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00

NCERT Figure Based Questions (Discussion)



o1

Animal Classification



Q

- (1) Fertilization _____.
- (2) Development _____.
- (3) Excretion and osmoregulation by _____.

Fill in the blanks for organism given in the figure.

?

1

Internal, direct, renette cells



?

2

Internal, indirect, flame cells



?

3

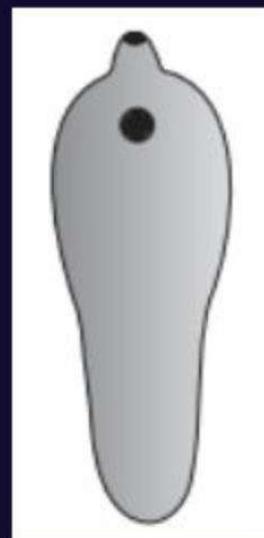
External, direct, nephridia



?

4

External, indirect, protonephridia



Q

**P
W**

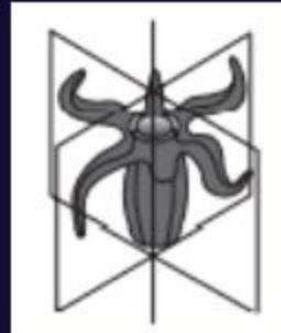
The below figure shows which type of symmetry

1 Bilateral

2 Radial

3 Biradial

4 Asymmetry

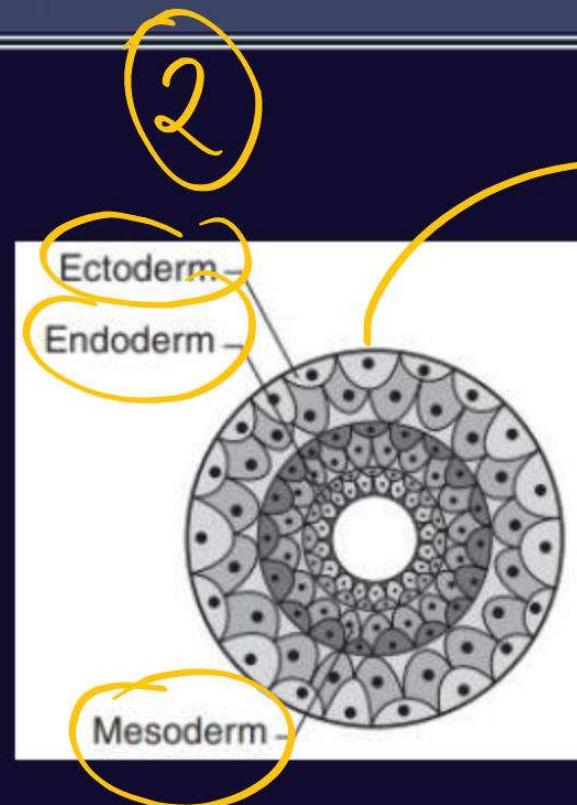


Q

The below diagram shows Bilateral symmetry, which is also found in the following group of organism.

PW

- 1 Adamsia, Asterias, Aplysia ✗
- 2 Salpa, Hyla, Calotes ✓
- 3 Taenia, Ctenoplana, Antedon ✗
- 4 Doliolum, Gorgonia, Sycon ✗ ✗



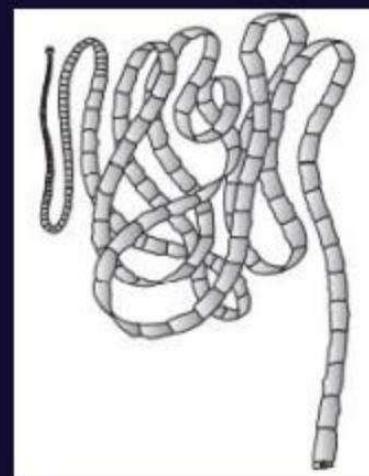
Triploblast (T^3)

- Solid Mesoderm
- T^3 - time origin of Mesoderm
- Acoelomat

Q

The excretory organ present in the organism given in figure is

- (a) Rennet cells
- (b) Protonephridia or flame cells
- (c) Malpighian tubules
- (d) Kidney

1
Rennet cells2
Protonephridia or flame cells3
Malpighian tubules4
Kidney

2

Q

P
W

All the features are present in the organism which is shown below in the diagram
except

1 It belongs to the **second largest** animal phylum.

2 Body is segmented and covered by calcareous shell.

3 Triploblastic, coelomate

4 Mantle cavity is present

2

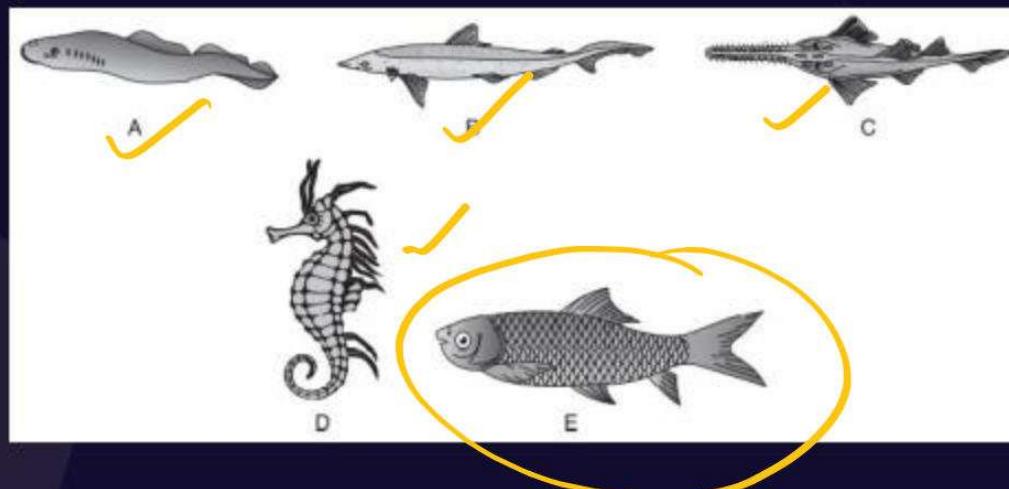


Q

Find out the total number of organism given in following figure that belongs to marine habitat:

PW

- 1
- 2
- 3
- 4
- 5

**3**

Q

Organism given in figure is respire by

**P
W**

1 Lungs ✓



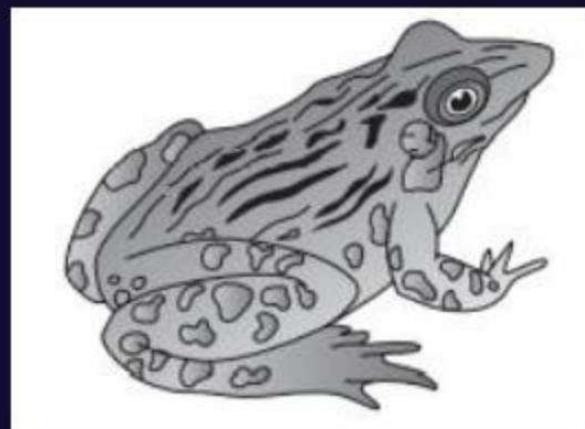
2 Skin ✓



3 Buccopharyngeal cavity ✓



4 All



o2

Structural Organization in Animals



Q

What indicates A to C in the below given figure?

**P
W****1**

A–Nucleus, B–Fat storage area, C–Plasma membrane

2

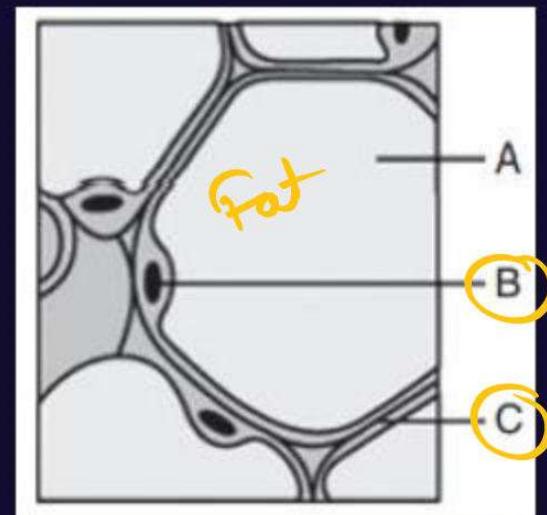
A–Fat storage area, B–Nucleus, C–Plasma membrane

3

A–Plasma membrane, B–Fat storage area, C–Nucleus

4

A–Plasma membrane, B–Nucleus, C–Fat storage area



Q

Identify A to D given in the figure.

PW

1

A-Collagen fibres, B-Macrophage,
C-Mast cell, D-Fibroblast

2

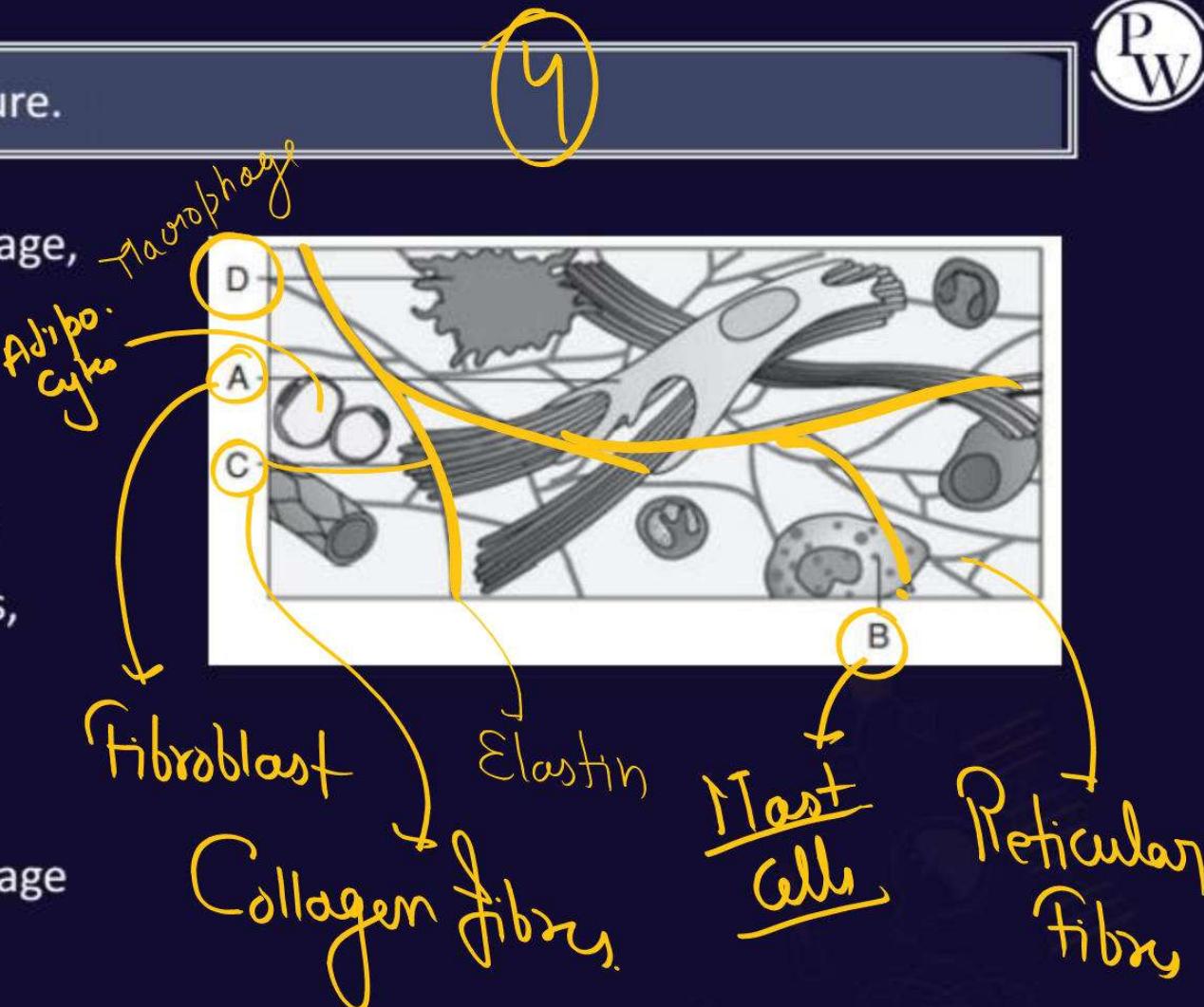
A-Macrophage, B-Fibroblast,
C-Mast cell, D-Collagen fibres

3

A-Mast cell, B-Collagen fibres,
C-Macrophage, D-Fibroblast

4

A-Fibroblast, B-Mast cell,
C-Collagen fibres, D-Macrophage



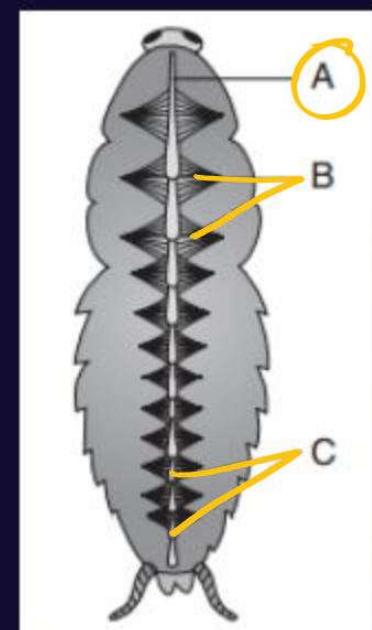
Q

Identify A, B and C given in the figure.

?

PW

A



P

1 A-Chambers of heart, B-Anterior aorta, C-Alary muscles X

2 A-Alary muscles, B-Chembers of heart, C-Anerior aorta X

3 A-Anterior aorta, B-Chambers of heart, C-Alary muscles X

4 A-Anterior aorta, B-Alary muscles, C-Chambers of heart ✓

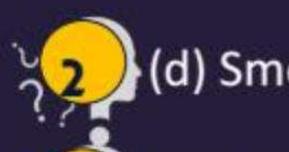


Q

The four sketches (a, b, c and d) given below, represent four different types of animal tissues. Which one of these is correctly identified in the options given, along with its correct location and function?

**P
W**

Tissue
(c) Collagen fibres



(d) Smooth muscle tissue



(a) Columnar epithelium



(b) Glandular epithelium

Location
Cartilage

Heart

Nephron

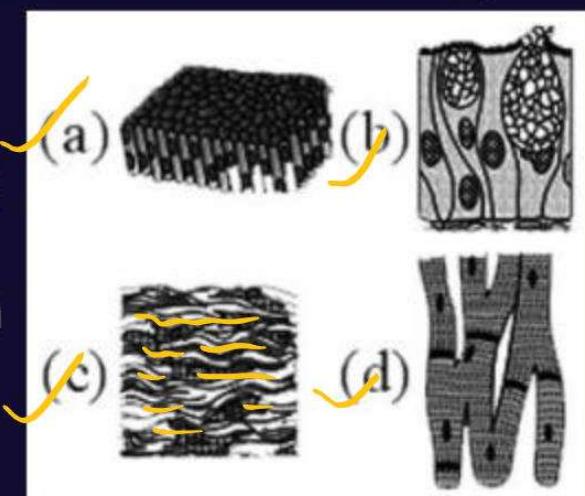
Intestine

Function
Attach skeletal muscles to bones

Heart contraction

Secretion and absorption

Secretion

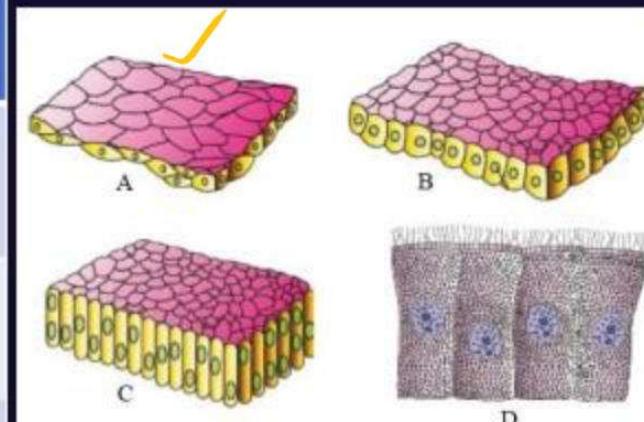


Q

Identify the following simple epithelial tissues:

PW**2**

A	B	C	D
Cuboidal	Squamous	Columnar	Ciliated column
Squamous	Cuboidal	Columnar	Ciliated columnar
Pseudostratified squamous	Cuboidal	Columnar	Ciliated columnar
Squamous	Cuboidal	Columnar	Pseudostratified columnar (ciliated)



- 1
- 2
- 3
- 4



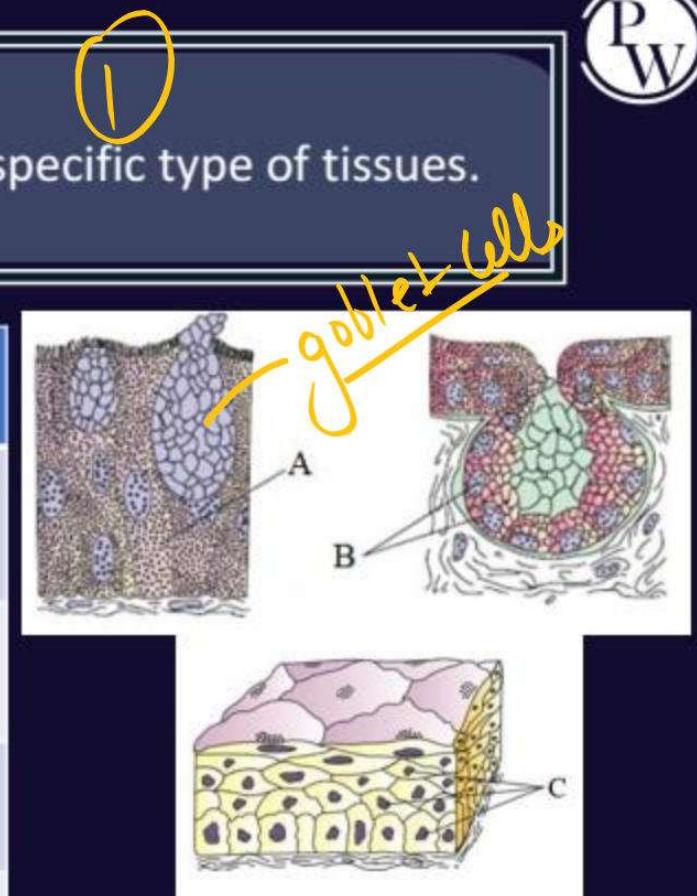
Q

Observe the following figures:

Figures A and B indicate glands while Figure C indicates specific type of tissues.

Identify these figures:

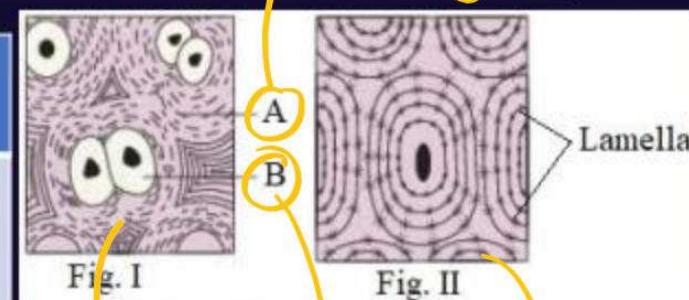
A	B	C
Unicellular gland	Multicellular gland	Compound epithelium
Unicellular gland	Multicellular gland	Pseudostratified epithelium
Multicellular gland	Unicellular gland	Pseudostratified epithelium
Unicellular gland	Goblet gland	Pseudostratified epithelium



Q

Identify figure-I and II, structure A and B respectively? Figures are related with specialized connective tissues:

Fig. I	Fig. II	A	B
1 Cartilage	Bone	Collagen	Chondrocyte
2 Cartilage	Bone	Collagen	Chondroblast
3 Cartilage	Bone	Microtubule	Chondroblast
4 Bone	Cartilage	Collagen fibres	Osteoblast



Cartilage
Bone
Chondrocyte

P W

Q

Identify A to E:



3

A	B	C	D	E
Pronotum	Mesothorax	Metathorax	Tegmina	Pleura
Pronotum	Mesothorax	Metathorax	Tegmina	Sterna
Pronotum	Mesothorax	Metathorax	Tegmina	Anal cerci
Pronotum	Mesothorax	Metathorax	Tegmina	Anal style

Thorax
Pronothorax
Pronotum (Covering of Prothorax)

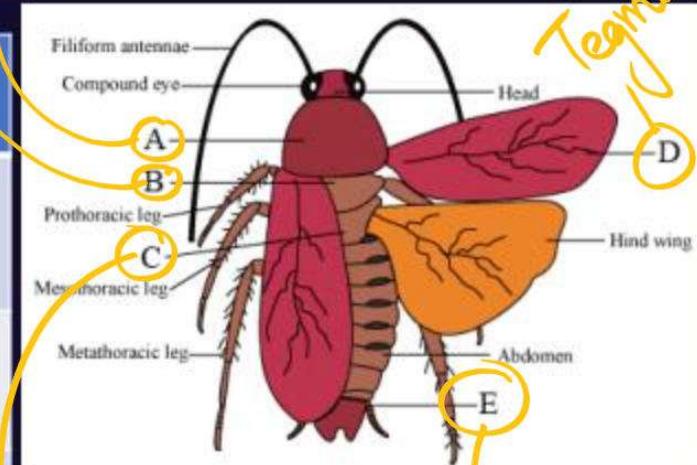


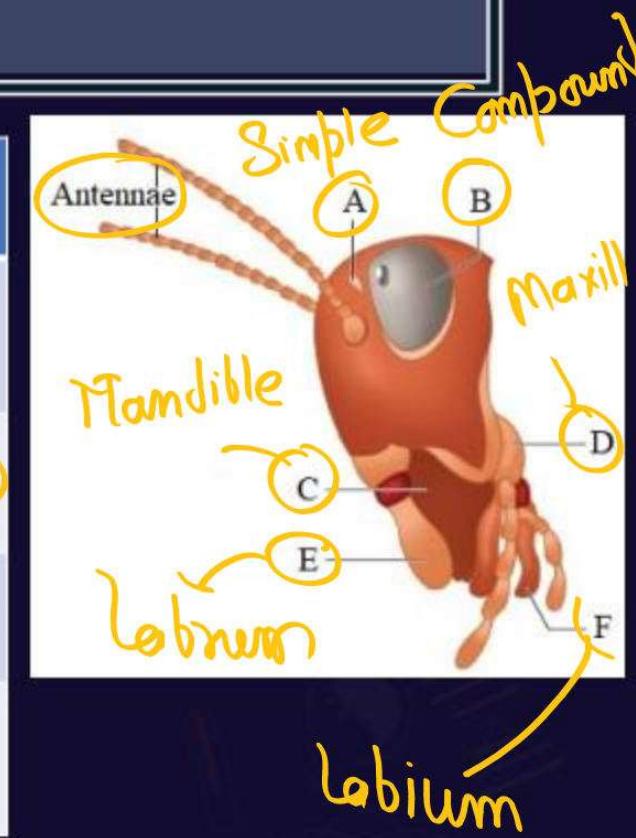
Figure: External features of cockroach

Metathorax
Anal cerci

Q

The following figure is related to head region of cockroach. Identify A to F.

