle sheath cells

B. RuBisCo in C_4 plants has higher affinity for CO_2

C. four carbon acids are the initial CO_2 fixation products

D. the primary fixation of CO_2 is mediated via PEP caroxylase

Answer: D

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43. In which stage of the cell cycle are histone proteins synthesised in a eukaryotic cells ?

A. G_2- stage of prophase

B. S-phase

C. Entire prophase

D. Telophase

Answer: B

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44. Relative rates of red blood cell production in the bone marrow of different bones at different ages are shown in the graph P,Q and R are likely to be, respectively

A. vertebra, rib and tibia

B. femur, carpal and rib

C. tibia, fibula and femur

D. radius, sternum and carpal

Answer: A

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45. The salivary amylase shows maximum digestive action at pH _____

A. 3.6

B. 7.5

C. 8.5

D. 6.8

Answer: D

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46. Bundle of His is a part of which one of the following organs in humans ?

A. Stomach

B. Brain

C. Kidney

D. Heart

Answer: D

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47. Consider the following four statements (i-iv) regarding kidney transplant and select the two correct ones out of these

(i) Even if a kidney transplant is proper the recipient may need to take immuno-suppressants for a long time

(ii) The cell-mediated immune response is responsible for the graft rejection

(iii) The B-lumphocytes are responsible for rejection of the graft

(iv) The acceptance or rejection of a kidney transplant depends on specific interferons

The correct statements are

A. (ii) and (iii)

B. (iii) and (iv)

C. (i) and (iii)

D. (i) and (ii)

Answer: D

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48. One mineral activates the enzyme catalase and the other is a constituent of the ring structure of chlorophyll. These minerals are respectively

A. iron and magnesium

B. iron and manganese

C. magnesium and maganese

D. calcium and magnesium

Answer: A

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49. Which of these animals has three chambered heart, cloaca and respires by gills, lungs and through skin ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: B

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50. Digestion of both starch and protein is done by

A. gastric lipase

B. ptyalin enzyme

C. gastric juice

D. pancreatic juice

Answer: D

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Test Paper 2

1. Which of the following represents order of Horse ?

A. Perissodactyla

B. Caballus

C. Ferus

D. Equidae

Answer: A

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2. Identify the vertebrate group of animals characterised by crop and gizzard in its digestive system

A. amphibia

B. reptilia

C. aves

D. osteichthyes

Answer: C

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3. In which of the following, scientific name, family and common name are correctly mentioned ?

A.

Scientific name	Family	Common name
Batrachospermum	Rhodohyceae	Frog's spawn algae

B.

Scientific name	Family	Common name
Spirogyra	Chlorophyceae	Water net

C.

Scientific name	Family	Common name
Lycopodium	Lycopodiaceae	Sanjeevani

D.

Scientific name	Family	Common name
Selaginella	Lycopodiaceae	Little club moss

Answer: A

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4. Which one of these animals is not a homoetherm ?

A. Macropus

B. Chelone

C. Camelus

D. Psittacula

Answer: B

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5. Adult human RBCs are enucleate. Which of the following statement (s) is/are most appropriate explanation for this feature ?

(1) They do not need to reproduce

(2) They are somatic cells

(3) They do not metabolise

(4) All their internal space is available for oxygen transport.

A. Only (1)

B. (1),(3) and (4)

C. (2) and (3)

D. only (4)

Answer: D

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6. Large volume of air that a person can expire after a forceful inspiration is called

A. inspiratory reserve volume

B. expiratory reserve volume

C. vital capacity

D. tidal volume

Answer: C

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7. Which cells of Crypts of Lieberkuhn secrete antibacterial lysozyme ?

A. Paneth cells

B. Zymogen cells

C. Kupffer cells

D. Argentaffin cells

Answer: A

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8. Which of the following is an incorrect match?

A. Bowman's capsule - Glomerular filtration

B. DCT - Absorption of glucose

C. Henle's loop - Concentration of urine

D. PCT - Absorption of NA^+ and K^+ ions

Answer: B

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9. In human beings the cranium is formed by

A. eight bones of which two are paired

B. fourteen bones of which six are paired

C. ten bones of which two are paired

D. twelve bones of which four are paired

Answer: A

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10. The third ventricle of the brain is situated in the

A. base of telencephalon

B. roof of metencephalon

C. roof of diencephalon

D. base of prosencephalon

Answer: C

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11. Which of the these cells release renin when GFR drops ?

A. Juxtaglomerullar cells

B. Adrenal cortex

C. Adrenal medulla

D. Posterior pituitary

Answer: A

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12. An investigator places as isolated neuron in a calcium-free medium, gives the neuron a suprathreshold stimulus and then performs an assay to test whether neurotransmitter is released into the medium. Which of the following outcomes would you predict ?

A. No neurotransmitter is detected since influx of calcium into the synaptic knob is required for neurotranmitter release

B. No neurotransmitter is detected since influx of calcium is required in order for the neuron to conduct an action potential

C. Neurotransmitter is detected since calcium is not required for action potential conduction and the initial stimulus was suprathreshold

D. We cannot predict the outcome without knowing whether the neuron was myelinated or not.

Answer: A

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13. Match column I (harmone) with column II (endrocrine gland) and column III (function) and select the correct option from the given codes

	Column I		Column II		Column III
1.	Melatonin	A.	Thyroid	(i)	Acts on the renal tubules
2.	MSH	B.	Adrenal	(ii)	Regulates blood calcium level
3.	Aldosterone	C.	Pituitary	(iii)	Maintains diurnal rhythm of our
4.	TCT	D.	Pineal	(iv)	Acts on the melanocytes

A. 4-A-(iv) , 3-D-(iii) , 1-B-(ii) , 2-C-(i)

B. 1-D-(iii) , 2-C-(iv) , 3-B-(i) , 4-A-(ii)

C. 1-B-(i) , 4-A-(iii) , 3-C-(ii) , 2-D-(iv)

D. 2-D-(ii) , 1-B-(i) , 4-C-(iv) , 3-A-(iii)

Answer: B

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14. Decreased levels of extrogen is a common cause of

A. myasthenia gravis

B. tetany

C. osteoporosis

D. gout

Answer: C

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15. Histamine, serotonin and heparin are secreted by

A. monocytes

B. neutrophils

C. eosinophils

D. basophils

Answer: D

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16. Which of the following vitamins has some physiological effects similar to those of parathormone ?