A	B	C	D	E	F
Compound eye	Cellus	Maxilla	Mandible	Labrum	Labium
Ocellus	Compound eye	Mandible	Maxilla	Labrum	Labium
Ocellus	Compound eye	Mandible	Maxilla	Labium	Labrum
Ocellus	Compound eye	Maxilla	Mandible	Labium	Labrum

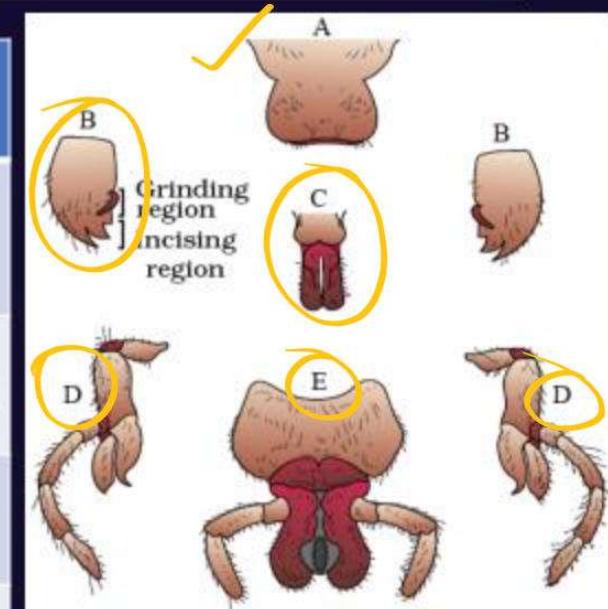


Q

The below figure is related with mouth parts of cockroach. Identify A to E:

3

A	B	C	D	E
Maxilla	Hypopharynx	Labium	Mandible	Labrum
Mandible	Labium	Maxilla	Labrum	Hypopharynx
Labrum	Mandible	Hypopharynx	Maxilla	Labium
Labium	Hypopharynx	Labrum	Maxilla	Mandible

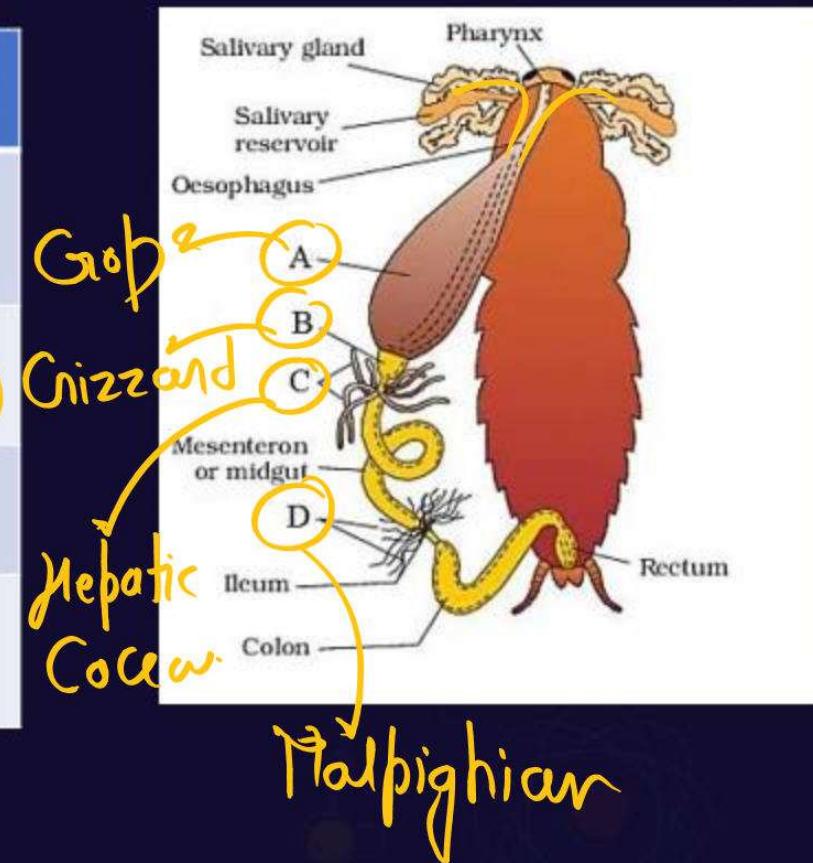


Q

Identify structures A to D:

Q

A	B	C	D
Gizzard	Crop	Hepatic caecae	Malpighian tubules
Crop	Gizzard	Hepatic caecae	Malpighian tubules
Crop	Gizzard	Malpighian tubules	Hepatic caecae
Gizzard	Crop	Malpighian tubules	Hepatic caecae



o3

Biomolecules



Q

Name the used amino acid in the above diagram.

**P
W****1**

Serine–Cysteine–Tyrosine–Glutamic acid

2

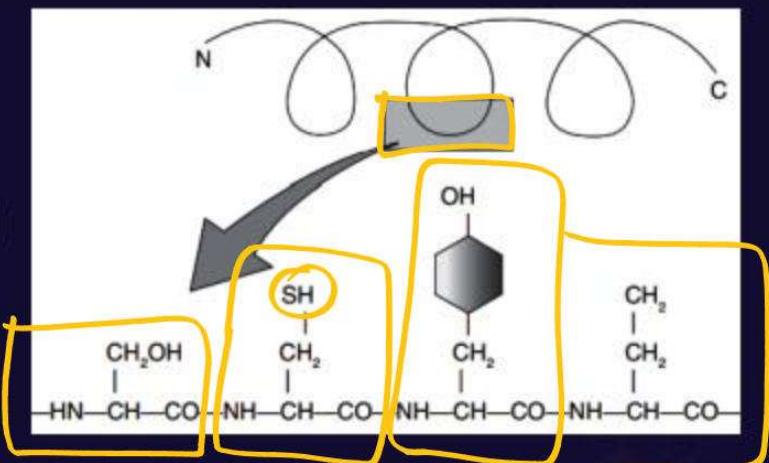
Serine–Methionin–Tryptophan–Glutamic acid

3

Serine–Methionin–Tyrosine–Aspartic acid

4

Serine–Cysteine–Tyrosine–Aspartic acid



Q

Which of the following is correct about secondary structure?

PW

α -Helix
 β -Plated

1 Helix is a primary structure.



3

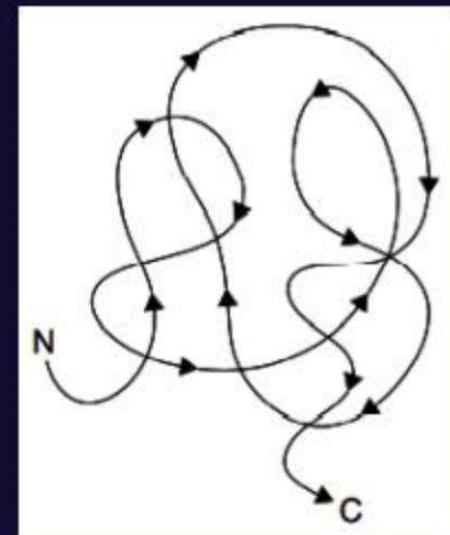
2 In proteins only left handed helices are observed.



3 In proteins only right handed helices are observed.



4 None of these

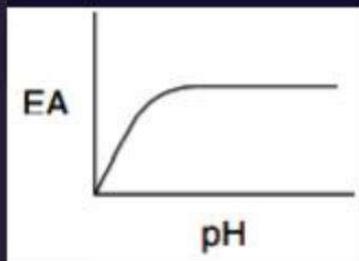


Q

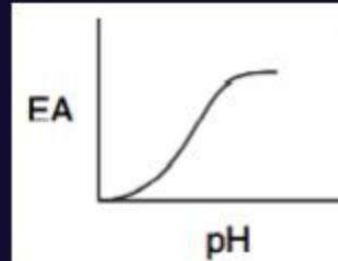
Which one of the graphs shows the effect of pH on the enzymatic activity (EA)?

PW

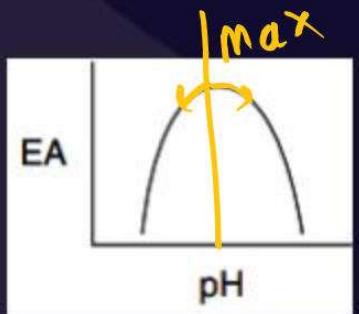
1



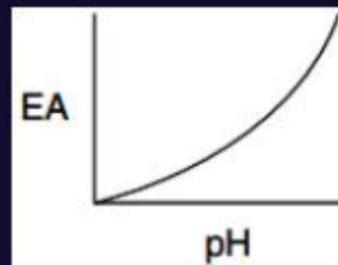
2



3



4



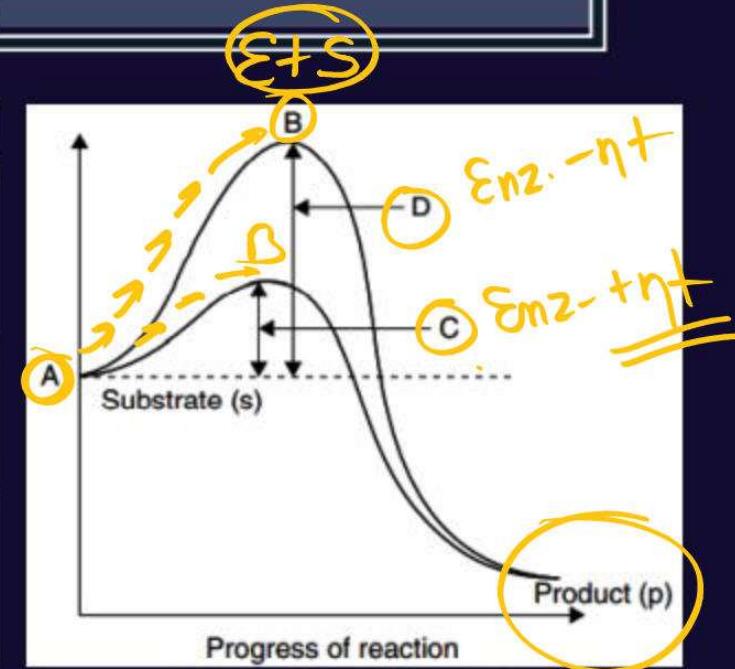
Q

The figure given below shows the conversion of a substrate into product by an enzyme. In which one of the options (a to d) the components of reaction labelled as A, B, C and D are identified correctly?

P
W

1

A	B	C	D
Potential energy	Transition state	Activation energy with enzyme	Activation energy without enzyme
Transition state	Potential energy	Activation energy without enzyme	Activation energy with enzyme
Potential energy	Transition state	Activation energy without enzyme	Activation energy with enzyme
Activation energy with enzyme	Transition state	Activation energy without enzyme	Potential energy



04

Digestion and Absorption



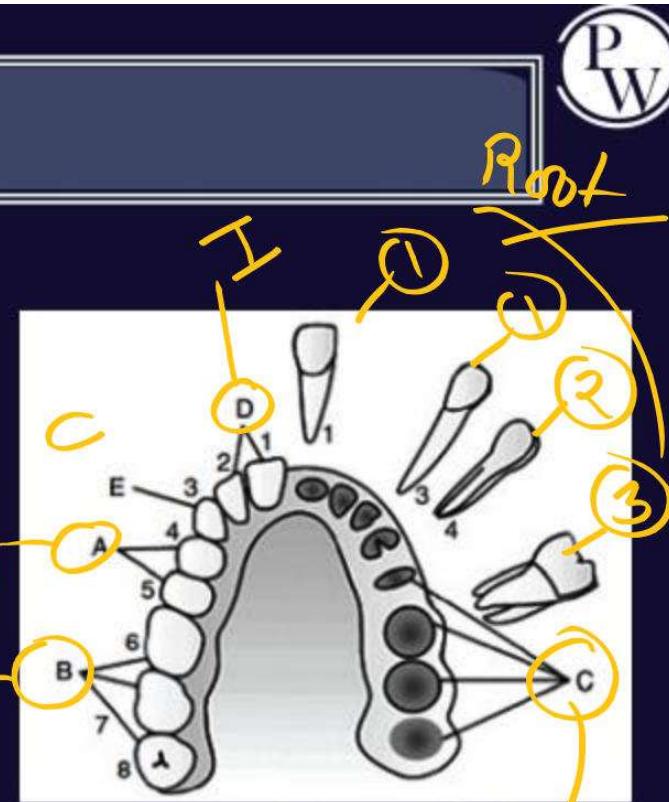
Q

Identify A, B, C, D and E in the given figure.

**P
W**

- 1 A—Molars, B—Incisor, C—Premolars, D—Canine, E—Socket of jaw
- 2 A—Premolars, B—Socket of jaw, C—Canine, D—Molars, E—Incisor
- 3 A—Premolars, B—Molars, C—Socket of jaw, D—Incisor, E—Canine
- 4 A—Socket of jaw, B—Canine, C—Premolars, D—Molars, E—Incisor

3



Q

Identify A to E in the given figure.



1
A—Oesophagus, B—Pyloric, C—Fundus,
D—Superior portion of duodenum, E—Cardiac



A—Pyloric, B—Cardiac, C—Fundus, D—Oesophagus,
E—Superior protein of duodenum



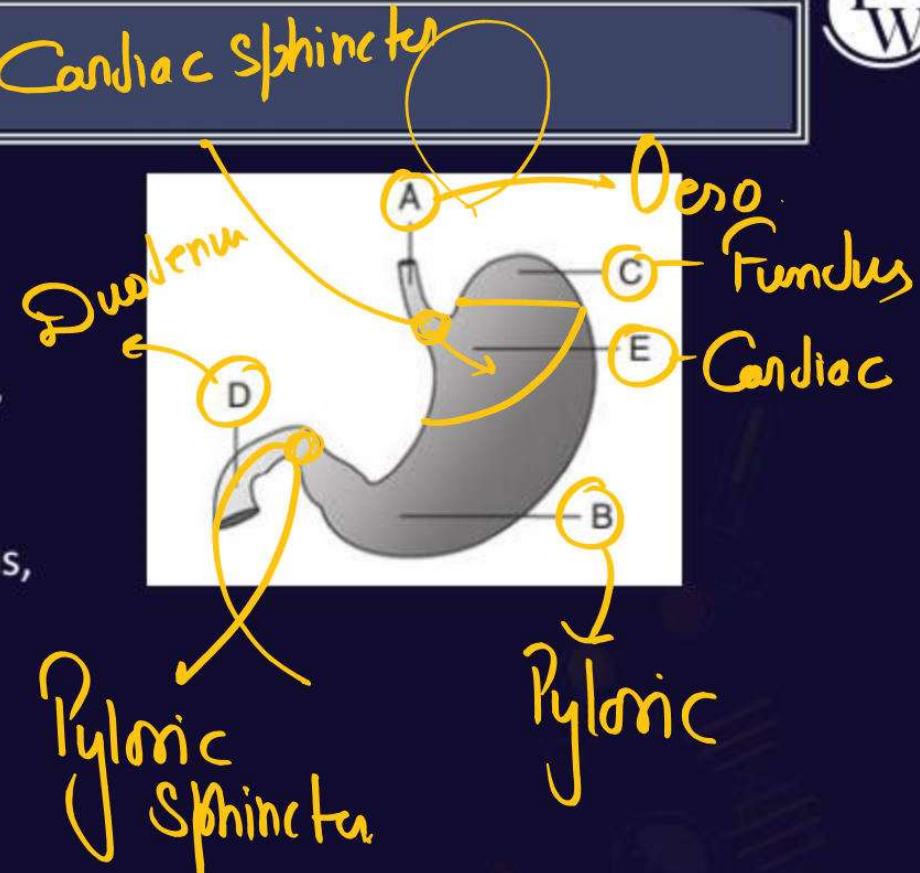
3
A—Superior protein of duodenum, B—Oesophagus,
C—Cardiac, D—Fundus, E—Pyloric



4
A—Oesophagus, B—Fundus, C—Pyloric,
D—Superior protein of duodenum, E—Cardiac

PW

Cardiac Sphincter

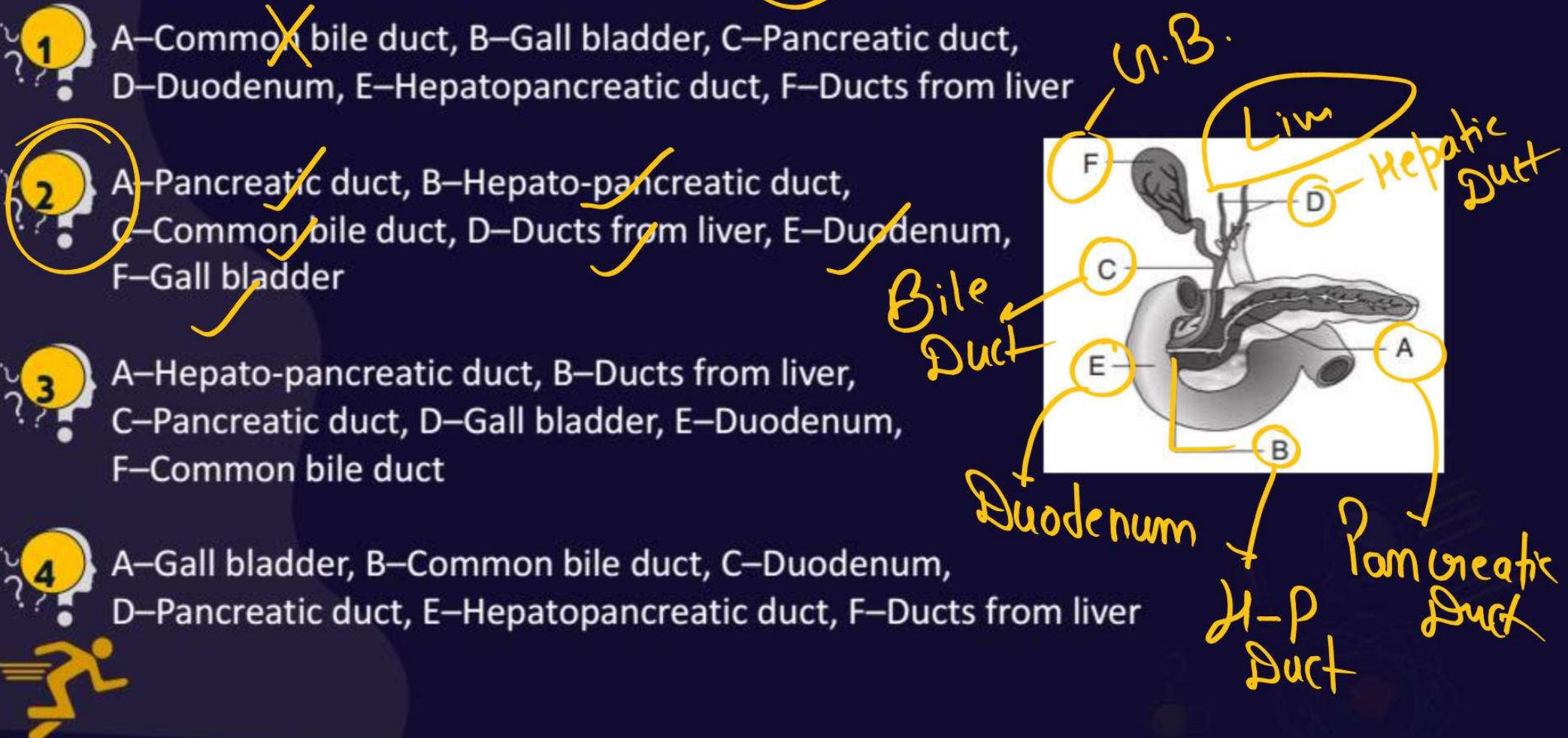


Q

Identify A to F in the given figure.

Q

P
W



Q

The below diagram represents the TS of Gut. Identify A, B, C and D:

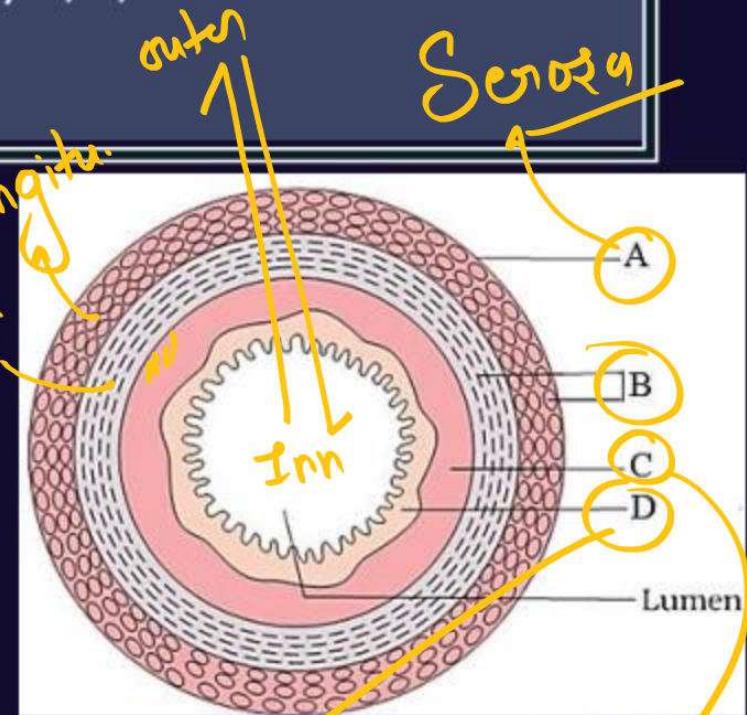
1

A-Serosa; B-Muscularis; C-Submucosa; D-Mucosa

A-Muscularis; B-Serosa; C-Submucosa; D-Mucosa

A-Serosa; B-Muscularis; C-Mucosa; D-Submucosa

A-Serosa, B-Submucosa, C-Muscularis, D-Mucosa

PW

Mucose . Submucos.

o5

Breathing and Exchange of Gases



Q**P
W**

$$P_{O_2} = 159 \rightarrow 104 \rightarrow 95 \rightarrow 95 \rightarrow 40$$

$$P_{CO_2} = 45 \rightarrow 45 \rightarrow 40 \rightarrow 32 \rightarrow 0.3$$

$$P_{O_2} = 159$$

16

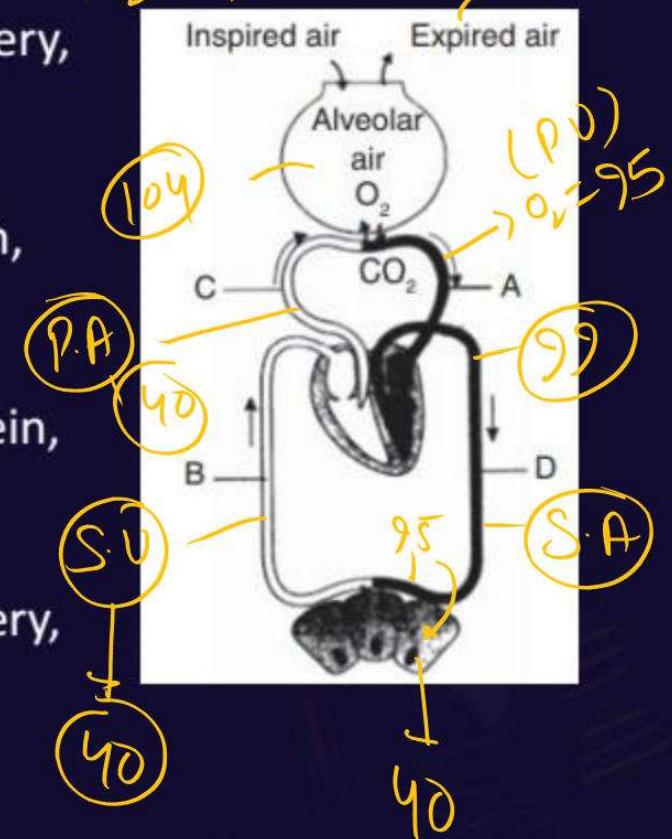
Name the blood vessel A to D.

1 A-Pulmonary vein, B-Systemic vein, C-Pulmonary artery,
D-Systemic artery

2 A-Systemic vein, B-Systemic artery, C-Pulmonary vein,
D-Pulmonary artery

3 A-Systemic artery, B-Pulmonary artery, C-Systemic vein,
D-Systemic artery

4 A-Pulmonary artery, B-Systemic vein, C-Systemic artery,
D-Pulmonary vein



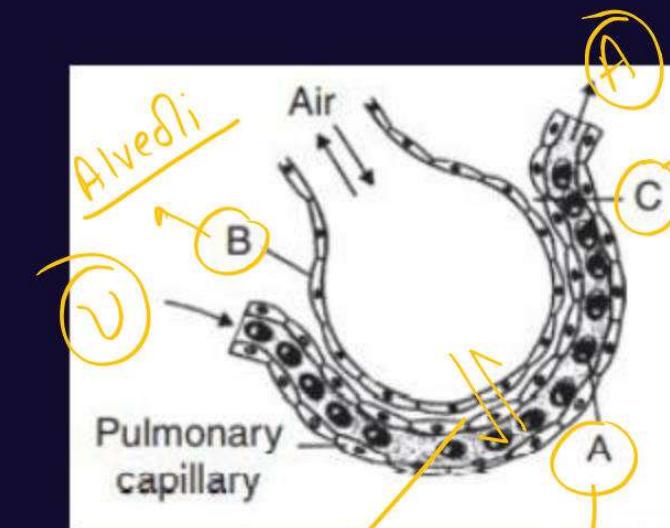
Q

Study the accompanying figure. Identify A to C from the above figure.

**P
W**

- 1 A-Basement substance, B-RBC, C-Alveolar wall X
- 2 A-Alveolar wall, B-Basement substance, C-RBC X
- 3 A-RBC, B-Basement substance, C-Alveolar wall X
- 4 A-RBC, B-Alveolar wall, C-Basement substance ✓

4



B.M

A
B
C
R.B.C
3-layers
= < 1mm thickness

Q

The figure shows a diagrammatic view of human respiratory system with labels A, B, C and D. Select the option which gives the correct identification and main function and/or characteristics.

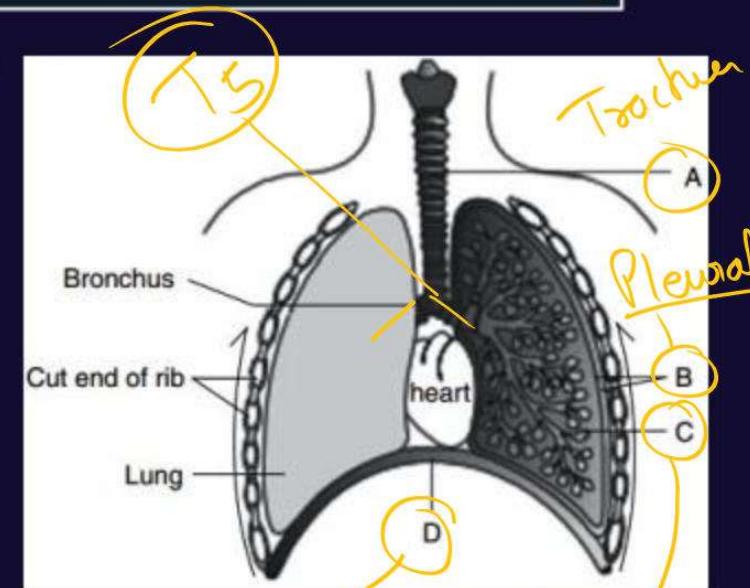
3

A – Trachea – long tube supported by complete cartilaginous rings for conducting inspired air

B – Pleural membrane – surround ribs on both sides to provide cushion against robbing

C – Alveoli – thin walled vascular bag like structures for exchange of gases

D – Lower end of lungs – diaphragm pulls it down during inspiration



Diaphragm

Alveoli

Q

Figure shows the schematic plant of blood circulation in humans with labels A to D. Identify the label a give its function/s.

PW

[AIPMT 2013]

(3)

1 A – Pulmonary vein – takes impure blood from body parts,

$$pO_2 = 60 \text{ mm Hg.}$$

2 B – Pulmonary artery – takes blood from heart to lungs

$$pO_2 = 90 \text{ mm Hg.}$$

3 C – Vena Cava – takes blood from body parts to right auricle,

$$pCO_2 = 45 \text{ mm Hg.}$$

4 D – Dorsal aorta – takes blood from heart body parts,

$$pO_2 = 95 \text{ mm Hg.}$$



06

Body Fluids and Circulation



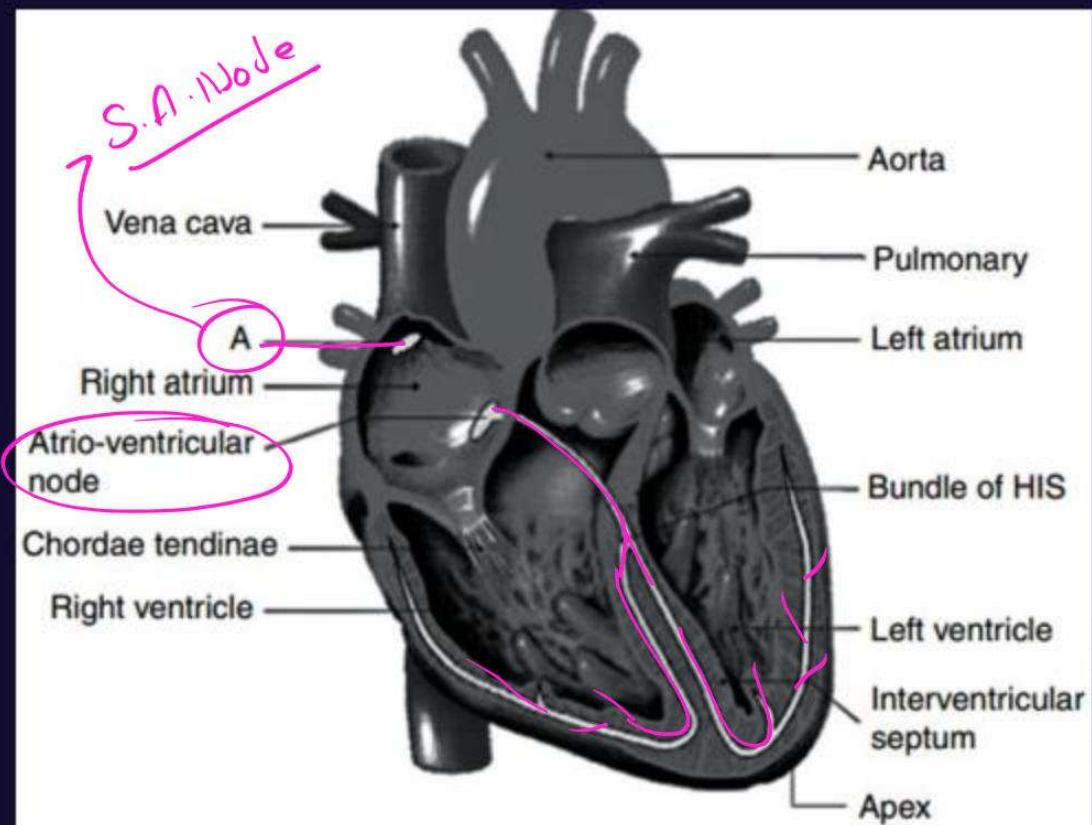
Q

The full form of label 'A' in the diagram is

**P
W**

- 1 Sin-Atrial-Node
- 2 Sinu-Atrial-Node
- 3 Sino-Atrial-Node
- 4 Sinus-Atrial-Node

3



Q

The given figure describes the diagrammatic representation of standard ECG.

**P
W**

1 A-I, B-II, C-III

2 A-III, B-II, C-I

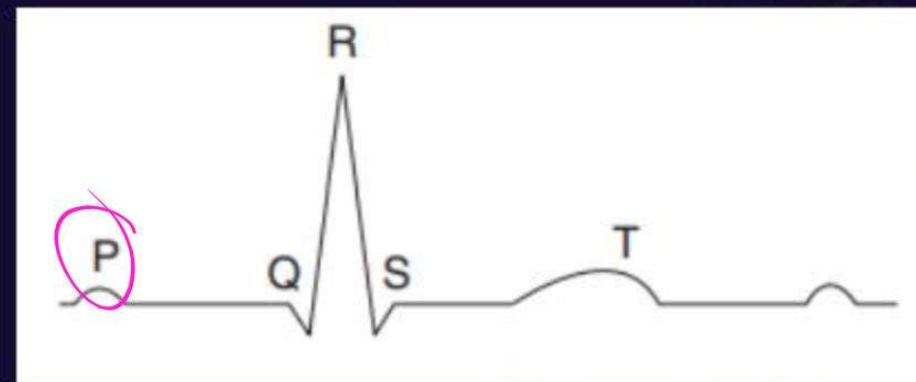
3 A-II, B-I, C-III

4 A-II, B-III, C-I

(3)

+ve P R T
 -ve Q & S

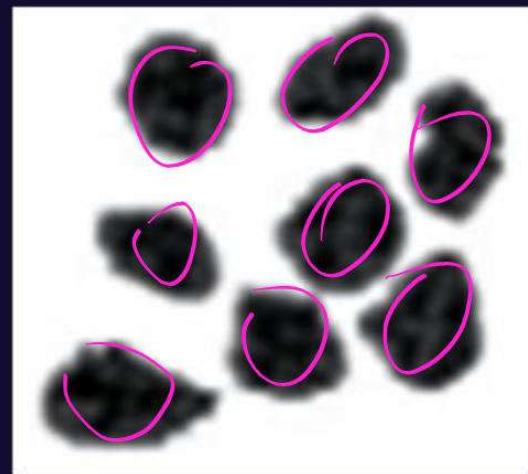
	Column I		Column II
A.	P-wave	I.	Ventricular depolarization followed by ventricular contraction
B.	QRS complex	II.	Atrial depolarization followed by systole of both atria
C.	T-wave	III.	Ventricular repolarization followed by ventricular relaxation



Q**P
W**

The function of the cell fragments in blood (given in the diagram) is

- 1 To resist infection
- 2 To be responsible for immune response
- 3 To help in clotting of blood
- 4 To resist allergy



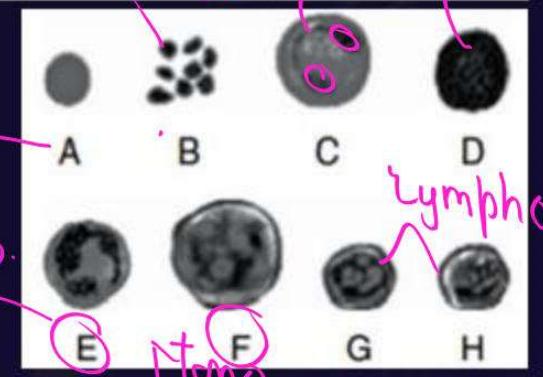
Q

Identify A, B, C, D, E, F, G and H in the given diagram.

P
W

3

A	B	C	D	E	F	G	H
Neturo-phil	Eosino-phil	Platelets	Basophil	Neutrophil	Monocyte	T lymphocyte	B lymphocyte
RBC	Platelets	Basophil	Eosinophil	Monocyte	Neutrophil	T lymphocyte	B lymphocyte
RBC	Platelets	Eosinophil	Basophil	Neutrophil	Monocyte	T lymphocyte	B lymphocyte
T lymphocyte	B lymphocyte	Platelets	Eosinophil	Basophil	Neutrophil	Monocyte	RBC



07

Excretory Products and Their Elimination



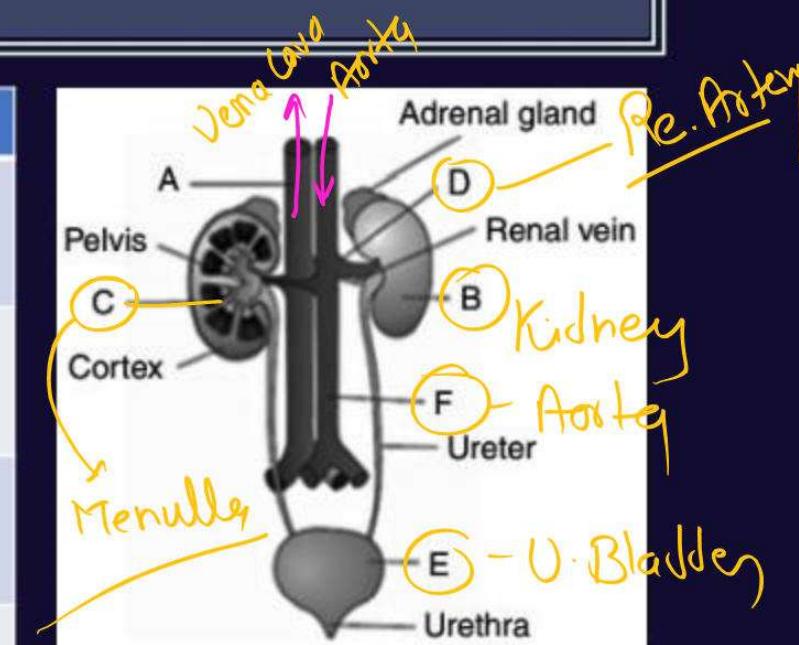
Q

Observe the following figure.
Identify A to E structure:

2

P
W

A	B	C	D	E
Renal artery	Urinary bladder	Inferior vena cava	Kidney	Medulla
1 Inferior vena cava	2 Kidney	3 Medulla	4 Renal artery	Urinary bladder
Urinary bladder	Urinary bladder	Kidney	Inferior vena cava	Renal artery
Kidney	Kidney	Inferior vena cava	Urinary bladder	Medulla

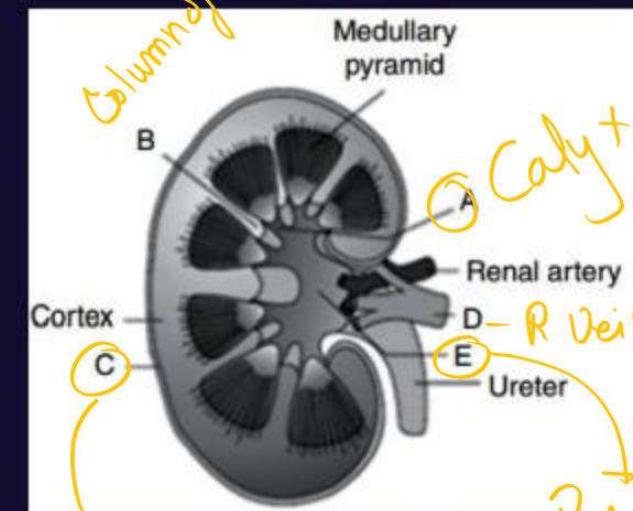


Q

Go through the following figure:

P
W

A	B	C	D
Renal column	Renal capsule	Calyx	Renal pelvis
Renal capsule	Renal pelvis	Renal vein	Calyx
1 Calyx	2 Renal column	3 Renal capsule	4 Renal vein
Renal vein	Calyx	Renal column	Renal capsule



Column of Bertini

(3)

Q

Match the following:

D**P
W****1**

A—Proximal convoluted tubule, B—Afferent arteriole,
C—Vasa recta, D—Bowman's capsule, E—Henle's loop

2

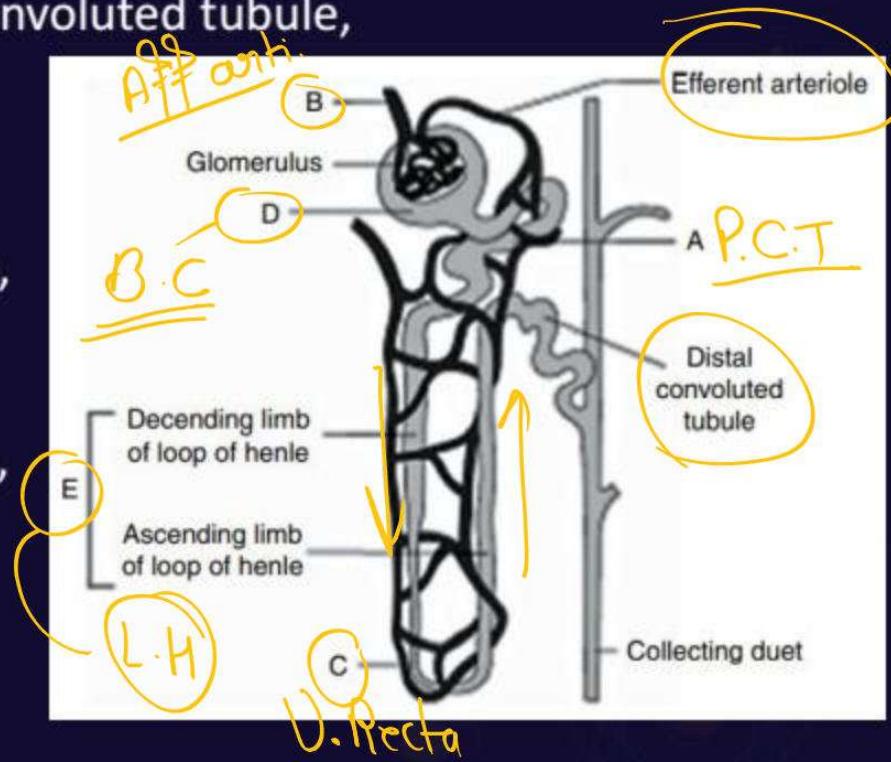
A—Henle's loop, B—Vasa recta, C—Proximal convoluted tubule,
D—Bowman's capsule, E—Afferent arteriole

3

A—Bowman's capsule, B—Henle's loop,
C—Proximal convoluted tubule, D—Vasa recta,
E—Afferent arteriole

4

A—Vasa recta, B—Proximal convoluted tubule,
C—Bowman's capsule, D—Afferent arteriole,
E—Henle's loop



Q

The following diagram represents the Malpighian body. Identify A to D.

PW

1

A-Efferent arteriole, B-Afferent arteriole,
C-Bowman's capsule, D-DCT

2

A-Afferent arteriole, A-Efferent arteriole,
C-Renal corpuscle, D-Proximal convoluted tubule

3

A-Efferent arteriole, B-Bowman's capsule,
C- Afferent arteriole, D-PCT

4

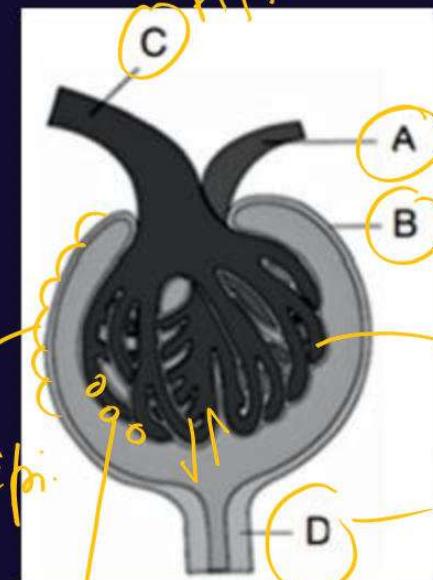
A-Afferent arteriole, B-Efferent arteriole,
C-Bowman's capsule, D-DCT

3

3

Sqa. Epi.

Podocytes



App. art.
Epi. C.
P.C.T.

Q

The diagram following the different parts absorb:
Identify A, B and D.

PW

1

A-Urea, B-Thick segment of ascending limb,
D-Descending limb of loop of Henle

2

A-Descending limb of loop of Henle,
B-Thick segment of ascending limb, D-Urea

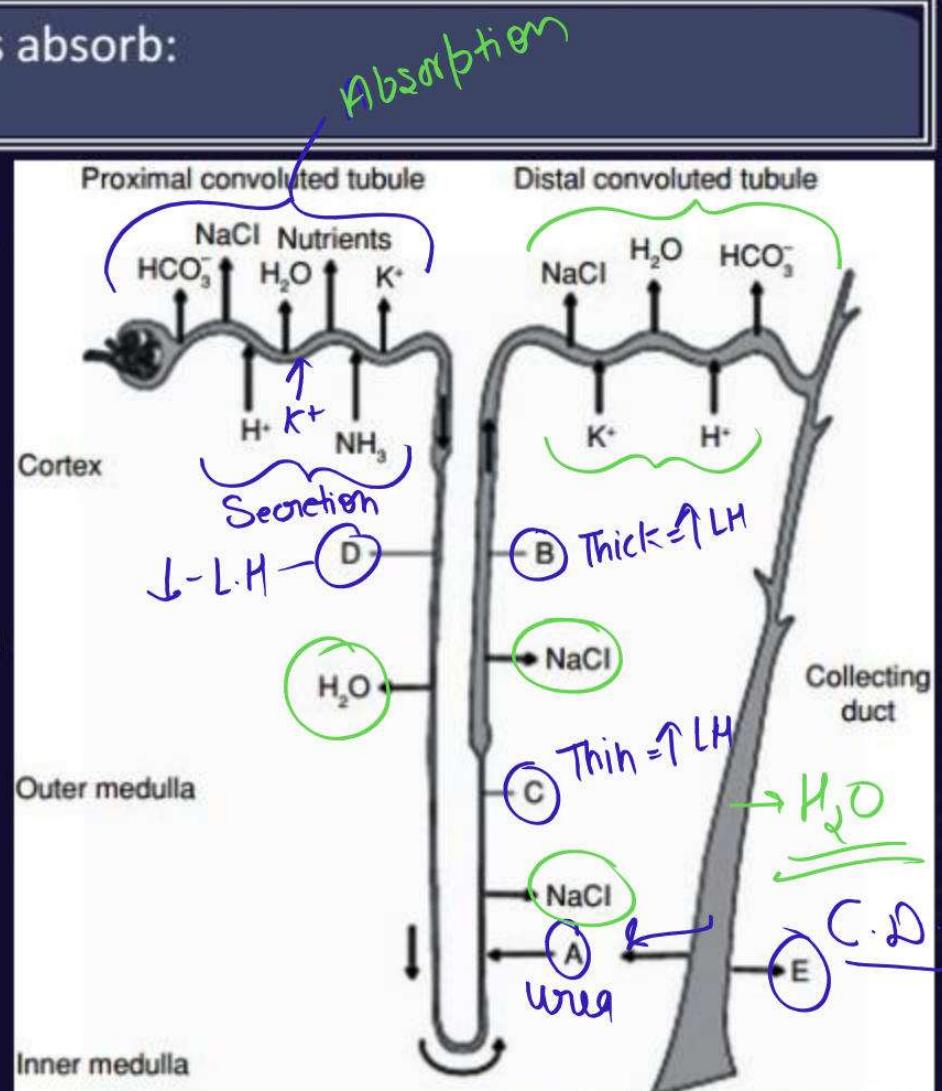
3

A-Thick segment of ascending limb,
B-Descending limb of loop of Henle, D-Urea

4

A-Thick segment of ascending limb,
B-Thick segment of ascending limb, D-Urea

①



08

Locomotion and Movement



Q

Identify A, B, C and D in the given figure.