A. Vitamin A

B. Vitamin D

C. Vitamin C

D. Vitamin B

Answer: B

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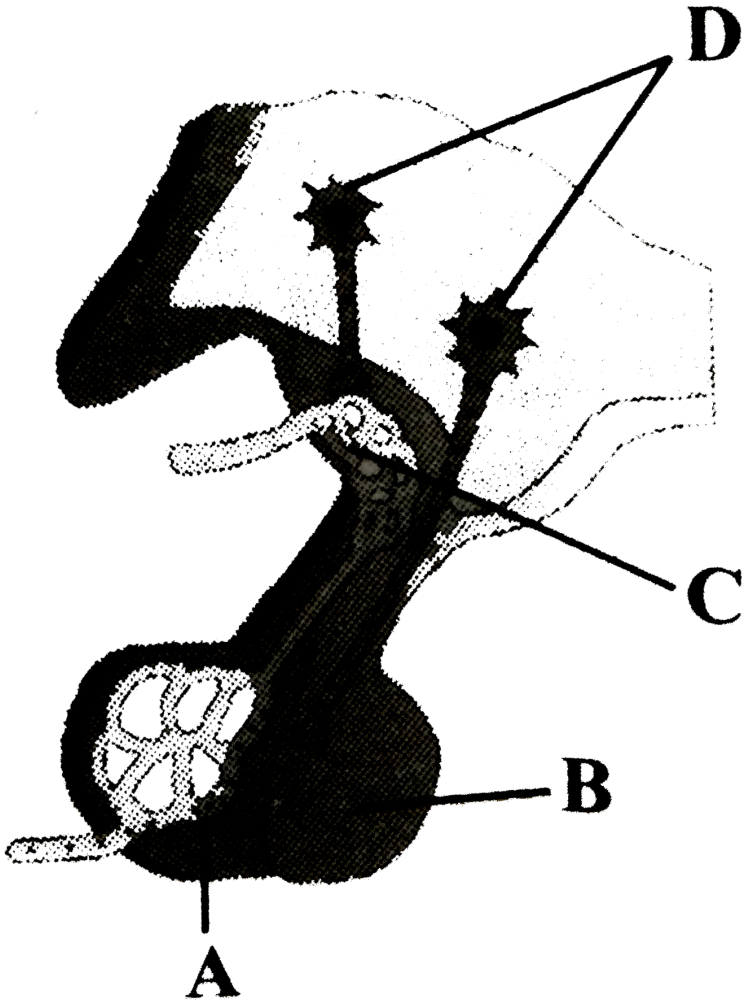
17. Which of the following is correct regarding the given diagram ?



A. Oxytocin and vasopressin are synthesised by B

B. Melatonin are synthesised by A

C. A is neurohypophysis and B is adenohypophysis

D. GnRH is released in C

Answer: D

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18. Match the items given in Column I with those in Column II and select the correct option given below

	Column I		Column II
A.	Tricuspid valve	(i)	Between left atrium and left ventricle
B.	Bicuspid valve	(ii)	Between right ventricle and pulmonary artery
C.	Semilunar	(iii)	Between right atrium and right ventricle

A.

A	B	C
(iii)	(i)	(ii)

B.

A	B	C
(i)	(iii)	(ii)

C.

A	B	C
(i)	(ii)	(iii)

D.

A	B	C
(ii)	(i)	(iii)

Answer: A

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19. Which of the following activates the adrenal cortex to release aldosterone ?

A. Renin

B. Angiotensin-I

C. Angiotensin-II

D. Angiotensinogen

Answer: C

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20. Which of the following joints is formed betweeen atlas and axis vertebrae ?

A. Saddle joint

B. Fibrous joint

C. Cartilaginous joint

D. Pivot joint

Answer: D

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21. Given below is a list of different steps (i-vi) involved in respiration.

(i) Utilisation of O_2 by the cells for cataolic reactions.

(ii) Transport of gases by the blood.

(iii) Pulmonary ventilation by which atmospheric air is drawn in and CO_2 is released out.

(iv) Release of resultant CO_2.

(v) Diffusion of O_2 and CO_2 between blood and tissues.

(vi) Diffusion of gases (O_2 and CO_2) across alveolar tissues.

Select an option which has correct sequence of all the steps.

A. (iii),(vi),(ii),(v),(i),(iv)

B. (iii),(vi),(i),(v),(ii),(iv)

C. (iv),(ii),(v),(iii),(i),(vi)

D. (iv),(vi),(ii),(v),(i),(iii)

Answer: A

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22. Select the incorrect match.

A. Lampbrush chromosomes - Diplotene bivalents

B. Allosomes - Sex chromosomes

C. Submetacentric chromosomes - L-shaped chromosomes

D. Polytene chromosomes - Oocytes of amphibians

Answer: D

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23. Which part of the human brain controls the urge for eating and drinking ?

A. Forebrain

B. Midbrain

C. Hindbrain

D. Spinal cord

Answer: A

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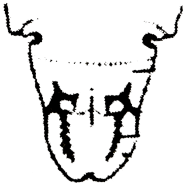
24. Which of the following mouthparts of the cockroach is found in a pair and performs mastication ?

A. (a) 

B. (b) 

C. (c) 

D. (d) 

Answer: C

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25. Phallic organs in cockroach are related to

A. male excretory system

B. male reproductive system

C. female exretory system

D. female reproductive system

Answer: B

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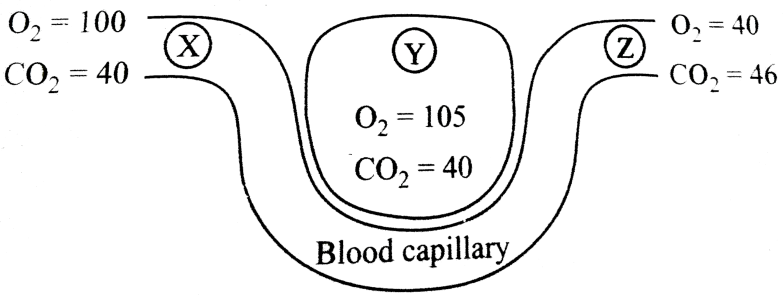
26. The given diagram shows a blood capillary in close contact with structure Y. The relative concentration (in units) of carbon dioxide (CO_2) and oxygen (O_2) are given at three different sites.



Which of the following statements is correct ?

A. Y is an alveolus and blood flow is from X to Z

B. Y is an alveolus and blood flow is Z to X

C. Y is a muscle and blood flow is from X to Z

D. Y is a muscle and blood flow is from Z to X

Answer: B

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27. R.Q. of sprouting photo tubers will be

A. > 1

B. 0

C. 1

D. < 1

Answer: C

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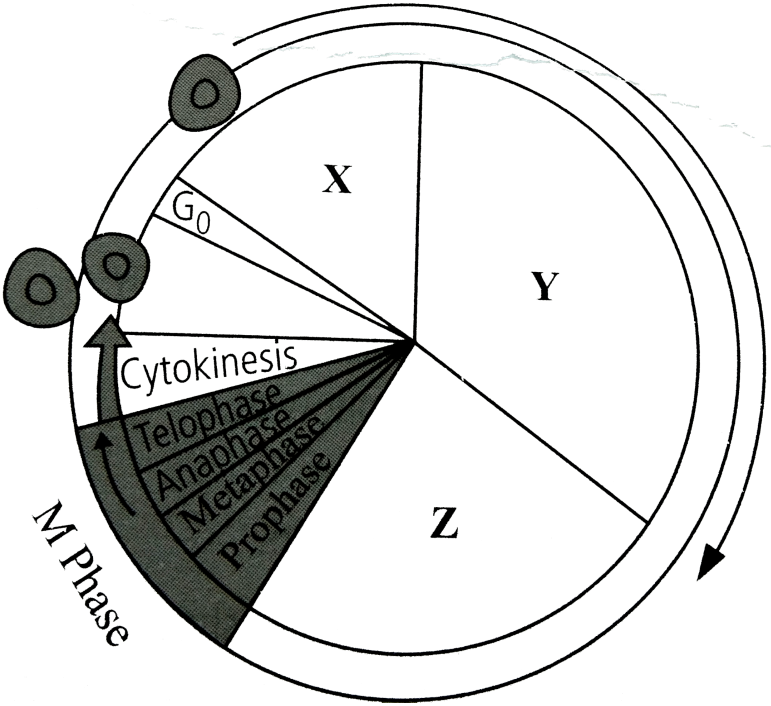
28. Refer to the given diagram showing cell cycle and answer the questions that follow



(i) If the chromosome number at X is 2n, what will be the number of chromosomer at Y ?

(ii) Which phase is the longest phase of M phase ?

A. (i) 2n (ii) Telophase

B. (i) 4n (ii) Metaphase

C. (i) 2n (ii) Prophase

D.

(i)	(ii)
4n	Anaphase

Answer: C

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29. The source of oxygen evolved during photosynthesis is

A. H_2O

B. $C_6H_{12}O_6$

C. CO_2

D. $n(CH_2O)$

Answer: A

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30. An enzyme promotes a chemical reaction by

A. lowering the energy of activation

B. changing the free energy difference between substrate and product

C. increasing molecular motion

D. All of these

Answer: A

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31. Gibberellic acid induces flowering

A. in short day plants under long day conditions

B. in day-neutral plants under dark conditions

C. in come gymnosperimic plants only

D. in long day plants under short day conditions

Answer: D

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32. Which of the following statements is correct ?

A. Ovules are not enclosed by ovary wall in gymnosperms

B. Selaginella is heterosporous, while Salvinia is homosporous

C. Horsetails are gymnosperms

D. Stems are usually unbranched in both Cycas and Cedrus

Answer: A

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33. Consider the following statements regarding gymnosperms

(A) In gymnospers, the male and female gametophytes have an independent existence

(B) The multicellular female gametophyte is retained within the megasporangium

(C) The gymnosperms are heterosporous

Of these statements.

A. (A) and (B) are true but (C) is false

B. (A) and (C) are true but (B) is false

C. (B) and (C) are false but (A) is true

D. (B) and (C) are true but (A) is false

Answer: D

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34. Find out the correct statement.

A. In lichens, the algal component is called phycobiont and fungal component is known as mycobiont, which are heterotrophic and autotrophic, respectively.