PW**1**

- A-Sarcolemma, B-Blood capillary,
C-Fascicle (muscle bundle),
D-Muscle fibre (muscle cell)

2

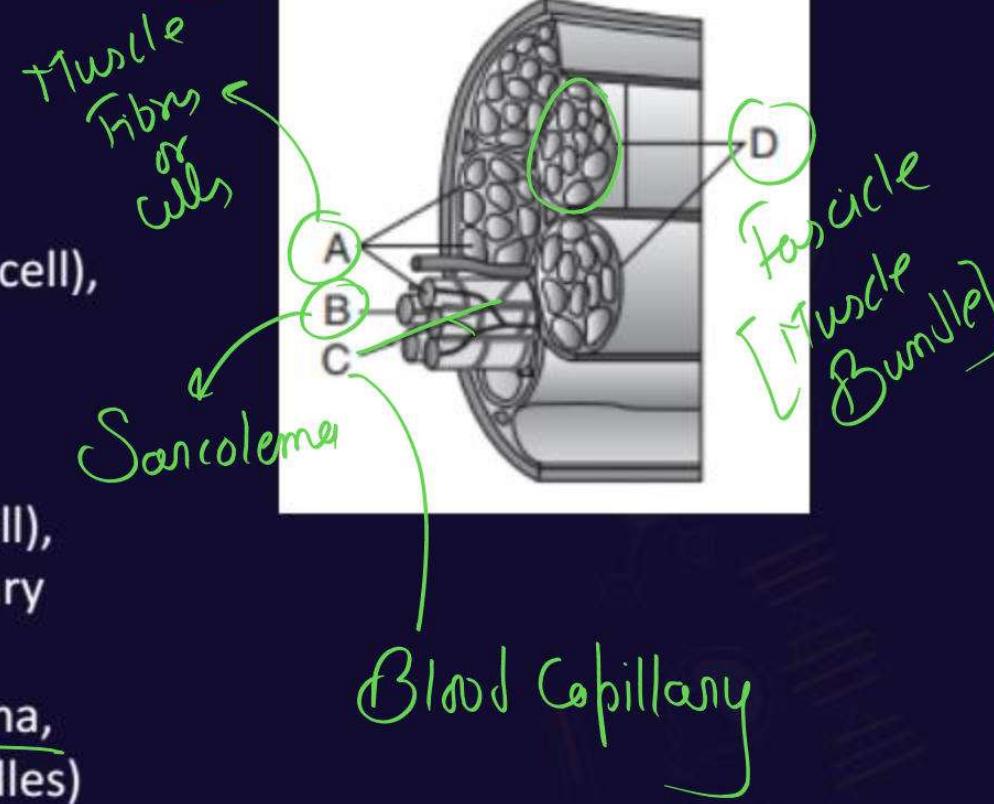
- A-Blood capillary, B-Muscle fibre (muscle cell),
C-Fascicle (muscle bundle),
D-Sarcolemma

3

- A-Sarcolemma, B-Muscle fibre (muscle cell),
C-Fascicle (muscle bundle), D-Blood capillary

4

- A-Muscle fibre (muscle cell), B-Sarcolemma,
C-Blood capillary, D-Fascicle (muscle bundles)

**4**

Q

Following is the figure of actin (thin) filaments. Identify A, B and C.

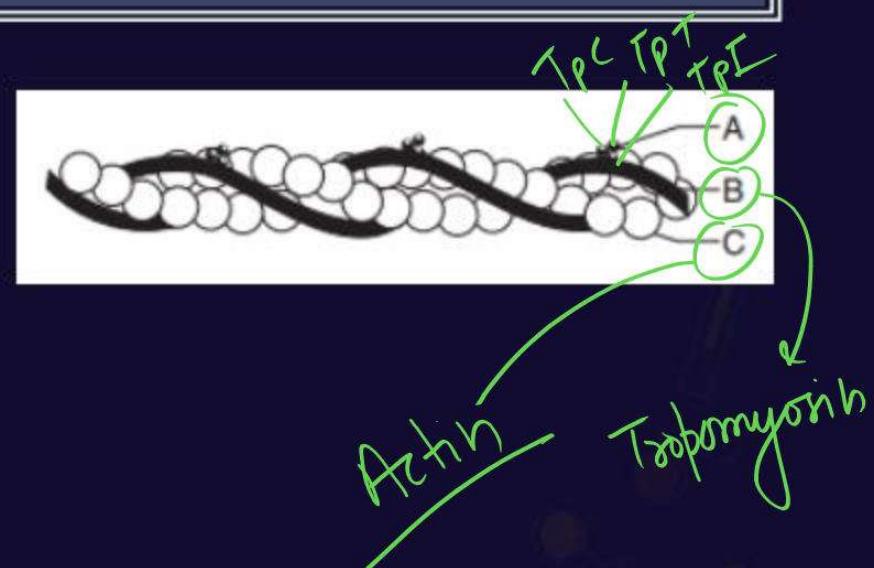
**P
W**

1 A-Tropomyosin, B-Troponin, C-F actin

2 A-Tropomyosin, B-Myosin, C-F Tropomyosin

3 A-Troponin, B-Tropomyosin, C-Myosin

4 A-Troponin, B-Tropomyosin, C-F actin



Q

Identify A to D in the below figure.

?

?

1

A—Actin binding sites, B—Head,
C—Cross arm, D—ATP binding sites

?

?

2

A—Cross arm, B—Actin binding sites,
C—ATP binding sites, D—Head

?

?

?

3

A—ATP binding sites, B—Head,
C—Actin binding sites, D—Cross arm

?

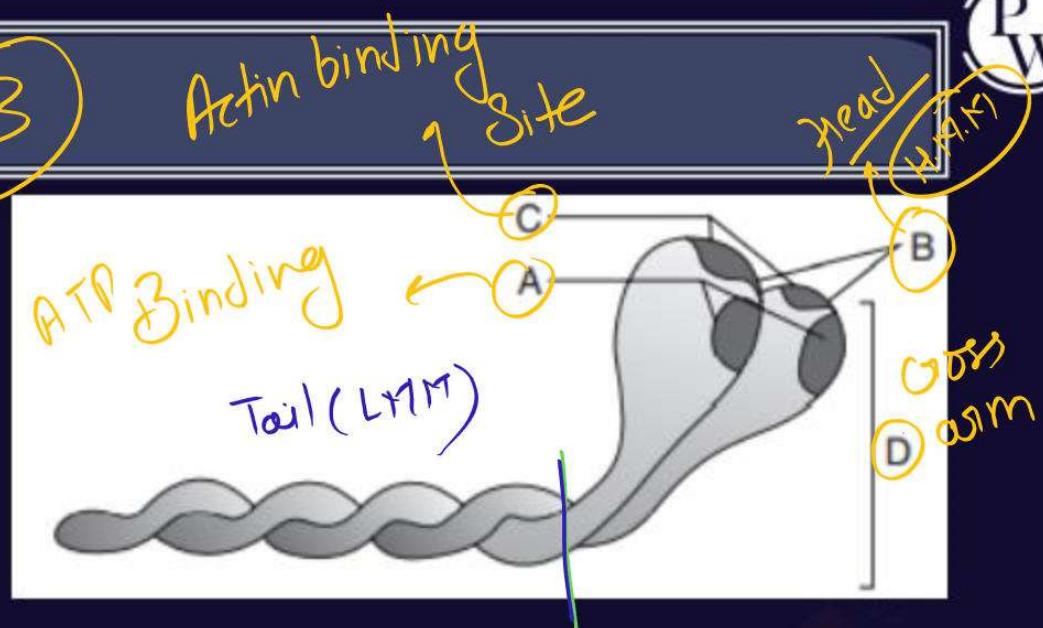
?

?

4

A—Head, B—Cross arm, C—ATP binding sites,
D—Actin binding sites

3



unit of Myosin = Titinomyosin



Q

Go through the following diagram describing muscle contraction. Identify A to E.

P
W

?

1

A-Sliding/Rotation, B-Actin filament,
C-Myosin head, D-ATP

?

2

A-Myosin head, B-Sliding/Rotation,
C-ATP, D-Actin filament

?

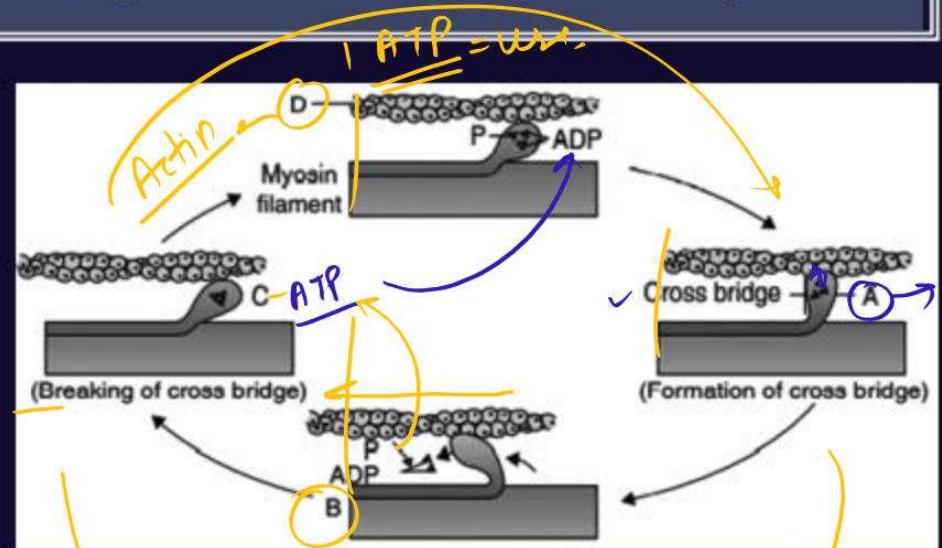
3

A-Sliding/Rotation, B-Myosin head,
C-Actin filament, D-ATP

?

4

A-Actin filament, B-Sliding/Rotation,
C-ATP, D-Myosin head



Sliding
formation | breaking of ATP



Q

The diagrams given above depicts three different condition of sarcomeres.

Identify these conditions:

The diagrams given above depicts three different condition of sarcomeres.

Identify these conditions:

(3)

1

A-contracting, B-relaxed, C-maximally contracted

2

A-relaxed, B-contracting, C-maximally contracted

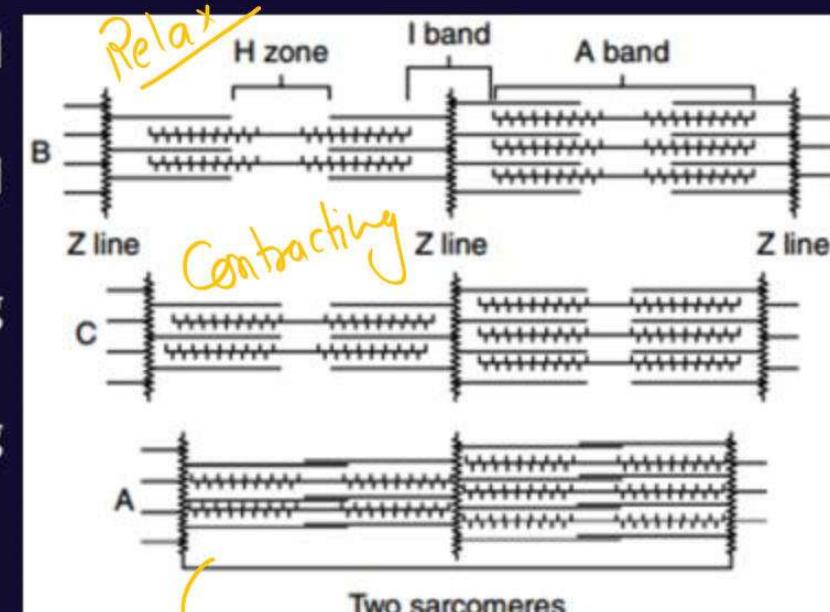
3

A-maximally contracted, B-relaxed, C-contracting

4

A-relaxed, B-maximally contracted, C-contracting

**P
W**



Max^m Contraction

Q

Which part is indicated as A, B, C, D, and E in the given figure?

**P
W**

1

A—Clavicle, B—Scapula, C—Humerus, D—Radius, E—Ulna

2

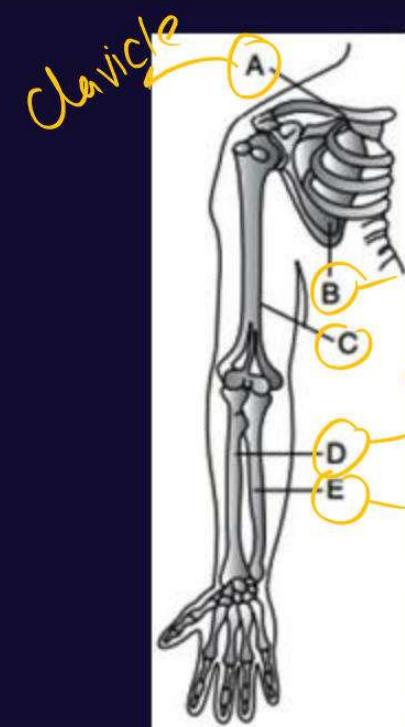
A—Humerus, B—Clavicle, C—Ulna, D—Scapula, E—Radius

3

A—Ulna, B—Humerus, C—Clavicle, D—Radius, E—Scapula

4

A—Radius, B—Ulna, C—Scapula, D—Clavicle, E—Humerus



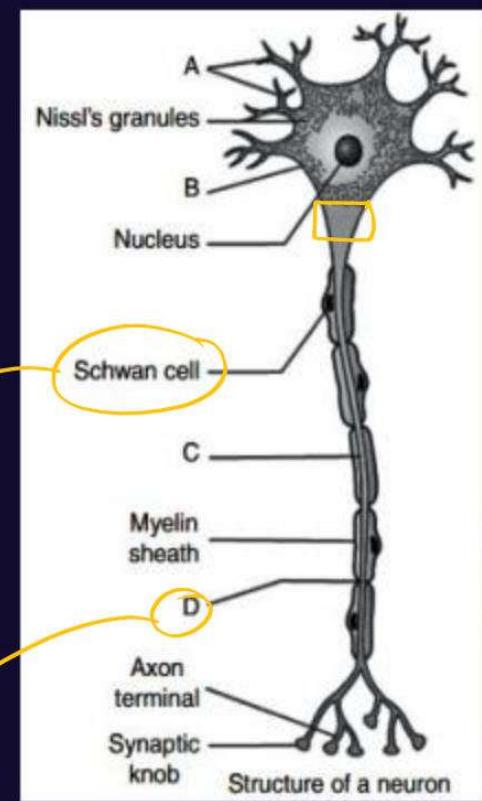
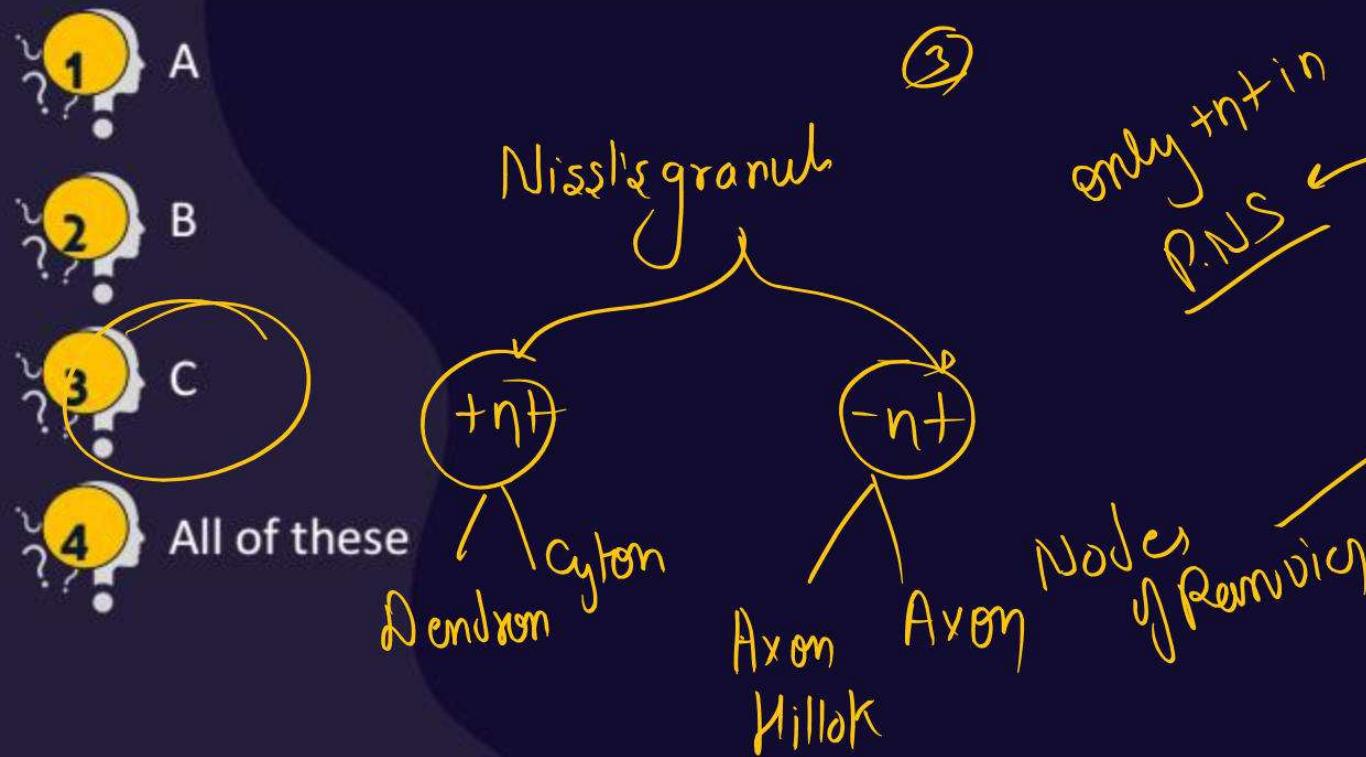
09

Neural Control and Co-ordination



Q

Question A and B is related to diagram given below.
Which part do not contain Nissl's granule?

PW

Q

Question A and B is related to diagram given below.
Which path of transmission is correct?

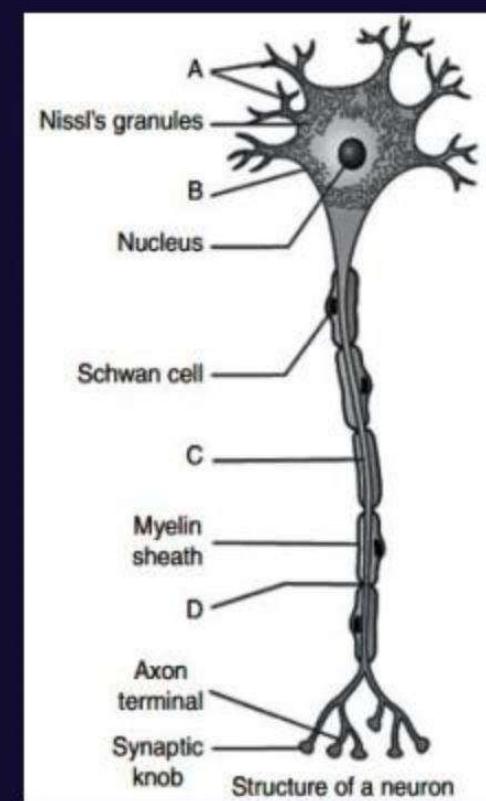
1 A → B → C

2 B → A → C

3 C → B → A

4 B → A → B → C

Conduction
↓
Dendron → Cyton
Axon
Dendron
Cyton → Axon

**PW**

Q

Identify A to H in the given figure.

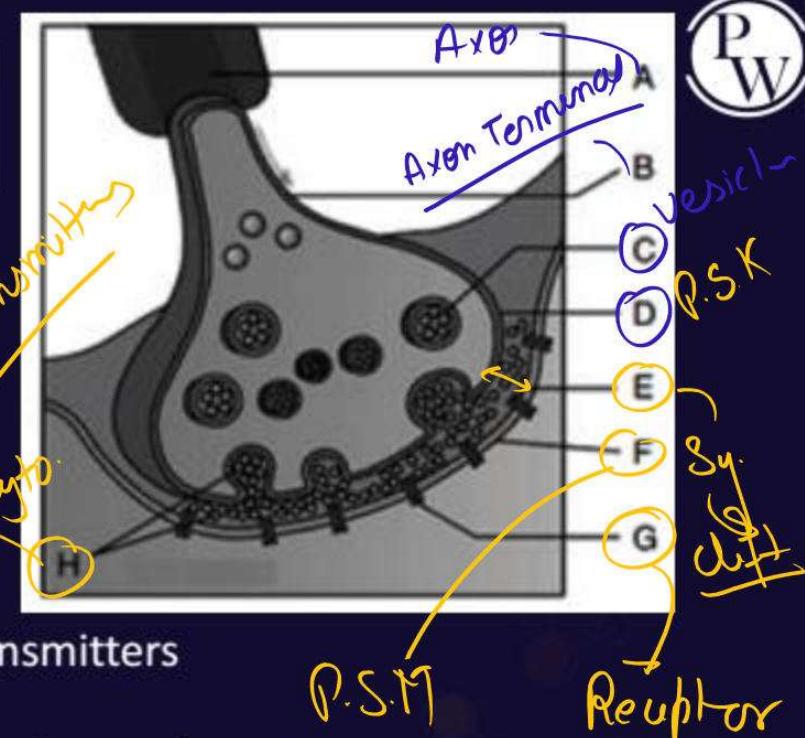
Q

- 1 A—Neurotransmitters, B—Pre-synaptic membrane,
 C—Receptors, D—Axon, E—Synaptic vesicles,
 F—Axon terminal, G—Synaptic cleft,
 H—Post-synaptic membrane

- 2 A—Axon, B—Axon terminal, C—Synaptic vesicles,
 D—Pre-synaptic membrane, E—Synaptic cleft,
 F—Post-synaptic membrane, G—receptors, H—Neurotransmitters

- 3 A—Receptors, B—Post-synaptic membrane, C—Pre-synaptic membrane,
 D—Axon terminal, E—Neurotransmitters, F—Synaptic cleft, G—Synaptic vesicles, H—Axon

- 4 A—Axon terminal, B—Neurotransmitters, C—Synaptic vesicles, D—Axon,
 E—Presynaptic membrane, F—Post-synaptic membrane, G—Synaptic vesicles,
 H—Synaptic cleft



Q

In the diagram of the lateral view of the human brain, the parts are indicated by alphabets. Choose the answer in which these alphabets have been correctly matched with the parts which they indicate?

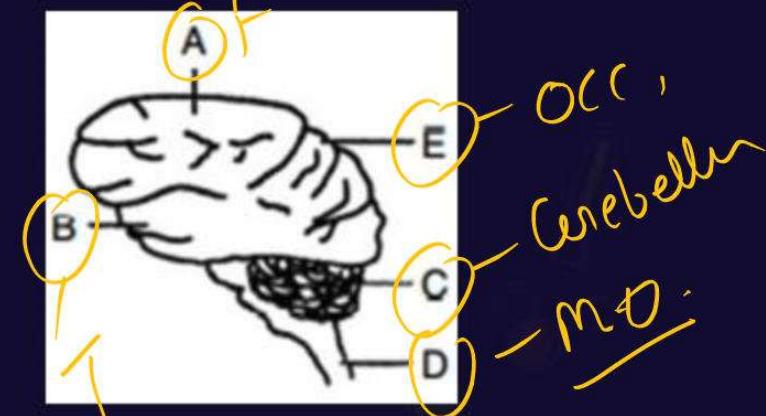
**P
W**

- 1 A-Temporal lobe, B-Parietal lobe, C-Cerebellum,
D-Medulla oblongata, E-Frontal lobe

- 2 A-Frontal lobe, B-Temporal lobe, C-Cerebrum,
D-Medulla oblongata, E-Occipital lobe

- 3 A-Temporal lobe, B-Parietal lobe, C-Cerebrum,
D-Medulla oblongata, E-Frontal lobe

- 4 A-Frontal lobe, B-Temporal lobe, C-Cerebellum,
D-Medulla oblongata, E-Occipital lobe



Q

Identify A to F in the given figure.