B. Viroid contain RNA of low molecular weight and protein coat

C. A virus contains bothe RNA and DNA

D. Viruses are obligatory parasites

Answer: D

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35. Select the correct match

(A) Nirosomonas - Nitrite to nitrate
(B) Thiobacillus - Denitrification
(C) Nostoc - Free-living nitrogen-fixer
(D) Azotobacter - Anaerobic nitrogen-fixer

A. A and B

B. C and D

C. B and C

D. B and D

Answer: C

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36. In kranz anatomy, the bundle sheath cells have

A. thin walls, many intercellular spaces and no chloroplasts

B. thick walls, no intercellular spaces and large number of chloroplasts

C. thin walls, no intercellular spcaes and several chloroplasts

D. thick walls, many intercellular spcaes and few chloroplasts.

Answer: B

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37. Function of leghemoglobin (a red pigment) in root nodules of leguminous plants is

A. to regulate O_2 supply in cells

B. to regulate CO_2 supply in cells

C. to regulate production of phenolic compounds

D. to regulate the Mo supply in cells

Answer: A

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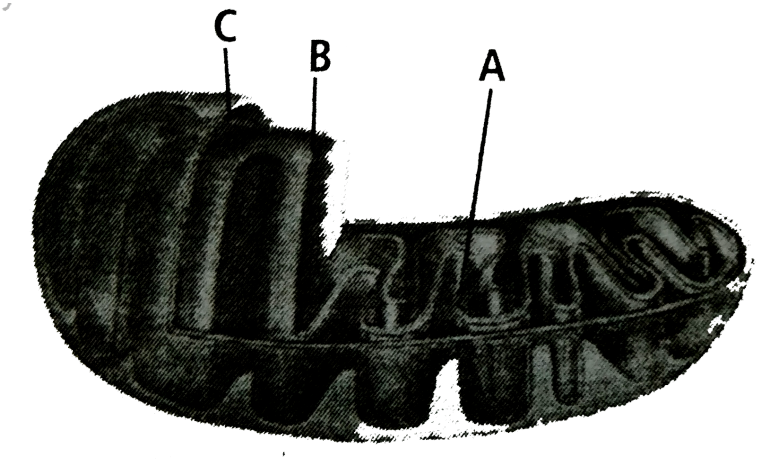
38. The given figure shows the structures of a mitochondrin with its four parts labelled A, B, C and D. Select the part correclty matched with its function



A. C - Gives rise to inner membrane by splitting

B. B - Forms infoldings called cristae

C. A - Possesses single circular DNA molecule and ribosomes

D. none of these

Answer: B

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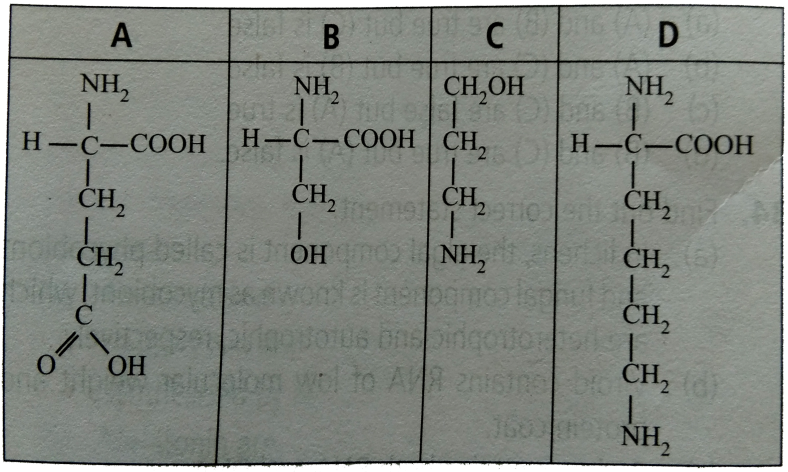
39. Which one out of A-D given below correctly represents the structural formula of a basic amino acid ?



A. C

B. D

C. A

D. B

Answer: B

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40. Which of the following is true/false regarding transport of substances in plants ?

(i) Mass flow is the movement of substances in bulk as a result of pressure difference

(ii) Bulk flow is achieved only through a positive hydrostatic pressure gradient

(iii) The apoplast system is the system of interconnected protoplasts

(iv) Most of the water flow in the roots occurs via the apoplast since the cortical cells are loosely packed, and offer no resistance to water movement.

A. (i) and (iv) are true , (ii) and (iii) are false

B. (i) and (ii) are true , (iii) and (iv) are false

C. (ii) and (iii) are true , (i) and (iv) are false

D. (i), (ii) and (iv) are true , (iii) is false

Answer: A

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41. Which of the following is a correct match ?

A. Cray fish - Elasmobranch

B. Cuttle fish - Osteichthyes

C. Jelly fish - Echinodermata

D. Silver fish - Arthropoda

Answer: D

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42. _____ is a couple of layer thick, made of narrow, thin walled and nearly rectangular cells. It cuts dervatives on both sides. The outer cells differentiate into _____ or _____ while the inner cells differentiate into _____ or _____. The three together is called _____

Select the right sequence of words to complete the above given paragraph.

A. Phellogen, cork, phellem, secondary cortex, phelloderm, periderm

B. Phellem, phelloderm, cork, secondary cortex, phellogen, periderm

C. Phellogen, cork, periderm, secondary cortex, phellem, phelloderm

D. Phellem, secondary cortex, periderm, cork, phellogen, phelloderm

Answer: A

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43. Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body.

A. Erythrocytes

B. Leucocytes

C. Neutrophils

D. Thrombocytes

Answer: D

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44. Acetyl CoA is produced from pyruvate by

A. oxidative decarboxylation

B. oxidative photophosphorylation

C. oxidative hydrogenation

D. oxidative photorespiration

Answer: A

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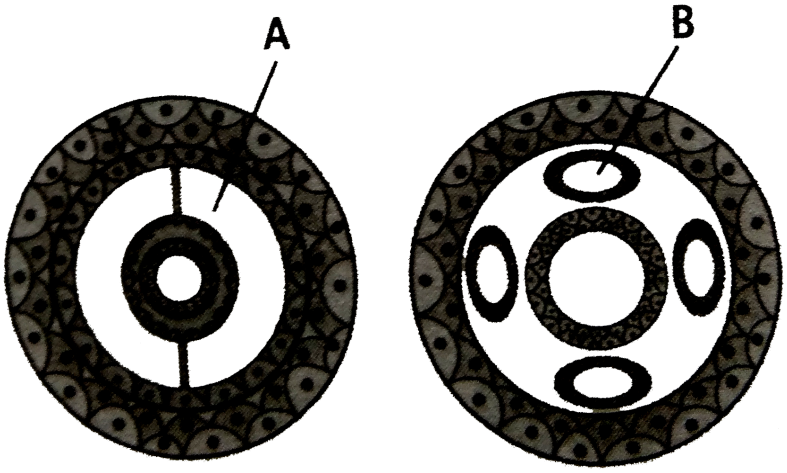
45. Refer to the given figure which shows sectional view of two types of coelom A and B. Select the correct option which represents groups of animals that possess A or B



A. A - Aschelminthes adn Annelids ,
B - Echinoderms and Chordates

B. A - Annelids, Echinoderms and Chordates ,
B - Aschelminthes

C. A - Echinoderms and Chordates ,
B - Aschelminthes and Annelids

D. A - Aschelminthes ,
B - Annelids, Echinoderms and Chordates

Answer: B

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46. Eustachian tube connects

A. pharynx with middle ear

B. middle ear with internal ear

C. middle ear with external ear

D. external ear with internal ear

Answer: A

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47. Which one is true about guttation ?

A. It occurs through specialised pores called hydathodes

B. It occurs in herbaceous plants when root pressure is low and transpiration is high

C. It only occurs during the day time

D. It occurs in plants growing under conditions of low soil moisture and high humidity

Answer: A

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48. At which stage, the homologous chromosomes separate due to repulsion, but are yet held by chiasmata?

A. Pachytene

B. Diplotene

C. Diakinesis

D. Zygotene

Answer: B

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49. In which of the following groups all are poly-saccharides ?

A. Sucrose, glucose and fructose

B. Maltose, lactose and fructose

C. Glycogen, sucorse and maltose

D. Glycogen, cellulose and starch

Answer: D

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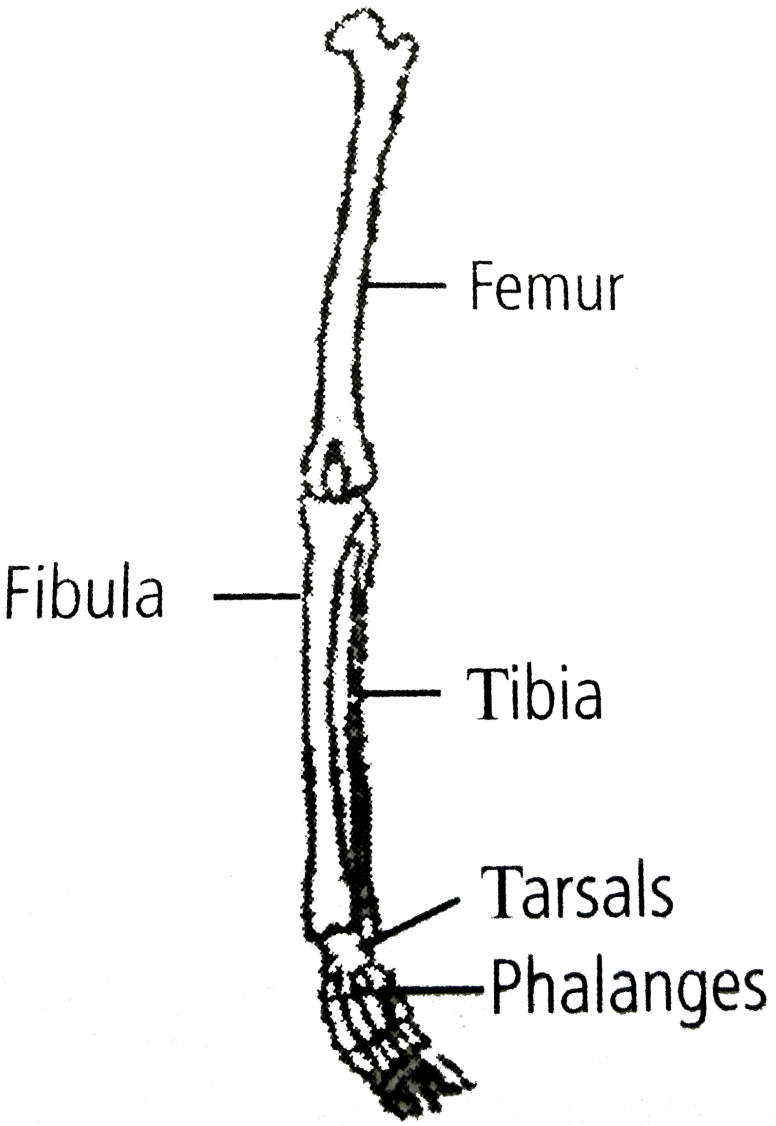
50. Given diagram shows bone of the left human hindlimb as seen from front. It has certain mistakes in labelling.