4

1

A—Cochlear nerve, B—Incus, C—Eustachian tube,
D—Cochlea, E—External auditory canal,
F—Tympanic membrane

2

A—External auditory canal, B—Eustachian tube,
C—Temporal bone, D—Steps in oval window,
E—Tympanic membrane, F—Cochlear nerve

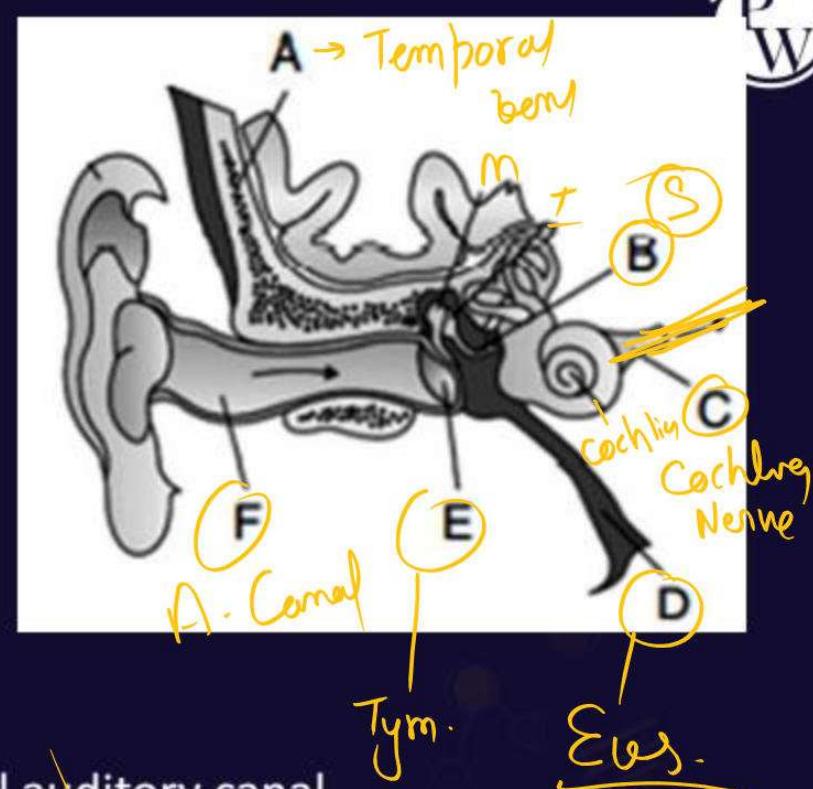
3

A—Cochlea, B—Tympanic membrane, C—Incus,
D—Cochlear nerve, E—Eustachian tube, F—External auditory canal

4

A—Temporal bone, B—Steps in oval window, C—Cochlear nerve,
D—Eustachian tube, E—Tympanic membrane, F—External auditory canal

P
W



Q

Identify A, B, C, D, E, F and G in the given figure.

1

A-Scala vestibuli, B-Tectorial membrane, C-Scala tympani,
D-Basilar membrane, E-Organ of corti, F-Scala media,
G-Reissner's membrane

2

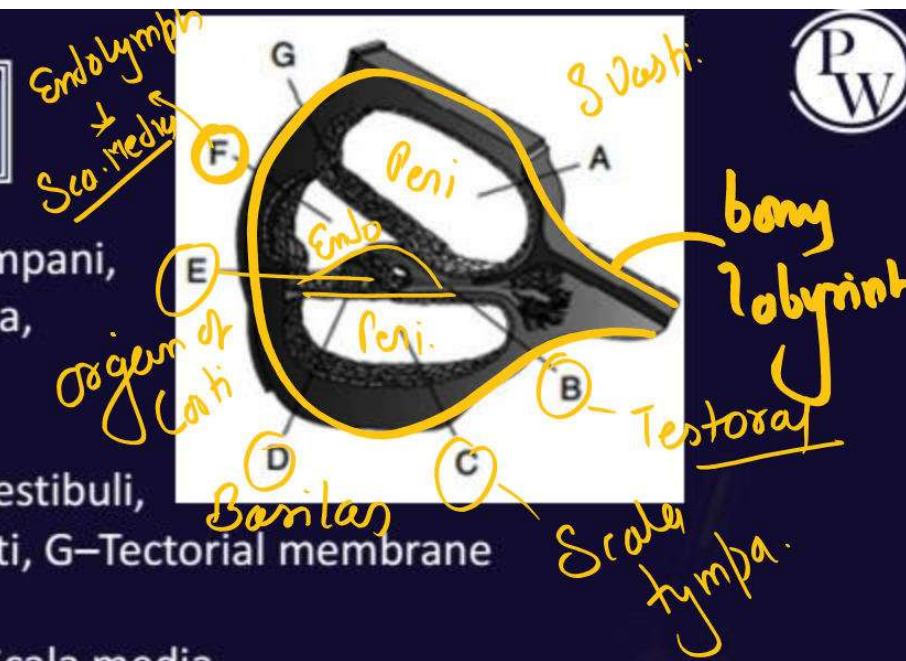
A-Scala tympani, B-Reissner's membrane, C-Scala vestibuli,
D-Basilar membrane, E-Scala media, F-Organ of corti, G-Tectorial membrane

3

A-Reissner's membrane, B-Tectorial membrane, C-Scala media,
D-Organ of corti, -Scala vestibuli, F-Scala tympani, G-Basilar membrane

4

A-Tectorial membrane, B-Scala tympani, C-Reissner's membrane,
D-Basilar membrane, E-Scala vestibuli, F-Scala vestibuli, G-Organ of corti

**①**

Q

The parts A, B, C and D of the human eye are shown in the diagram. Select the option which gives the correct identification along with its function/characteristics.

**P
W**

[AIPMT 2013]

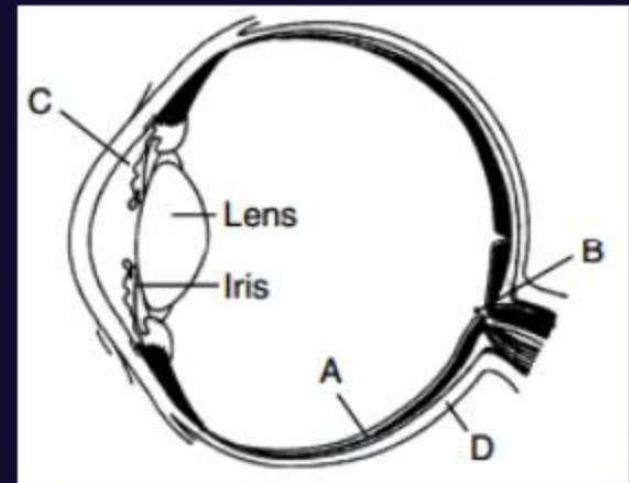


1 A - Retina – Contains photoreceptors rods and cones ✓

2 B – Blind spot – Has only a few rods and cones ✗

3 C – Aqueous chamber – Reflects the light which does not pass through the lens ✗

4 D – Choroid – Its anterior part forms ciliary body ✗



10

Chemical Co-ordination and Integration



Q

Identify A to F in the given figure.

Q**P
W****1**

A—Hypothalamus, B—Pineal, C—Thymus,
D—Adrenal, E—Pituitary, F—Thyroid and parathyroid

2

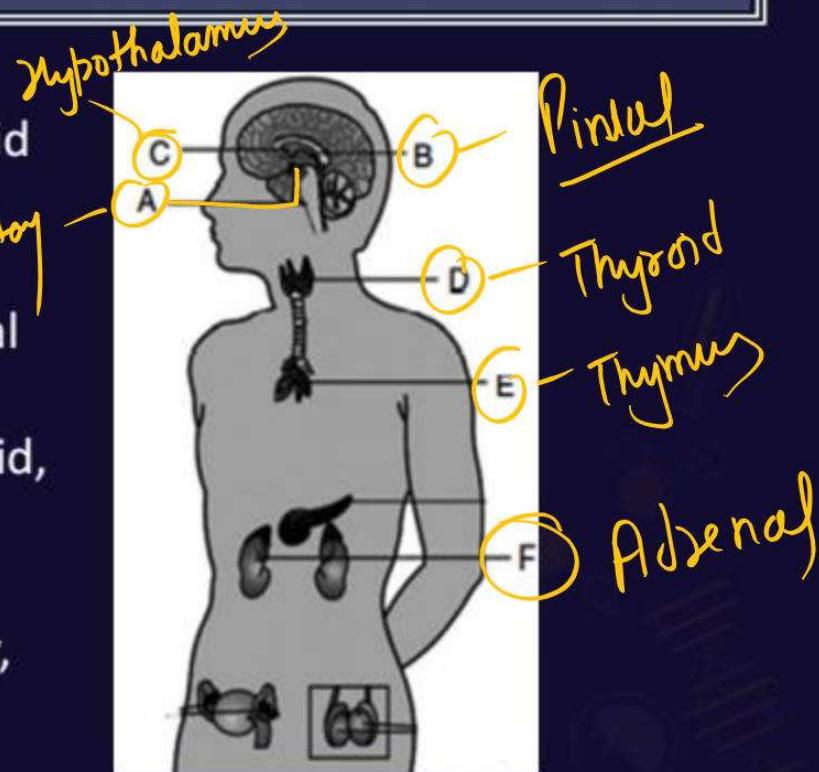
A—Pituitary, B—Pineal, C—Hypothalamus,
D—Thyroid and parathyroid, E—Thymus, F—Adrenal

3

A—Thymus, B—Pituitary, C—Thyroid and parathyroid,
D—Pineal, E—Hypothalamus, F—Adrenal

4

A—Pineal, B—Thyroid and parathyroid, C—Pituitary,
D—Hypothalamus, E—Adrenal, F—Pineal



Q

Identify A to E in the given figure.

1

- A—Hypothalamus, B—Hypothalamic neurons,
C—Portal circulation, D—Posterior pituitary, E—Anterior pituitary

2

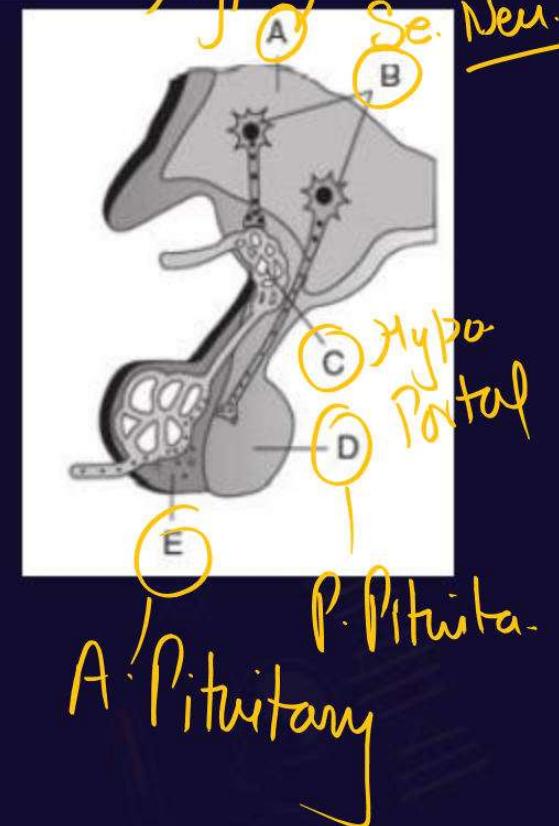
- Posterior pituitary, B—Hypothalamic neurons,
C—Hypothalamus, D—Anterior pituitary, E—Posterior pituitary

3

- A—Anterior pituitary, B—Portal circulation, C—Hypothalamus,
D—Posterior pituitary, E—Hypothalamic neurons

4

- A—Hypothalamic neurons, B—Posterior pituitary,
C—Anterior pituitary, D—Portal circulation, E—Hypothalamus

PW

Q

Identify A, B, C and D in the given figure.

**P
W****1**

A-Physiological response, B-Proteins,
C-Receptor-hormone complex,
D-Uterine cell membrane

2

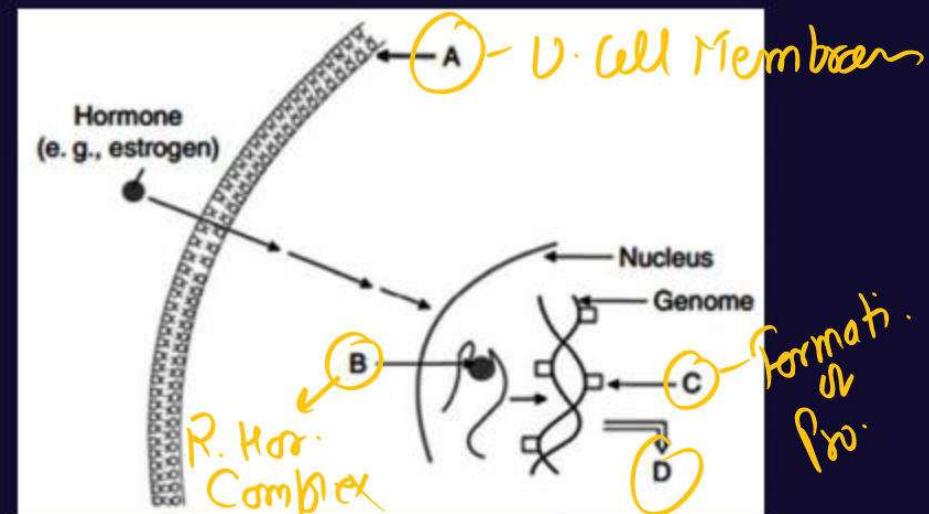
A-Receptor-hormone complex, B-Proteins,
C-Uterine cell membrane,
D-Physiological response

3

A-Uterine cell membrane,
B-Receptor-hormone complex, C-Proteins, D-Physiological response

4

A-Proteins, B-Uterine cell membrane, C-Physiological response,
D-Receptor-hormone complex

3format
or
pro-

Physiology

Q

Observe the below diagrammatic representation. Identify A to D.

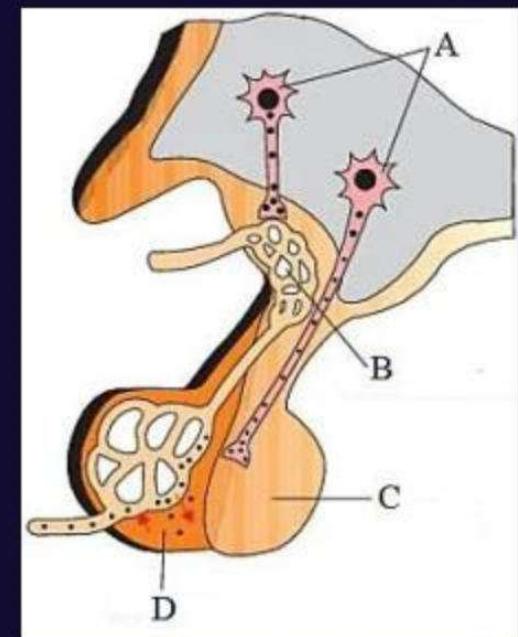
**P
W**

1 A-Hypothalamic neurons; B-Hypothalamic artery; C-Posterior pituitary

2 A-Epithalamic neurons; B-Hypothalamic vein; C-Pars distalis; D-Pars intermedia

3 A-Hypothalamic neurons, B-Portal circulation, C-Anterior pituitary, D-Posterior pituitary

4 A-Hypothalamic neurons, B-Portal circulation, C-Posterior pituitary, D-Anterior pituitary



Q

Observe the following figures. Identify A to D:

Q**P
W****1**

A-Parathyroid gland; B-Isthmus; C-Trachea; D-Thyroid

2

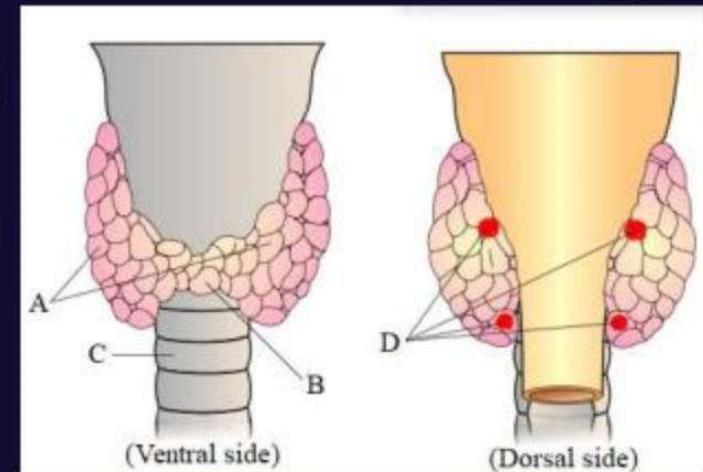
A-Thyroid; B-Isthmus; C-Trachea; D-Parathyroid gland

3

A-Thyroid; B-Isthmus; C-Larynx; D-Parathyroid gland

4

A-Thyroid, B-Corpus luteum, C-Trachea, D-Parathyroid gland



11

Human Reproduction



Q

Identify structures X, Y and Z.

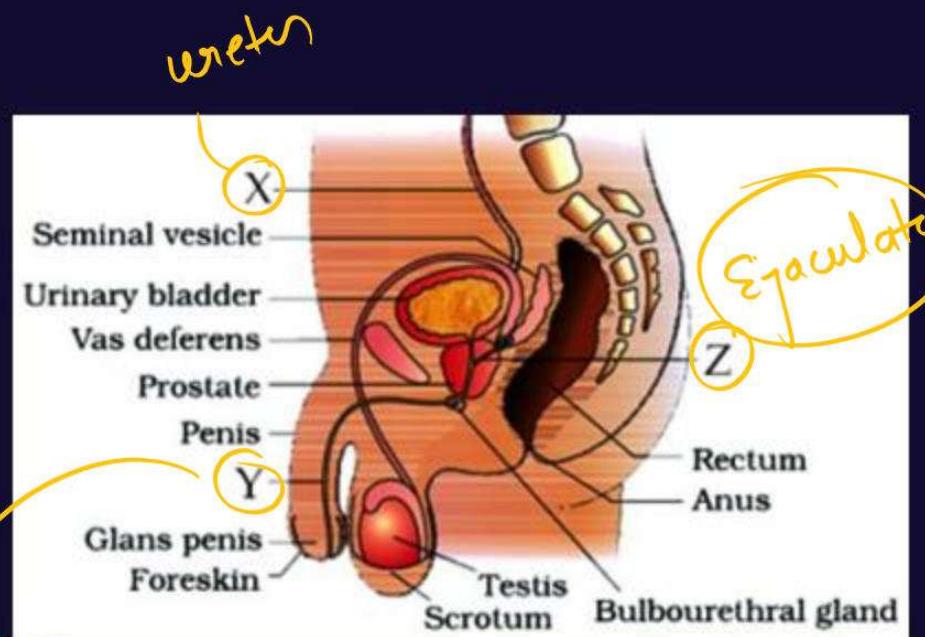
PW

Q. X Structure transport only urine.

Q. Z Structure transport only semen.

Q. Y Structural transport both.

(Choose from X / Y / Z)



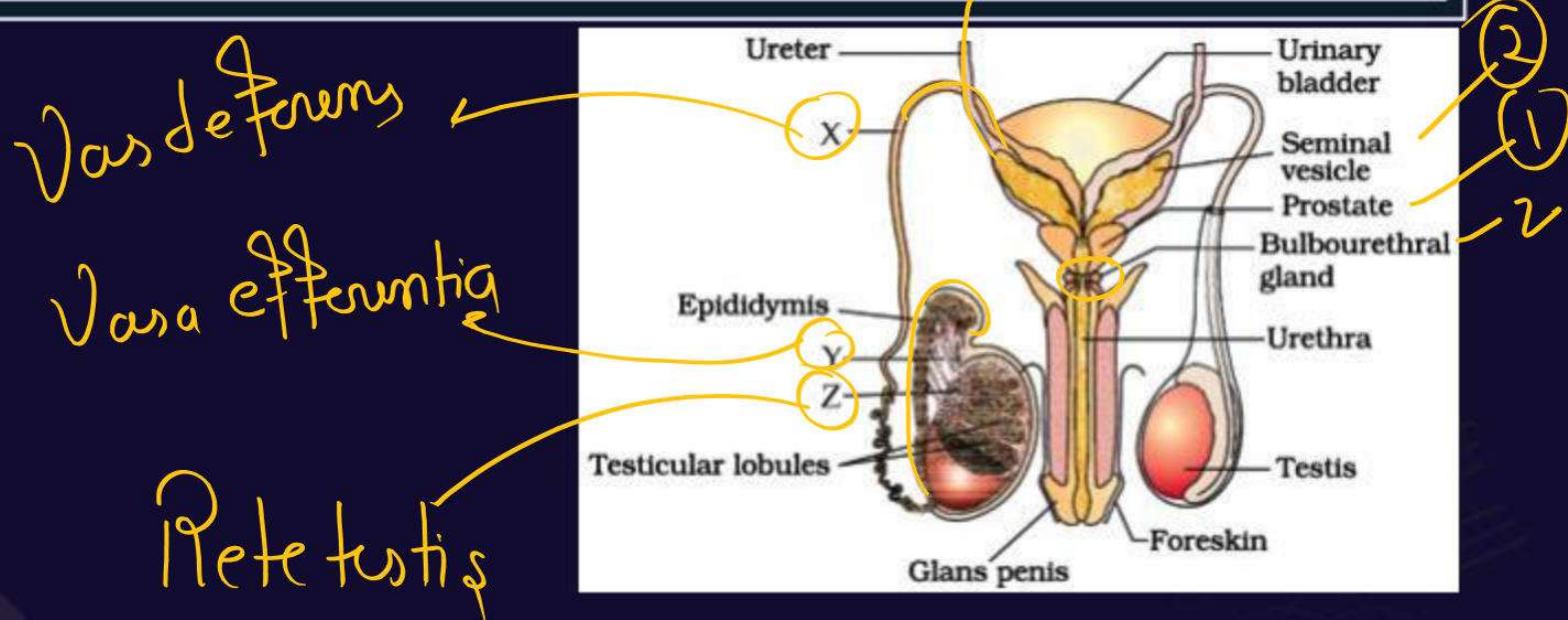
wetting
(urogenital tract)



Q

P
W

- Q. Epididymis is located towards lateral surface of testis (medical/lateral)
Identify structure labelled with X, Y and Z and correct sequence of transport of sperms through these structures.



Q

Q. Target cell of FSH. (X / Y)

Q. Source of androgens (X / Y)

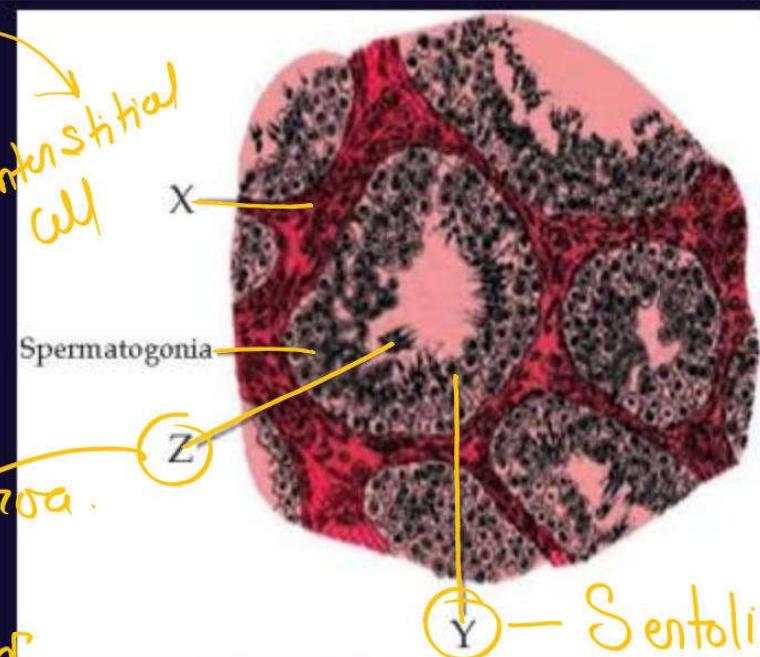
Q. Blood testis barrier formed by (X / Y)

Q. Sperms get nourishment from this cell ?

Q. Formation of Z is result of _____ which occurs with help of sperm maturation factors released by _____ cell.

Sertoli cell,

**P
W**



Q

Q. Cervix is P to urinary bladder and A to rectum
(Anterior/Posterior)

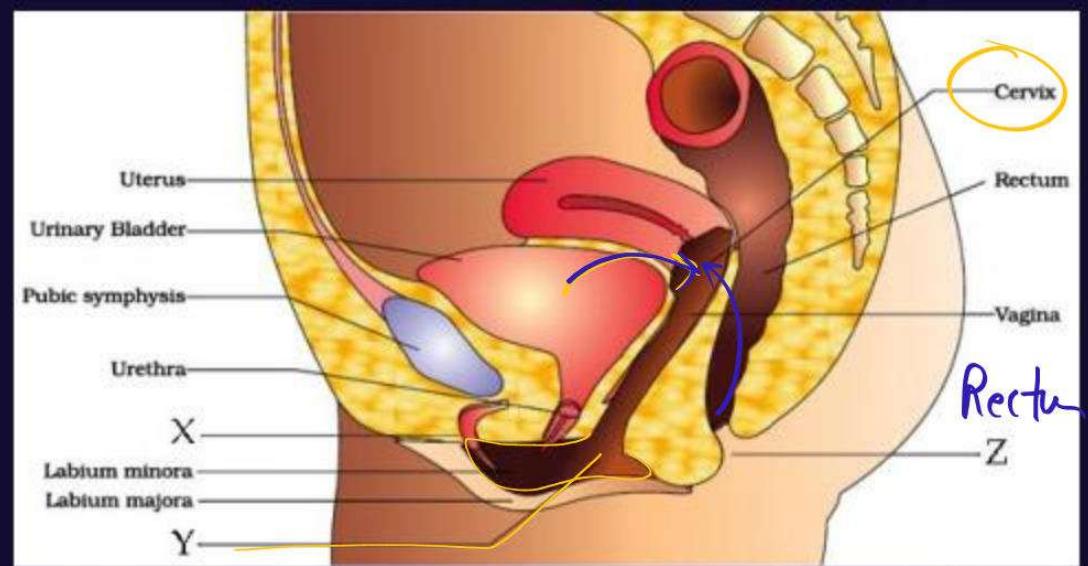
PW

Q. Identify given Structures.

X = Clitoris

Y = Vagina

Z = Rectum



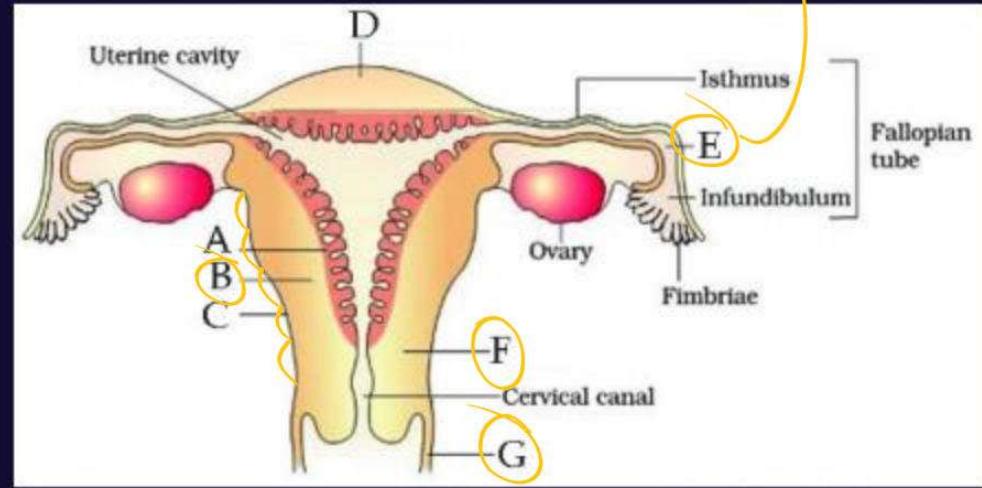
Q

Fill blank space with A – G.

PW

- Q. Birth canal = F (vagina) + G.
- Q. Simple squamous epithelium lines C.
- Q. Ciliated epithelium lines E.
- Q. Oxytocin receptors are located on B.
- Q. Foetus gets attached to A during implantation.

Endometrium



Site of
implantation
→ Fertilization
Amphulla



Q

Identify structures A, B and C.

**P
W**

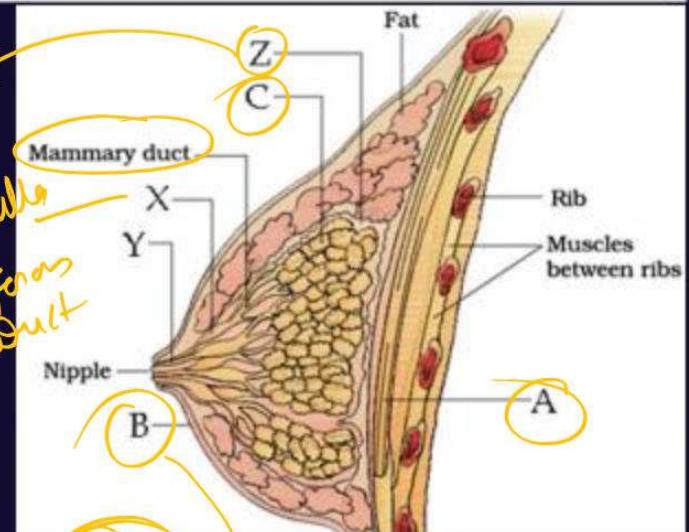
Q. Tell count of X, Y and Z. = 15-20 15-20

Q. Correct sequence of transport of milk. C → X → Y

Q. Correct sequence of transport of milk?

Q. Which of the following hormone does not have any effect on given structure?

Prolactin / Oxytocin / Estrogen / Progesterone



None

None

Mom



Q

PW

Q. Write down ploidy of A, B, C and D.

Q. x Spermatids

Q. y Spermatozoa

Q. Name 2 hormones / chemicals released by cell D.

Q. Cell D is involved in this type of **cell junction**?

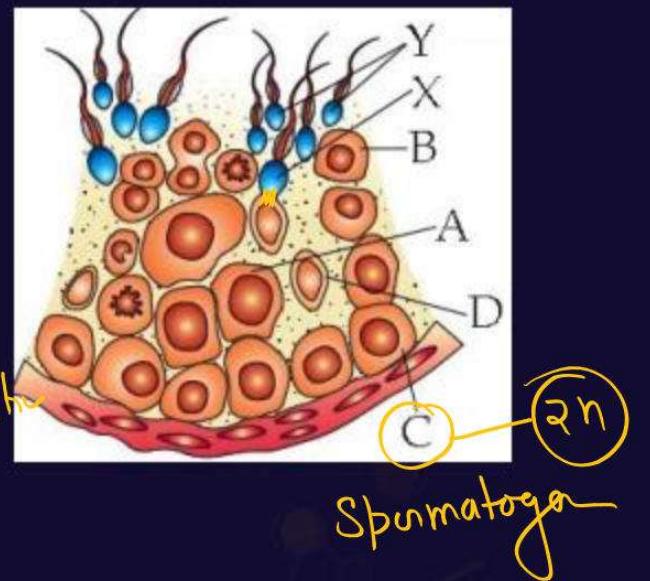
D = Sertoli cells Inhibin
S.M.F. Tight junction

$$C = \text{Spermatogenesis} = 2h$$

$$A = P_{\text{m-Spermatocytes}} = (2n)$$

$$B = \{e_1, \dots, e_n\} = \mathcal{H}$$

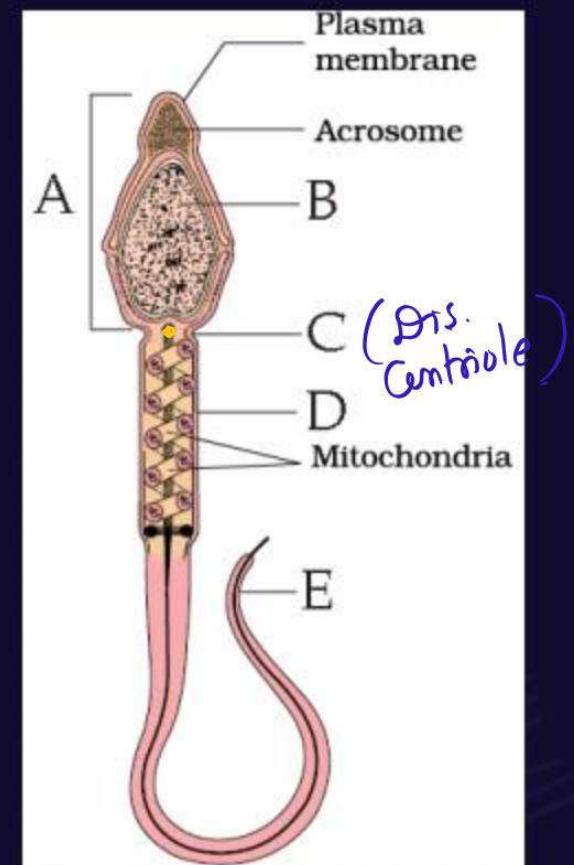
X = Spermatids = (n)



Q

Q. Name the structure / part which is responsible for

1. Transfer of genetic information. = **B**
2. Motility. = **E**
3. Energy production. = **D**
4. Lysis of egg membrane = **A**
5. Tail formation. = **C** = **E**

**P
W**

Q

Q. Hormone released by structure X?

P
W

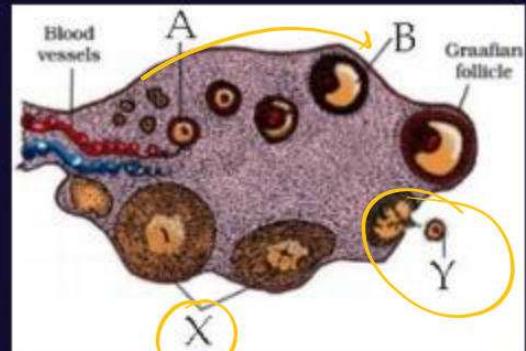
Q. Process of release of Y? = Ovulation

Q. Changes from structure A to B.

Development of Follicle
Formation of Antrum

Q. Identification feature of B.

Ten-Follicle
Formation of Ist-Polar body
Meiosis I - Complete
Formation of Sec. Oocyte



Progesterone
↓
Estrogen
Inhibin etc.



Q

Q. Find out correct terms / events for covered areas A to G.

P
W

A? = Mitosis.

B? = Birth

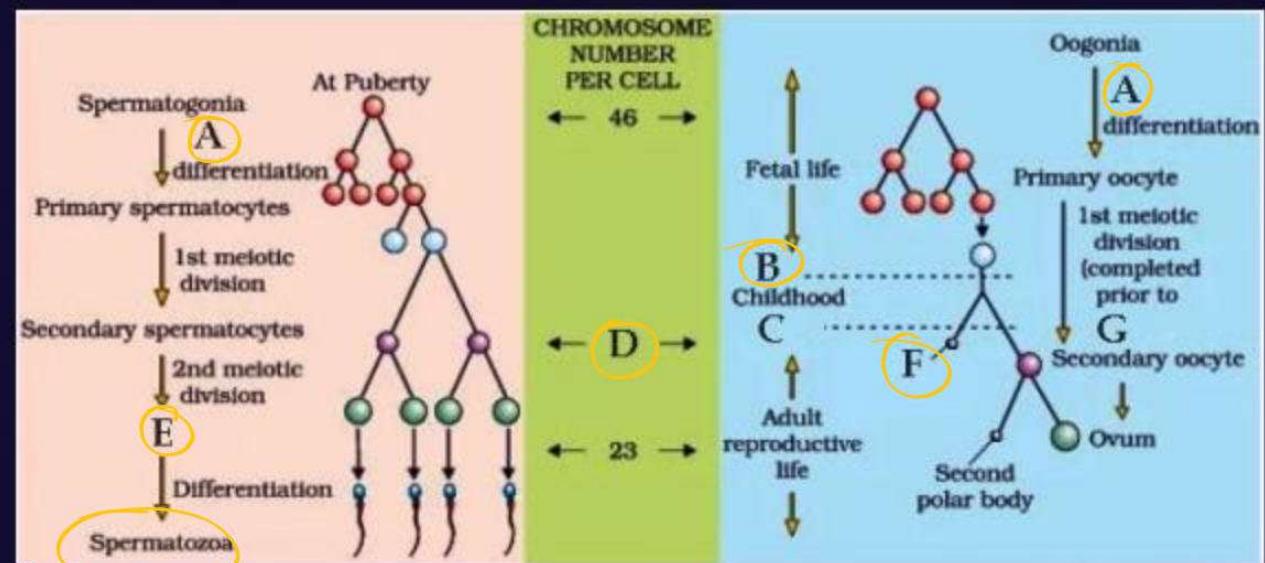
C? = Puberty.

D? = 23 (n)

E? = Spermatogenesis

F? = 1st Polar body

G? = Ovulation



Q

Hormone A ^{L.H.} is required to form and maintain this structure which is source of hormone B (C/D)

P W

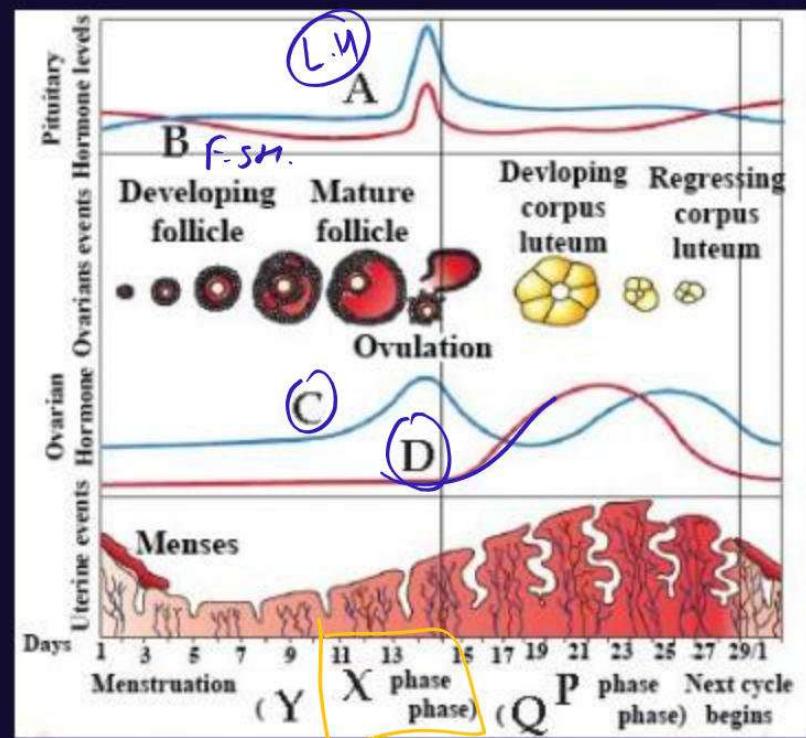
Corpus luteum

Progesterone

Hormone B is responsible for development of follicles and that's why this phase is termed Follicular phase and because of effects of hormone C it is also termed Proliferative phase.

What is P and Q?

Uteral Phase \rightarrow Secretory Phase



Q

Q. Ploidy of X and Y & B ?

**P
W**

Eg:

Q.

Source of A and B.

Cells of B are held together with help of ?

Q.

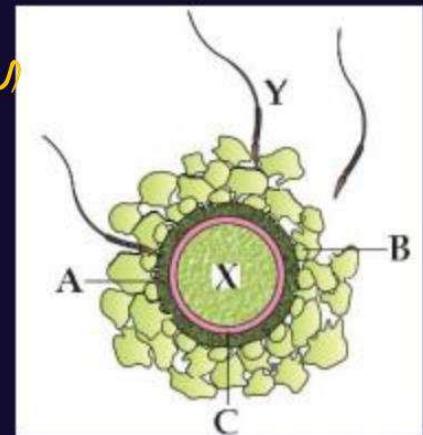
C is space between ___ & ___?

P.M.

Z.P.

Hyaluronic acid

Cumulus \rightarrow Follicular wall



Q

Q. ZIFT can be done till this stage (b / c / d / e / f)

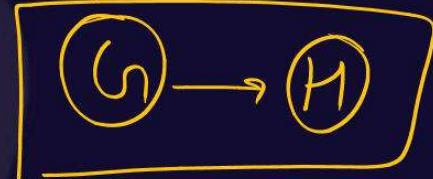
→ 8

Q. IUT is done in this stage (b / c / d / e / f)

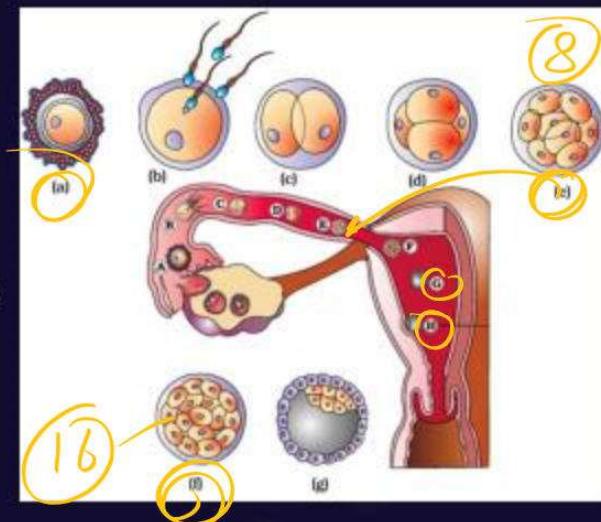
Q. In GIFT transfer of a is done (a / b / c / d)

Q. c / f is a solid ball while g is like a hollow ball.

Q. Implantation is seen in this stage. → Blastocyst +



PW



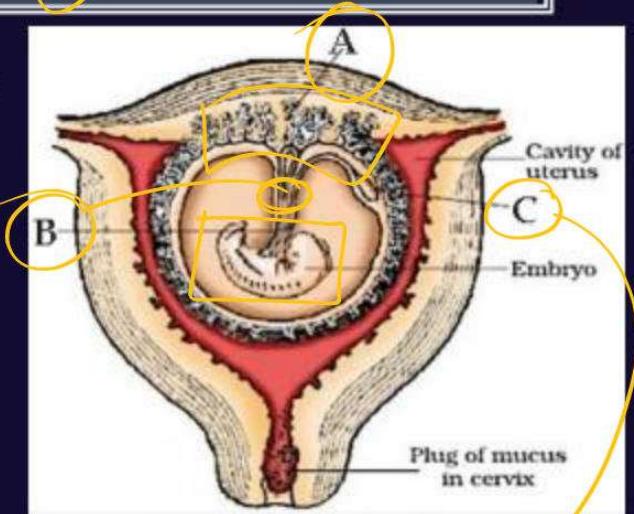
Q

Q. This structure participates in placenta formation. - (A)

Q. Structure responsible for RBC production in Foetus. (C)

Q. Structure which links foetus with placenta.

= (B) = Umbilical
Cord



Yolk Sac



12

Reproductive Health



Q

Q. Structure for male use and female use are respectively X & Y?

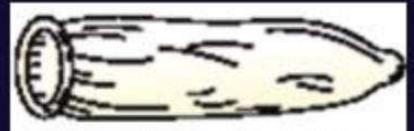
PW

Q. One unique advantage of given contraceptive device.

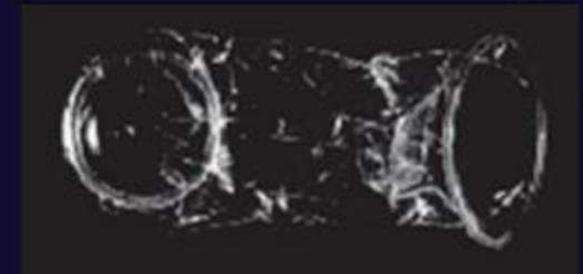
Q. Select between X and Y.

X

Protect from
STD & AIDS



Condom for X



Condom for Y



Q**P
W**

Q. This is 2nd generation IUD.

Q. This IUD release Cu from part (A) (A / B) which suppress Motility of Sperm.

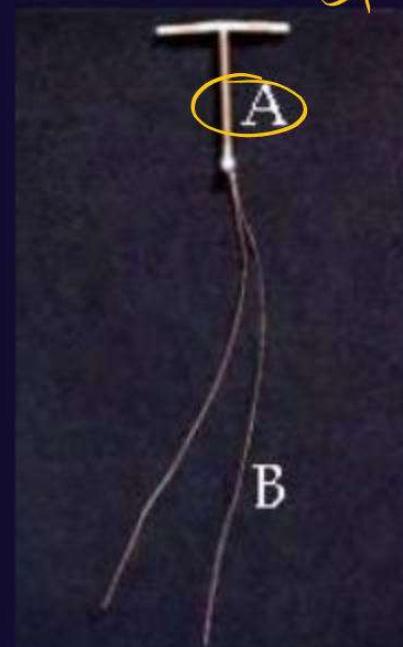
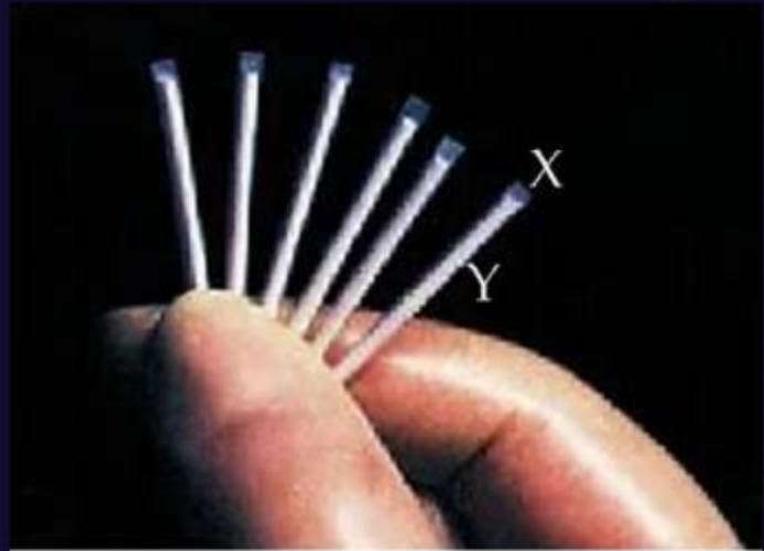


Figure 4.2

Q. This is Progesterone releasing contraceptive device, this is implanted beneath Skin and release Progesterone from part X (X/Y).

Q. It is effective for 5-7 and its mechanism of action is releasing Progesterone which provided (re) feedback and cause inhibition of GnRH

(re)
↓
Inhibit GnRH



Q

This is Permanent method of contraception.