Which of the following pairs contain both wrongly labelled bones ?



A. Tibia and tarsals

B. Femur and fibula

C. Fibula and phalanges

D. Tarsals and femur

Answer: C

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Test Paper 3

1. Which of the following statements regarding universal rules of biological nomenclature is incorrect ?

A. The first word in a biological name represents the genus

B. The first word denoting the genus starts with a capital letter

C. Both the words in a biological name, when handwritten, are separately underlined

D. Biological names are generally in Greek and written in italics

Answer: D

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2. Which of the following is correct ?

A. All fungi are filamentous

B. Transfer of DNA from one bacterium to another bacterium cannot take place

C. Viruses cannot have both DNA and RNA together

D. Protists reproduce asexually only

Answer: C

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3. Select the correct combination of the statements (i-iv) regarding the characteristics of certain organisms.

(i) Methanogens are archaebacteria which produce methane in marshy areas

(ii) Nostoc is a filamentous blue-green alga which fixes atmospheric nitrogen

(iii) Chemosnthetic autotrophic bacteria synthesise cellulose from glucose

(iv) Mycoplasma lack a cell wall and can survive without oxygen

The correct statements are

A. (ii) and (iii)

B. (i),(ii) and (iii)

C. (ii),(iii) and (iv)

D. (i),(ii) and (iv)

Answer: D

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4. Single-celled eukaryotes are included in Kingdom

A. Protista

B. Fungi

C. Plantae

D. Monera

Answer: A

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5. In which of the following classes of fungi, sexual reproduction is absent ?

A. Basidiomycetes

B. Deuteromycetes

C. Phycomycetes

D. Ascomycetes

Answer: B

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6. Algae have cells made up of

A. cellulose, galactans and mannans

B. hemicellulose, pectins and proteins

C. pectins, cellulose and proteins

D. cellulose, hemicellulose and pectins

Answer: A

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7. Which of the following statements is incorrect regarding bryophytes ?

A. Zygote undergoes meiosis to produce sporphyte

B. Zygote undergoes mitosis to form embryo proper

C. Fertilisation takes place in presence of water

D. Sporophyte is parasitic over gametophyte

Answer: A

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8. Pick out wrong statement

A. Double fertilisation is unique to gymnosperms and monocotyledons

B. Sequoia, a gymnosperm, is one of the tallest trees

C. Phaeophyceae members possess chlorophyll a,c, carotenoids and xanthophylls

D. Moss is a gametophyte which consists of two stages namely, protonema stage and leafy stage.

Answer: A

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9. Aestivation of petals in the flower of cotton is correctly shown in

A. 

B. 

C. 

D. 

Answer: D

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10. Find the correct match

A. Mustard plant : Opposite phyllotaxy

B. Mustard plant : Alternate phyllotaxy

C. Guava plant : Alternate phyllotaxy

D. Guava plant : Whorled phyllotaxy

Answer: B

Watch Video Solution

11. In cyathium inflorescence

A. single male flower is surrounded by female flowers

B. male and female flowers are borne in different plants

C. there is only one male and one female flower

D. single female flower is surrounded by many peripheral male flowers

Answer: D

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12. Which one of the following is not correct ?

A. Early wood is characterised by large number of xylary elements

B. Early wood is characterised by vessels with wider cavities.

C. Late wood is characterised by large number of xylary elements

D. Late wood is characterised by vessels with narrower cavities

Answer: C

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13. A few drops of sap were collected by cutting across a plant stem by a suitable method. The sap was tested chemically. Which one of the following test results indicates that it is phloem sap ?

A. Acidic

B. Alkaline

C. Low refractive index

D. Absence of sugar

Answer: B

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14. Cell A and cell B are adjacent plant cells. In cell A $\Psi_s = -20$ bars and $\Psi_p = 8$ bars. In cell B, $\Psi_s = -12$ bars and $\Psi_p = 2$ bars . Then,

A. water moves from cell A to cell B

B. there is no movement of water between cell A and B

C. water moves from cell B to cell A

D. equal amount of water is simultaneously exchanged between cell A and cell B.

Answer: C

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15. Refer to the given flow chart regarding classification of Kingdom Animalia.

Which of the following is correct regarding `P,Q,R and S ?

A. Q is Phylum Echinodermata

B. R is Phylum Aschelminthes

C. S is Phylum Coelenterata

D. P is Phylum Chodata

Answer: B

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16. With reference to factors affecting the rate of photosynthesis, which of the following statements is not correct ?

A. Increasing atmospheric CO_2 concentration up to $0.05\,\%$ can enhance CO_2 fixation rate

B. C_3 plants respond to higher temperature with enhanced photosynthesis while C_4 plants have much lower temperature optimum

C. Tomato is a greenhouse crop which can be grown in CO_2-enriched atmosphere for higher yield,

D. Light saturation for CO_2 fixation occurs at 10 % of full sunlight.

Answer: B

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17. Which statement is wrong for Krebs' cycle ?