PW

It includes technique A and B for vas & Tubectomy respectively.

This is permanent method as it is poorly reversible. ✓

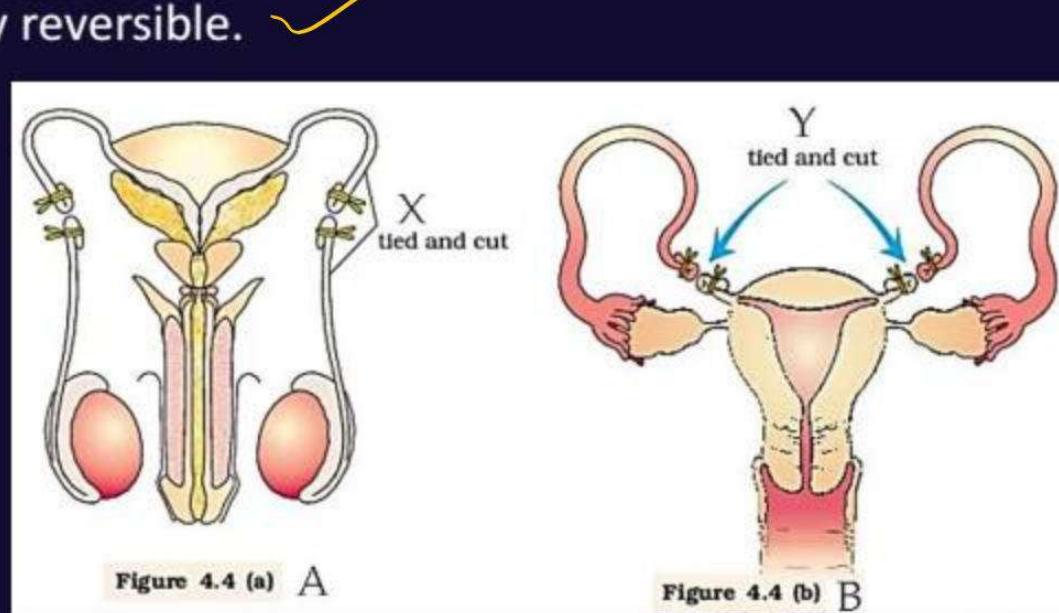


Figure 4.4 (a) A

Figure 4.4 (b) B



13

Evolution



Q

Q. This setup is experimental verification of theory of _____?

PW

origin of life

Q. Type and proportion of gases present in mixture X.



Q. Gas was absent in mixture X.



Q. After ... days Simple organic compounds were found in Y.

(simple / complex)

Amino acids

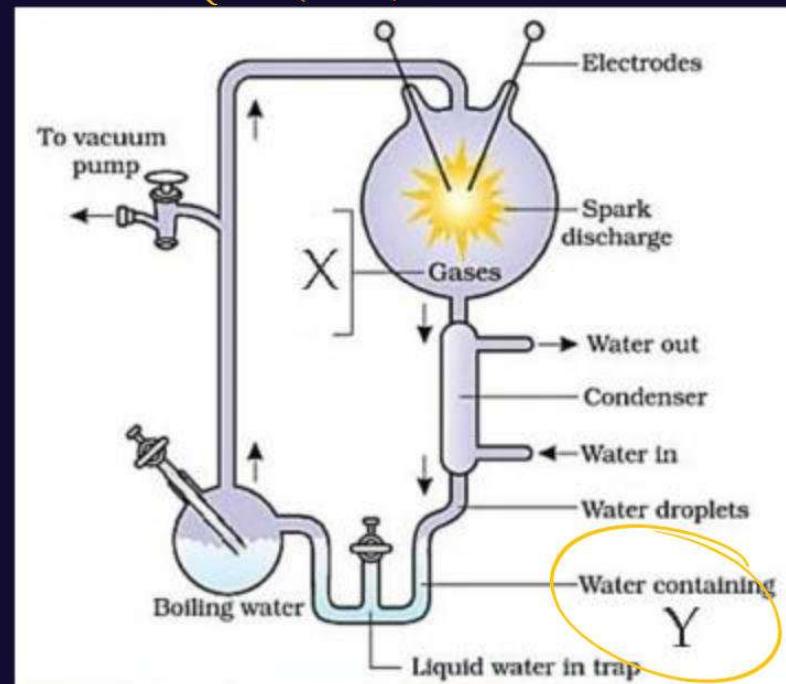


Figure 7.1 Diagrammatic representation of Miller's experiment

Q

- Dinosaurs disappeared 65 MYB years back.

- Largest dinosaur (carnivore) was _____.
- Some dinosaurs were herbivore like _____.
- Connecting link between reptiles and birds was _____.
- Dinosaurs with 3 horns on head was _____.

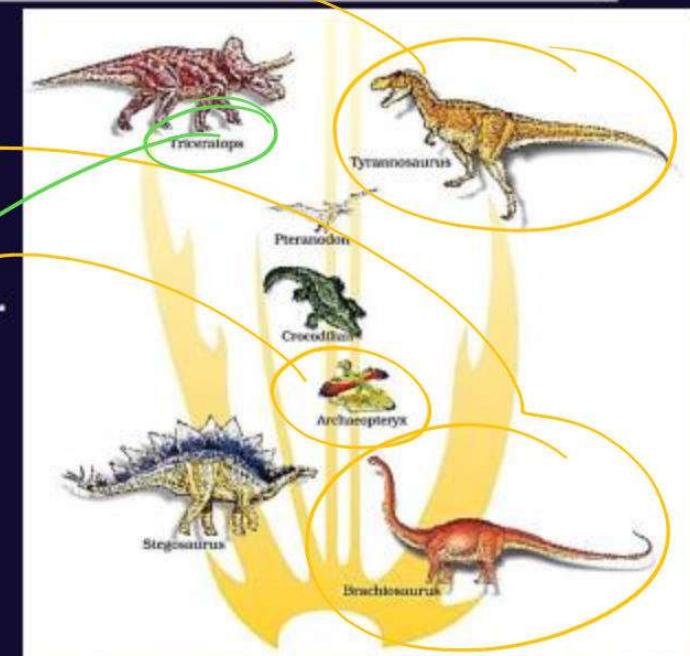


Figure 7.2 A family tree of dinosaurs and their living modern day counterpart organisms like crocodiles and birds.

Given structures represents (Choose one)

1. Morphology (same / different)
2. Anatomy (same / different)
3. Function (same / different)
4. Adapted for ___ environment (same / different)
5. Result of (convergent / divergent) evolution

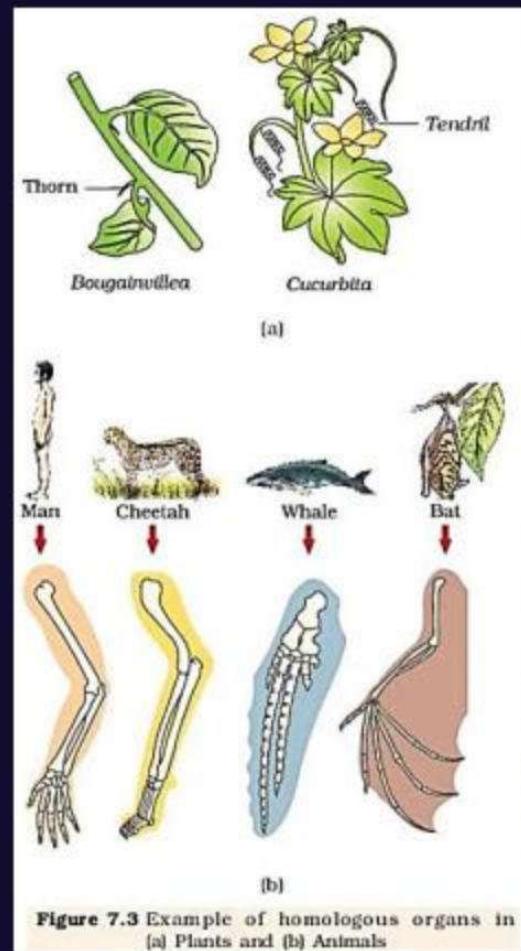
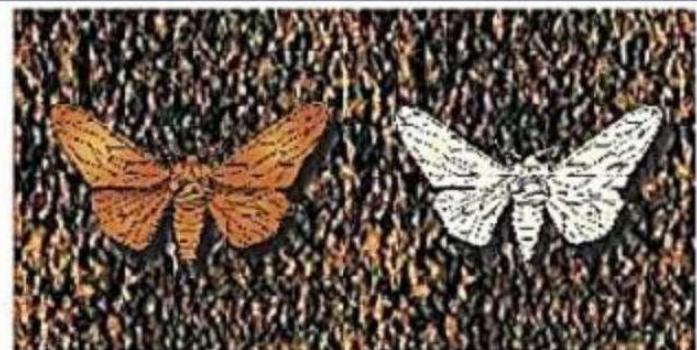


Figure 7.3 Example of homologous organs in (a) Plants and (b) Animals

1. This is e.g. of (natural selection) / artificial selection)
 2. Which type of selection is this out of 3 mechanisms. → Directional selection.
 3. What is the reason that initially there were 2 types of moth in population
(cause of origin) - Mutation
 4. If one variant is selected other one is completely out from population (True / False).



(a)



(b)

Figure 7.4 Figure showing white - winged moth and dark - winged moth (melanised) on a tree trunk (a) In unpolluted area (b) In polluted area

Q**P
W**

Q. This phenomenon represents (Choose 1)

1. Adaptive divergence / adaptive convergence

2. Original back/finch was adapted to eat

Seed



Figure 7.5 Variety of beaks of finches that Darwin found in Galapagos Island

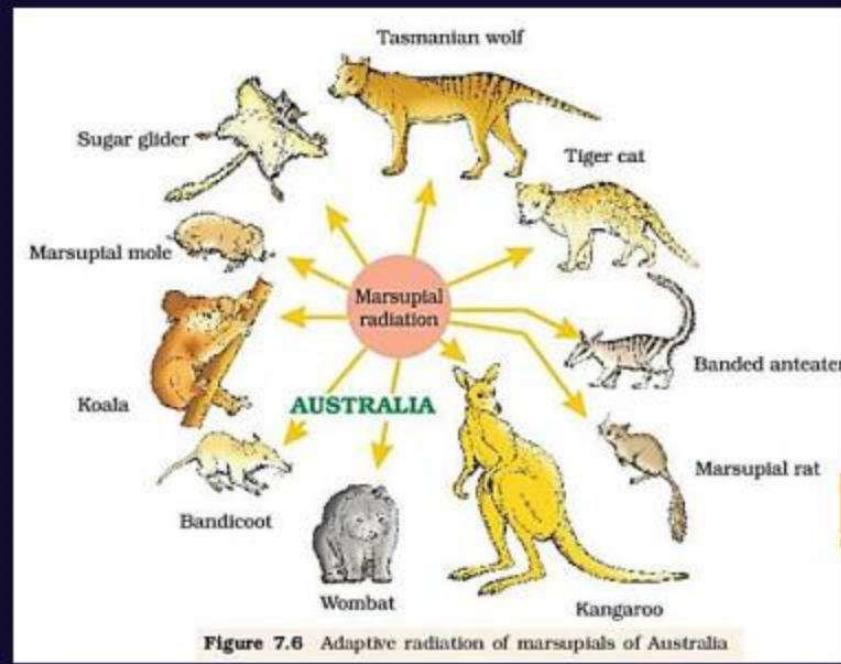


Q

P
W

1. This is e.g. of Divergent / convergent evolution.
2. This will give birth to homologous/analogous organs.
3. All these organism show common ancestor and that's why fundamental anatomy will be same but they are adapted for diff environment. So morphology/ function of organs is diff.

(Similar / Different)



Q

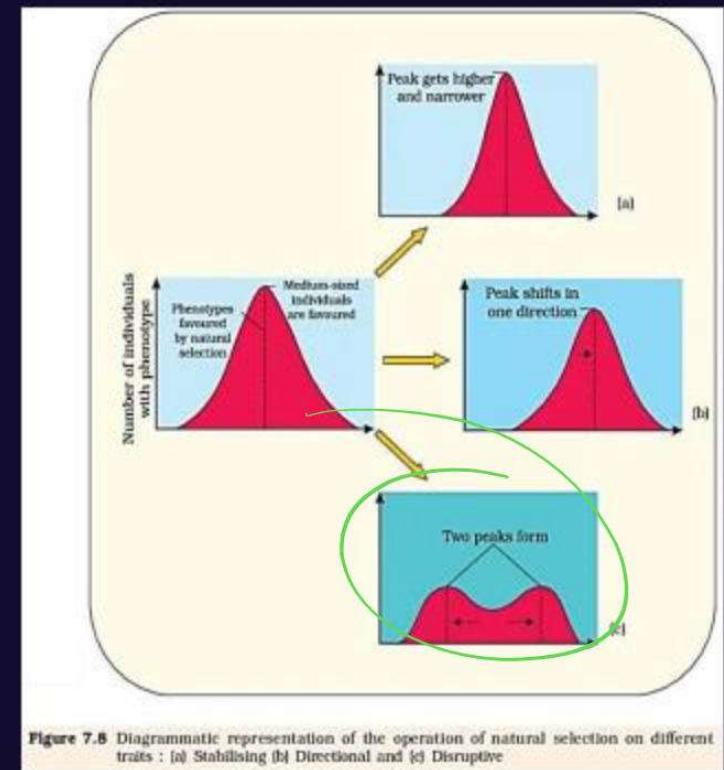
1. This is e.g. of Divergent / convergent evolution.
2. This will give birth to homologous, analogous organs.
3. All these organism show ~~diff~~ ancestor and that's why fundamental anatomy will be ~~diff~~ but they are adapted for ~~same~~ environment so morphology/function of organs is ~~similar~~
(Similar/Different)

**P
W**

Placental mammals	Australian marsupials
Mole	Marsupial mole
Anteater	Numbat (anteater)
Mouse	Marsupial mouse
Lemur	Spotted cuscus
Flying squirrel	Flying phalanger
Bobcat	Tasmanian tiger cat
Wolf	Tasmanian wolf

Figure 7.7 Picture showing convergent evolution of Australian Marsupials and placental mammals

- Q. Most common and most rare type of selection
- Q. Hardy Weinberg equilibrium will not apply in all selections.



Q

Q. Mammals are released to (synapsids/sauropsids)

Q. Sauropsids gave origin to (Birds/modern reptiles)

Q. Pelycosaurs and therapsids were found during evolution of
(birds/mammals)

Q. Golden period of reptiles was _____.

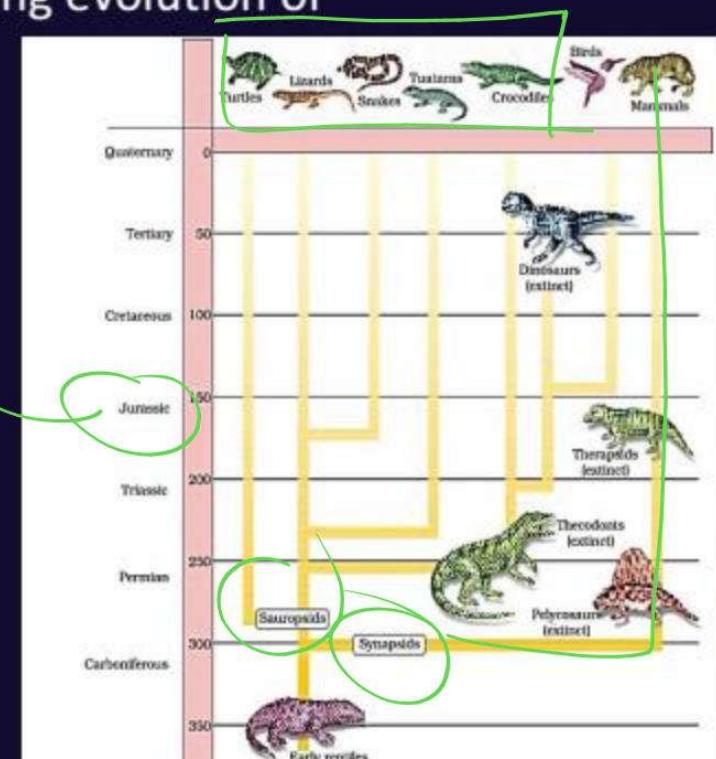
PW

Figure 7.10 Representative evolutionary history of vertebrates through geological periods

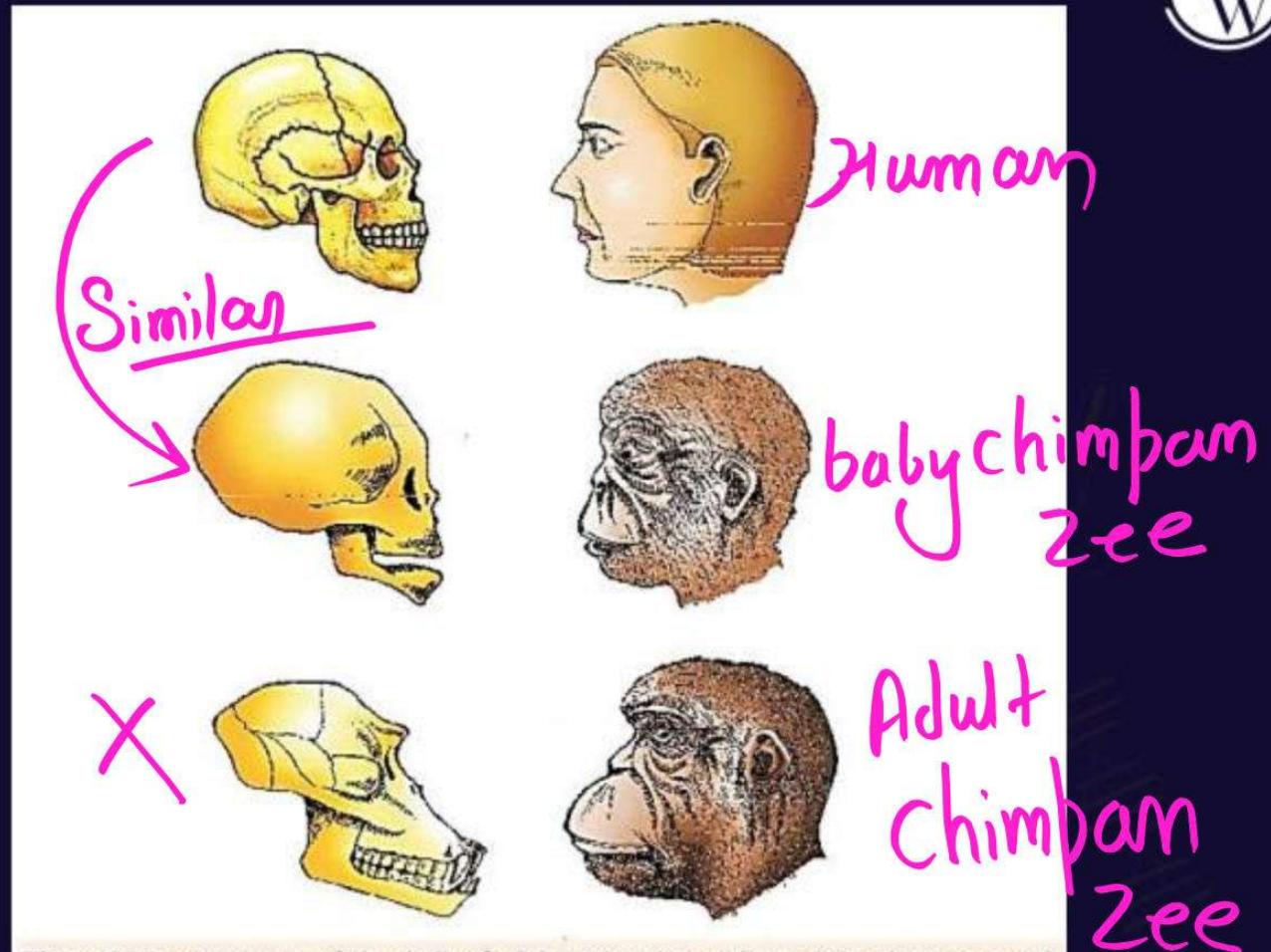


Figure 7.11 A comparison of the skulls of adult modern human being, baby chimpanzee and adult chimpanzee. The skull of baby chimpanzee is more like adult human skull than adult chimpanzee skull

14

Human Health and Disease



Q**PW**

Q. Infective stage for human is Sporozoites and mosquito it is _____.

R. Site where following events/stages are seen.

1. Collective of sporozoites = Salivary glands of mosquito
2. Fertilization → Stomach of Mosquito
3. Cryptozoites
4. Gametocytes → Liver of Human
- Blood of Human

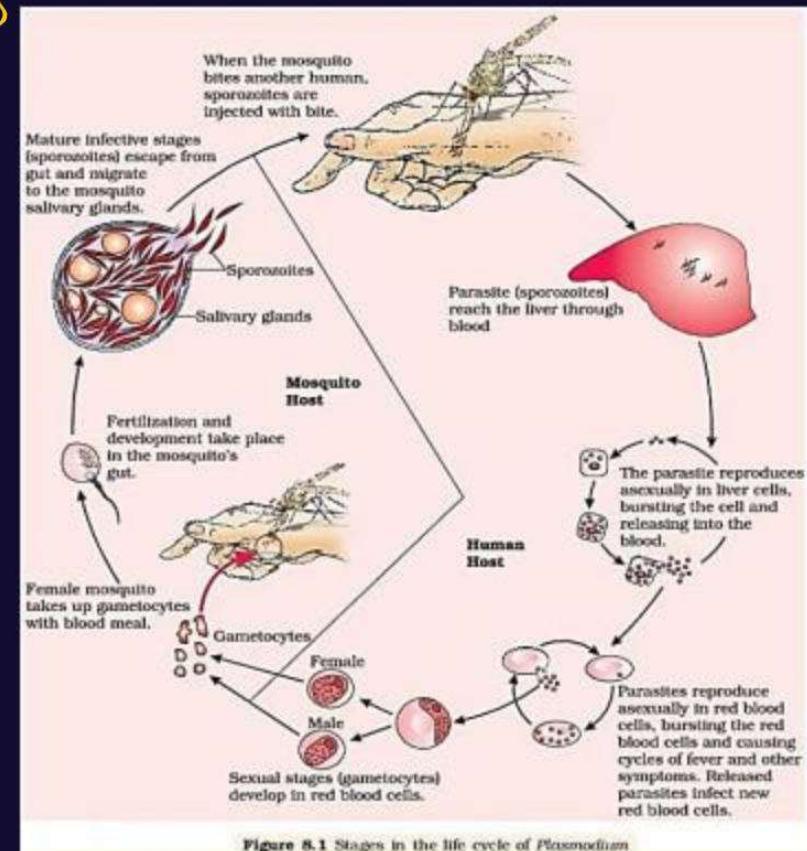


Figure 8.1 Stages in the life cycle of *Plasmodium*

Q

Q. This disease is due to pathogen *filanica worm* and vector Culex

PW

Q. This pathogen affects lymphatic system of body and cause blockage.

Q. This pathogen belongs to Bschminth phylum and while other organisms of this phylum are Oviparous while this one is Viviparous.