A. There is one point in the cycle where FAD^+ is reduced to $FADH_2$

B. During conversion of succinyl CoA to succinic acid, a molecule of GTP is synthesised

C. The cycle starts with condensation of acetyl group (acetyl CoA) with pyruvic acid to yield citric acid.

D. There are three points in the cycle where NAD^+ is reduced to $NADH + H^+$

Answer: C

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18. Match column I with column II for housefly classification and select the correct option using the codes given below

	Column I		Column II
A.	Family	(i)	Diptera
B.	Order	(ii)	Arthropoda
C.	Class	(iii)	Muscidae
D.	Phylum	(iv)	Insecta

A. A-(iii),B-(i),C-(iv),D-(ii)

B. A-(iii),B-(ii),C-(iv),D-(i)

C. A-(iv),B-(iii),C-(ii),D-(i)

D. A-(iv),B-(ii),C-(i),D-(iii)

Answer: A

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19. The pineapple which under natural condition is difficult to blossom has been made to produce fruits throughout the year by application of

A. NAA, 2,4-D

B. pheyl acetic acid

C. cytokinin

D. none of these

Answer: A

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20. Consider the following statements and select the correct option

(A) The endomembrane system includes plasma membrane, ER, Golgi complex, lysosomes and vacuoles

(B) ER helps in the transparent of substances, synthesis of proteins, lipoproteins and glycogen

(C) Ribosomes are involved in protein synthesis

(D) Mitochondria help in oxidative phosphorylation and generation of ATP

A. B, C and D are correct

B. A along is correct

C. B alone is correct

D. C alone is correct

Answer: A

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21. Select the incorrect statement

A. Ribozymes are nucleic acids with catalytic power

B. Nucleic acids serve as genetic material

C. Proteins, nucleic acids and polysaccharides are the only three types of macromolecules found in the living system

D. Collagen is the most abdundant protein in the whole of the biosphere and RuBisCo is the most abundant protein in animal world

Answer: D

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22. Select the correct statement with respect to mitosis

A. Chromatids separate but remain in the centre of the cell in anaphase

B. Chromatids start moving towards opposite poles in telophase

C. Golgi complex and endoplasmic reticulum are still visible at the end of prophase

D. Chromosomes move to the spindle equator and get aligned along equatorial plate in metaphase

Answer: D

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23. Beads on string like structures of A are seen in B, which further condense to form chromosomes in C stage of cell division. Identify A, B, C.

A.

A	B	C
Chromonema	Chromatin	Metaphase

B.

A	B	C
Chromatin	Chromatid	Metaphase

C.

A	B	C
Chromonema	Chromosome	Anaphase

D.

A	B	C
Chromonema	Chromatid	Anaphase

Answer: A

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24. Match column I with column II and select the correct option from the codes given below

	Column I		Column II
A.	Choanocytes	(i)	Platyhelminthes
B.	Chindoblasts	(ii)	Ctenophora
C.	Flame cells	(iii)	Porifera
D.	Nephridia	(iv)	Coelenterata
E.	Comb plates	(v)	Annelida

A. A-(ii),B-(i),C-(iv),D-(v),E-(iii)

B. A-(ii),B-(iv),C-(i),D-(v),E-(iii)

C. A-(iii),B-(iv),C-(i),D-(v),E-(ii)

D. A-(iii),B-(i),C-(iv),D-(v),E-(ii)

Answer: C

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25. Read the following statements and select the correct option

(A) Blood cells serete fibres of structural proteins called collagen or elastin

(B) Neuoglial cells protect and support the nephrons

(C) Osteocytes are present in spaces called lacunae

(D) Striated muscle fibres are bundled together in a parallel fastion

(E) Bieps are involuntary and striated.

A. C and D statements are wrong

B. A and C statements are wrong

C. B and C statements are wrong

D. A,B and E statements are wrong

Answer: D

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26. Male cockroach differs from female cockroach in having

A. antennae

B. labrum

C. maxillae

D. anal styles

Answer: D

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27. The gastric juice contains

A. trypsin, pepsin, lipase

B. pepsin, lipase, rennin

C. pepsin, amylase, trypsin

D. pepsin, rennin, carboxypeptidase

Answer: B

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28. Pick the correct statement

A. The contraction of internal intercostal muscles lifts up the ribs and sternum

B. The thoracic cavity is anatomically an air tight chamber

C. Healthy man can inspire approximately 500 ml of air per minute

D. During expiration, the intrapulmonary pressure is slighly below the surrounding atmospheric pressure

Answer: B

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29. If the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg, the pulse pressure is _____

A. $120 \times 80 = 9600$ mm Hg

B. $120 + 80 = 200$ mm Hg

C. $120 - 80 = 40$ mm Hg

D. $\frac{120}{40} = 2$ mm Hg

Answer: C

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30. Select the correct statement

A. The juxta medullary nephrons have reduced Henle's loop

B. Vase recta is well developed in cortical nephrons

C. The PCT and DCT are situated in the medulla of the kidney

D. The ascending linb of the Henle's loop is connected to DCT

Answer: D

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31. The type of joint present between the humerus bone and the pectoral girdle is

A. pivot joint

B. ellipsoid joint

C. gliding joint

D. ball and socket joint

Answer: D

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32. Select the answer with correct matching of the stucture its location and function

A.

Structure	Locaton	Function
Eustachian	Anterior part of internal ear	Equalises air pressure on

B.

Structure	Locaton	Function
Cerebellum	Midbrain	Controls respiration adn gastric secretions

C.

Structure	Locaton	Function
Hypothalamus	Forebrain	Controls body temperature, urge for eat

D.

Structure	Locaton	Functio
Blind spot	Near the place where optic nerve leaves the eye	Rods a

Answer: C

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33. Select the correct statement regarding the specific disorder of musclular or skeletal system.

A. Muscular - Age related shortening of muscles

B. Osteoporosis - Decrease in bone mass and higher chances of fractures with advancing age

C. Myasthenia gravis - Autoimmune disorder which inhibits sliding of myosin filaments

D. Gout - Inflammation of joints due to extra deposition of calcium

Answer: B

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34. Identify the origin of sympathetic nerve fibres and the location of their ganglia

A. They arise from thoraco-lumbar region of spinal cord and form ganglia just beside the vertebral column

B. They arise from thoraco-cervical region of spinal cord and form ganglia just beside the vertebral column

C. They arise from cranio-sacral region of spinal cord and form ganglia very close to effector organ

D. They arise from thoraco-lumbar region of spinal cord and form ganglia very close to effector organ

Answer: A

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35. The main mineralocorticoid in human is

A. aldosterone

B. cortisol

C. testosterone

D. adrenaline

Answer: A

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36. Refer to the given figure showing structure of Malpighian corpuscle. To facilitate ultrafiltration through glomerular capillaries _____

A. part 'D' is narrower than part 'A'

B. part 'A' is narrower than part 'D'

C. part 'C' is narrower than part 'D'

D. part 'B' is narrower than part 'D'

Answer: A

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37. Prophase of the first meiotic division is typically longer on complex. It is subdivided into 5 phases , leptotene, zygotene, pachytene,diplotene and diakinesis. Which of the following statements is not correct of these phases ?

A. The formation of synaptonemal compex is seen during zygotene stage

B. The stage of pachytene is characterised by appearance of recombination nodules

C. Diplotene stage is marked by terminalisation of chiasmata

D. The compaction of chromosomes continues throughout the leptotene

Answer: A

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38. Identify P,Q, and R in the graph shown below

	P	Q	R
A.	Chlorophyll b	Chlorophyll a	Carotenoids
B.	Chlorophyll a	Chlorophyll b	Carotenoids

C.

P	Q	R
Chlorophyll a	Carotenoids	Chlorophyll b

D.

P	Q	R
Chlorophyll b	Carotenoids	Chlorophyll a

Answer: C

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39. Which of the following is an amino acid derived hormone ?

A. Epinephrine

B. Ecdysone

C. Estradiol

D. Estriol

Answer: A

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40. Refer the given figure showing some steps of citric acid cycle. What changes takes place during the conversion of A to B ?

A. CO_2 is liberated

B. NAD^+ is converted to $NADH + H^+$

C. GTP is formed from GDP

D. All of these

Answer: D

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41. Plants require sulphur for

A. ATP synthesis

B. protein synthesis

C. glucose synthesis

D. DNA replication

Answer: B

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42. An inflorescene with single, oldest, female flower and many younger male flowers has to be

A. verticillaster

B. hypanthodium

C. spike

D. syathium

Answer: D

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43. Match the plany hormones listed in column I with their major role listed in column II and select the correct option from the codes given below

	Column I		Column II
(A)	Auxin	(i)	Fruit ripening
(B)	Cytokinin	(ii)	Phototropism
(C)	abscisic acid	(iii)	Suppression of cell division
(D)	Ethylene	(iv)	Stomatal opening and closing
		(v)	Growth of lateral buds

A. A-(v),B-(iii),C-(iv),D-(ii)

B. A-(iii),B-(ii),C-(iv),D-(i)

C. A-(ii),B-(v),V-(iv),D-(i)

D. A-(ii),B-(iv),C-(v),D-(iii)

Answer: C

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44. During the transmission of nerve impulse through a nerve fibre, the potential on the inner side of the plasma membrane has which type of electric charge ?

A. First possitive, then negative and continue to be negative

B. First negative, then positive and continue to be positive

C. First positive, then negative and again back to positive

D. First negative, then positive and again to negative

Answer: D

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45. Which of the labelled parts of human brain is connected with swallowing, coughing sneezing and vomiting ?

A. R

B. Q

C. S

D. P

Answer: A

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46. Which is essential for the growth of root tip ?

A. Zn

B. Fe

C. Ca

D. Mn

Answer: C

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47. Which one of the following is incorrect for artherosclerosis ?

A. Constriction of arterial lumen reduces the blood flow

B. Loss of dilation ability of the arterial wall and its rupture

C. Cholesterol deposition at the inner wall of the artery

D. Proliferation of the vascular muslces

Answer: B

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48. The below diagram is the cyclic series of reactions that occurs during carbon fixation stage of photosynthesis

(i) Carbon dioxide is taken into the cycle at stage A

(ii) Hydrogen from reduced hydrogen acceptor is used at stage B

(iii) Energy from ATP used to drive stage C

(iv) The substance formed at position Y is D

(v) If one molecule of substance Y is released per cycle, the cycle must turn $\underline{\quad E \quad}$ times for one molecule of sucrose $(C_{12}H_{22}O_{11})$ to be built up at position Z.

A. A-4 , B-2 , C-2 and 3 , D-3-carbon sugar , E-4

B. A-2 , B-3 , C-1 and 2 , D-pyruvic acid, E-2

C. A-2 , B-4 , C-3 and 4 , D-glucose-1-phosphate, E-8

D. A-1 , B-1 , C-2 and 4,D-citric acid , E-12

Answer: A

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49. The given graph shows pressure changes in the left side of the heart during a single heart beat

Between points W and X, which of the following valves are open or closed respectively ?

A.	Atrio-ventricular valves Closed	Semilunar valves Closed
B.	Atrio-ventricular valves Closed	Semilunar valves Open
C.	Atrio-ventricular valves Open	Semilunar valves Closed
D.	Atrio-ventricular valves Open	Semilunar valves Open

Answer: B

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50. Which of these epithelia is chiefly involved in function like diffusion and thereby is found in the wall of blood vessel and air sacs of the lungs ?

A. 

B. 

C. 

D. 

Answer: D

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