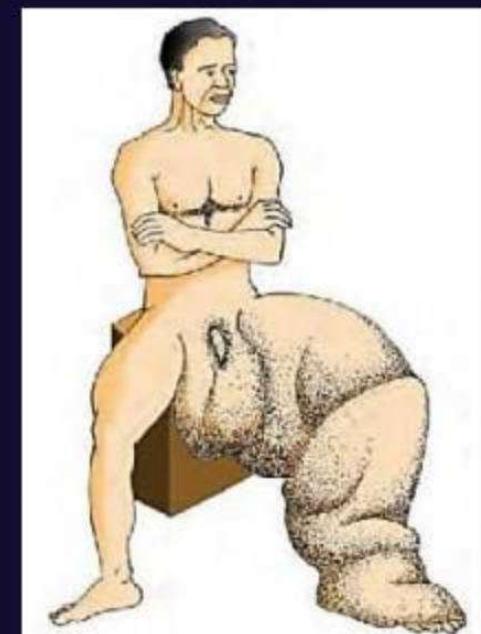


Figure 8.2

Diagram showing inflammation in one of the lower limbs due to elephantiasis

Q

Q. This condition is known as Ring worm

PW

Q. Common pathogen causing this belongs to 3 genera normally?

Q. This pathogen mainly affects 3 structures in body?

Hair
Nail
Skin



Figure 8.3 Diagram showing ringworm affected area of the skin

Q**PW**

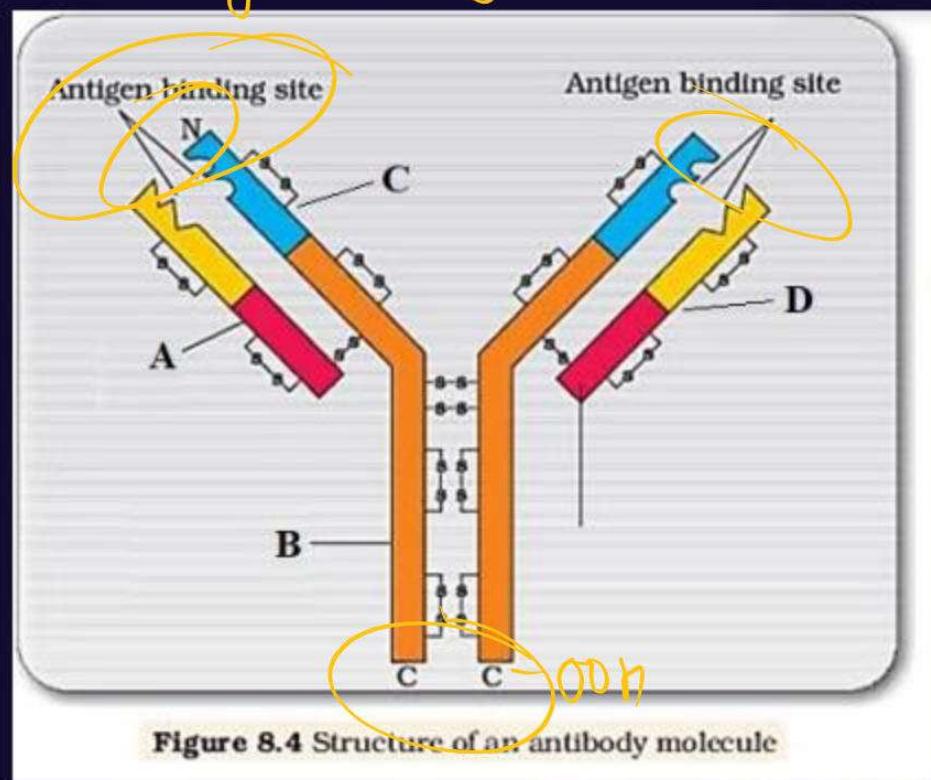
Q. Which one is C end and which one is N end and what is meaning.

Q. Number of paratopes in 1 antibody molecule.

=2

Q. Disulfide bond is never present between light and light chain.

Q. Meaning of H_2L_2 . 2 heavy
2 light



Q

Q. Select out of A, B and C.

1. Throne of immunity = **(B)**
2. Secondary lymphoid organ. = **(A)**
3. Site of encounter between antigen and lymphocytes. = **(A)**
4. Part affected in elephant foot. = **(C)**
5. Filter apparatus. = **(A)**
6. Also help in absorption of fats. = **(C)**

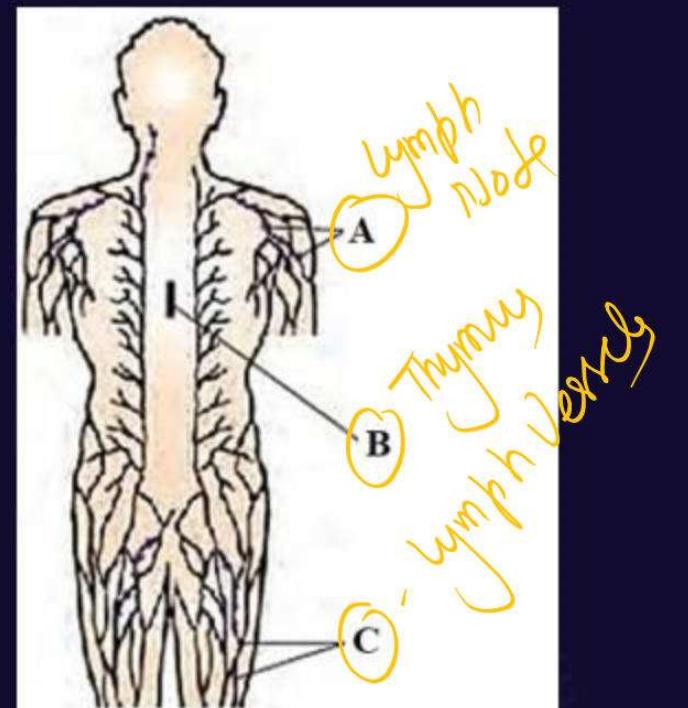
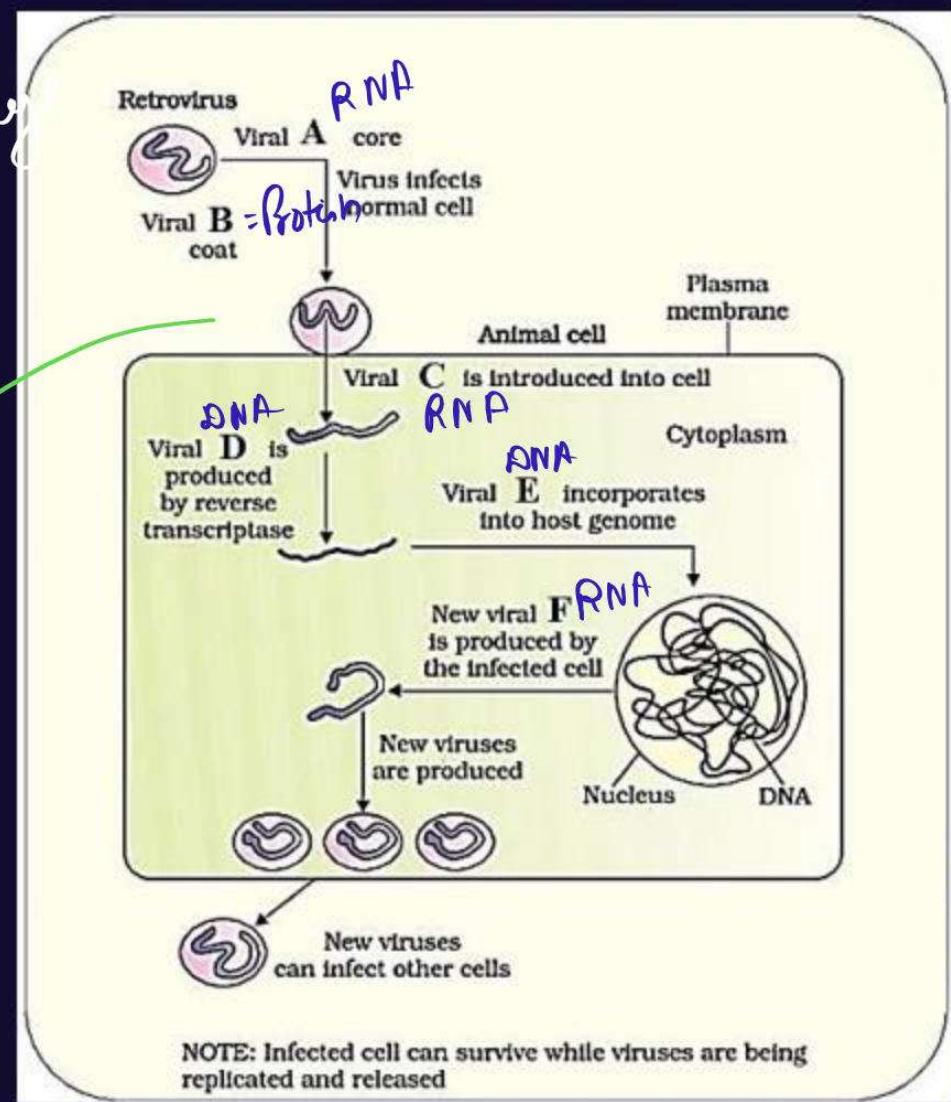
**P
W**

Figure 8.5 Diagrammatic representation of Lymph nodes

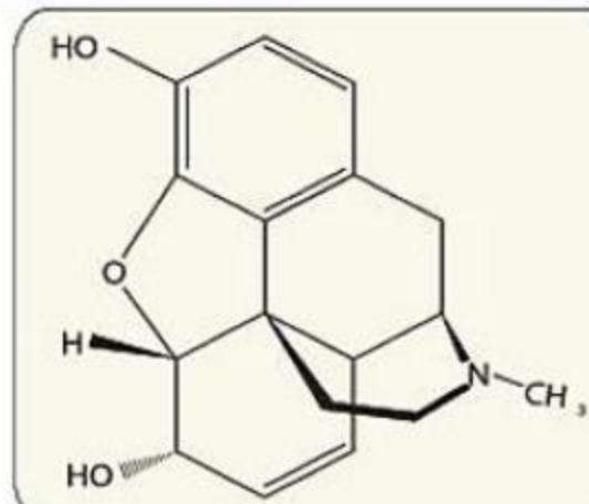
(Q) Which animal cell is represented in given figure
- Macrophage

(Q) Find out appropriate terms for A, B, C, D, E, F.

(Q) Incubation period of given infection?
- 5-10 Y



- (Q) Identify given molecule. = Torophin
- (Q) Use of this molecule in modern medicine is Pain Killers.
- (Q) It has ↓ gut effect on CNS.



(Q) Identify given plant

Poppy

(Q) Which part of plant is source of substance for which this plant is famous

unripe fruit



(Q) Name 2 alkaloids and 2 derived products of this plant

Morphine
Codeine

(Q) Chemicals obtained from this plant have

Morphine effect on CNS and also affect

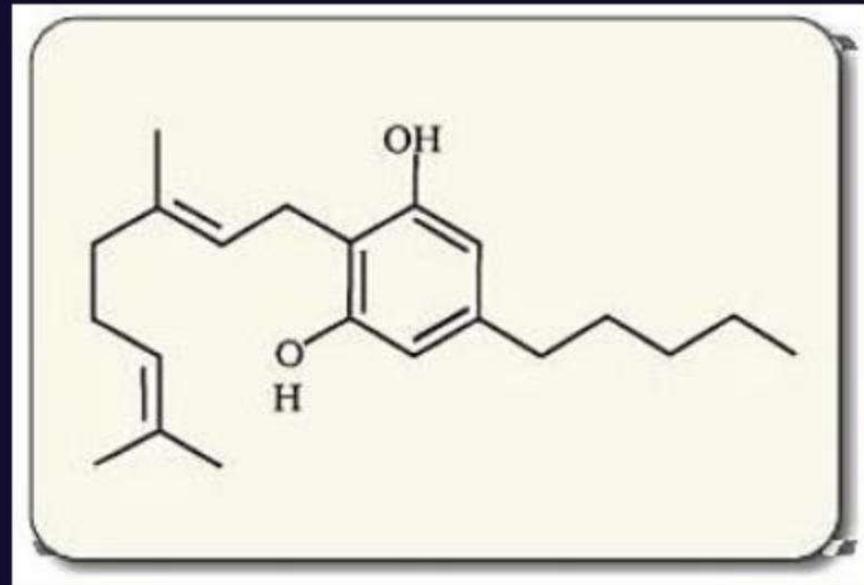
gut | Digestive



(Q) From which plant and from which part of this plant this chemical is obtained.

Cannabis b

(Q) This chemical affect CNS



(Q) This part of Cannabis plant is commonly consumed as _____.

Bhang.
This X belongs to a group of chemicals known as _____.



Substances used by this plant are used in folk medicine as they have Hallucinogenic property the substance is famous with name Datura



15

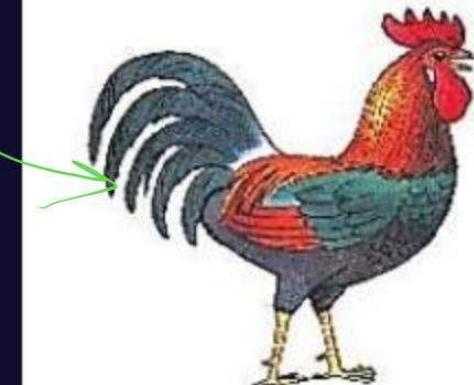
Strategies For Enhancement in Food Production

What is meaning of Breed

Identify given breeds of animals.



(a)



(b)



(Q) This organism is produced with cross between male Donkey and female Horse.



(Q) This is an example of Cross breeding and specifically Interspecific hybridization in which organisms of 2 diff (same / diff) Species (related/unrelated) species are mated.



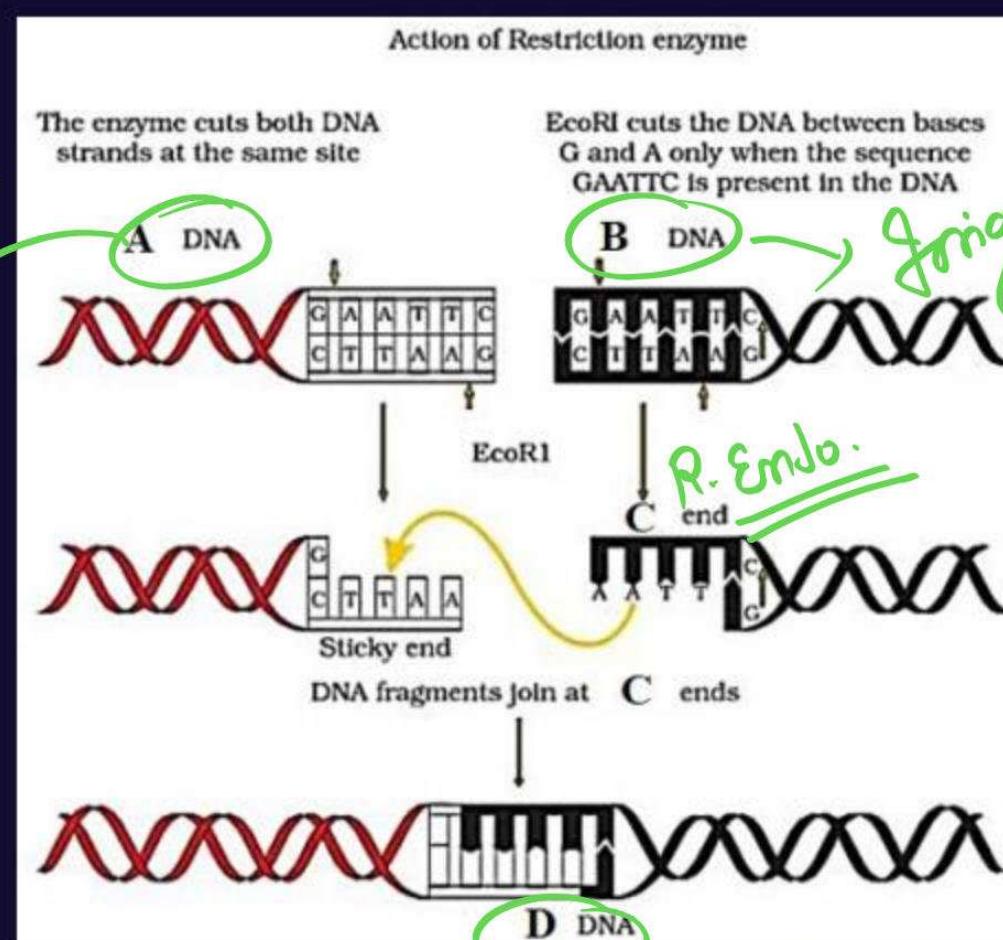
16

Biotechnology : Principles and Processes



- (Q) Find appropriate terms for A, B, C, D.
- (Q) Identify the enzyme used in this experiment and source bacteria of this enzyme.

Vector



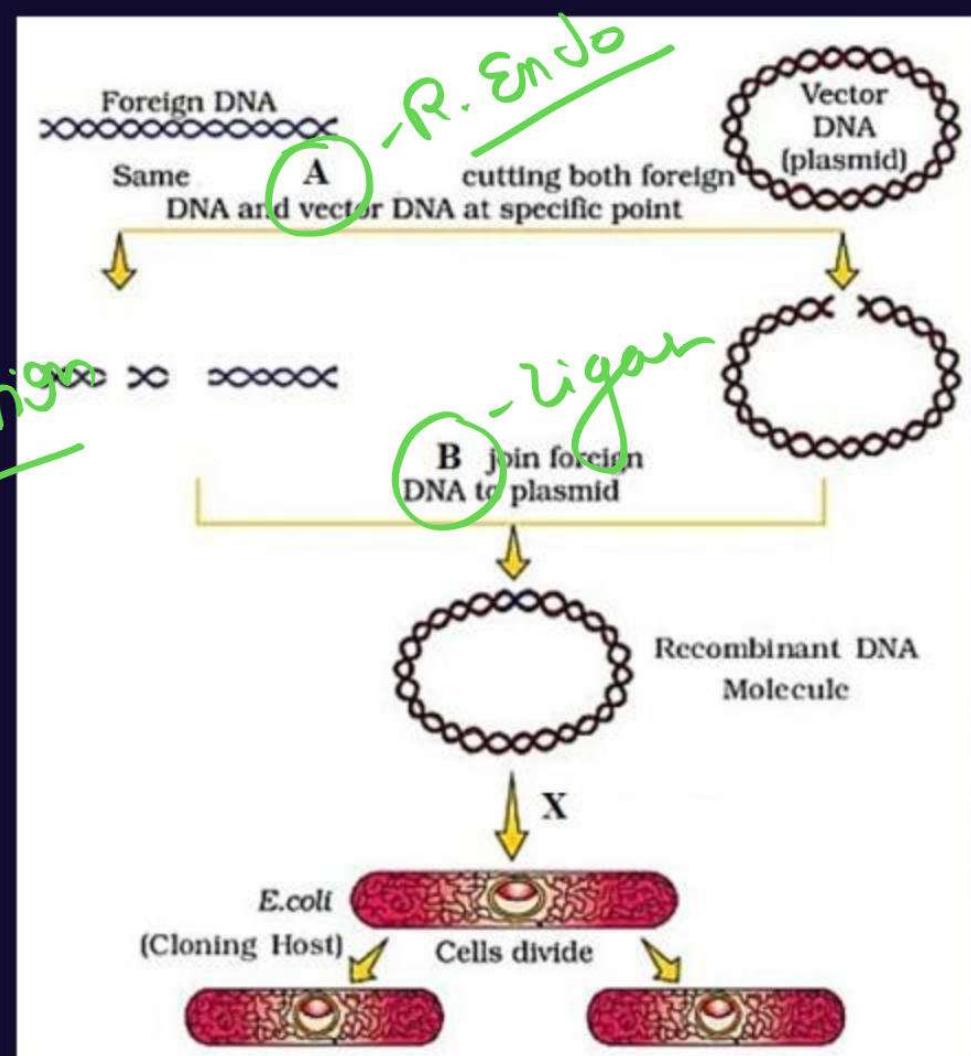
ligase.



(Q) Identify A and B enzymes

(Q) What is process X

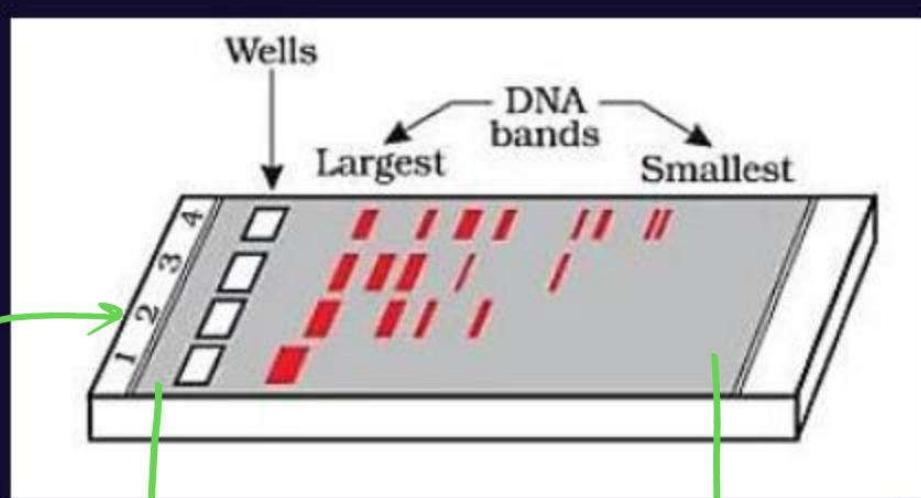
Transformation



(Q) This process can be used for separation of any DNA molecule under Electric field.

(Q) Location of anode is ????

(Q) Which lane represent digested DNA fragments ??



Cathode

Anode

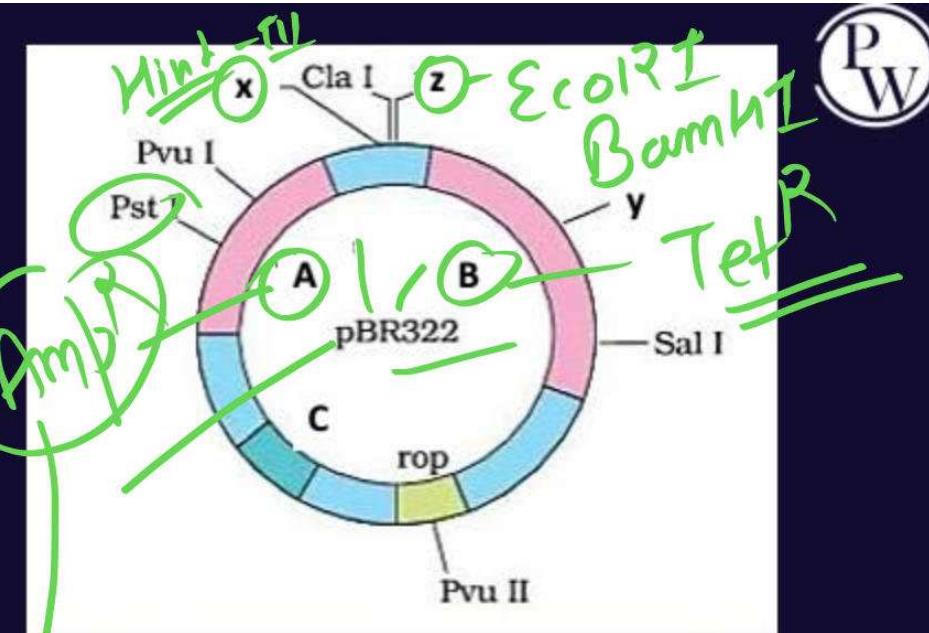


(Q) This is an ____ vector developed by ____ and ____ from plasmid of ____

(Q) Functions of site A and B

(Q) Identify source bacteria for enzymes x, y and z.

(Q) If we use enzyme Pvul then which site will be used in selection of transformants.



(Q)

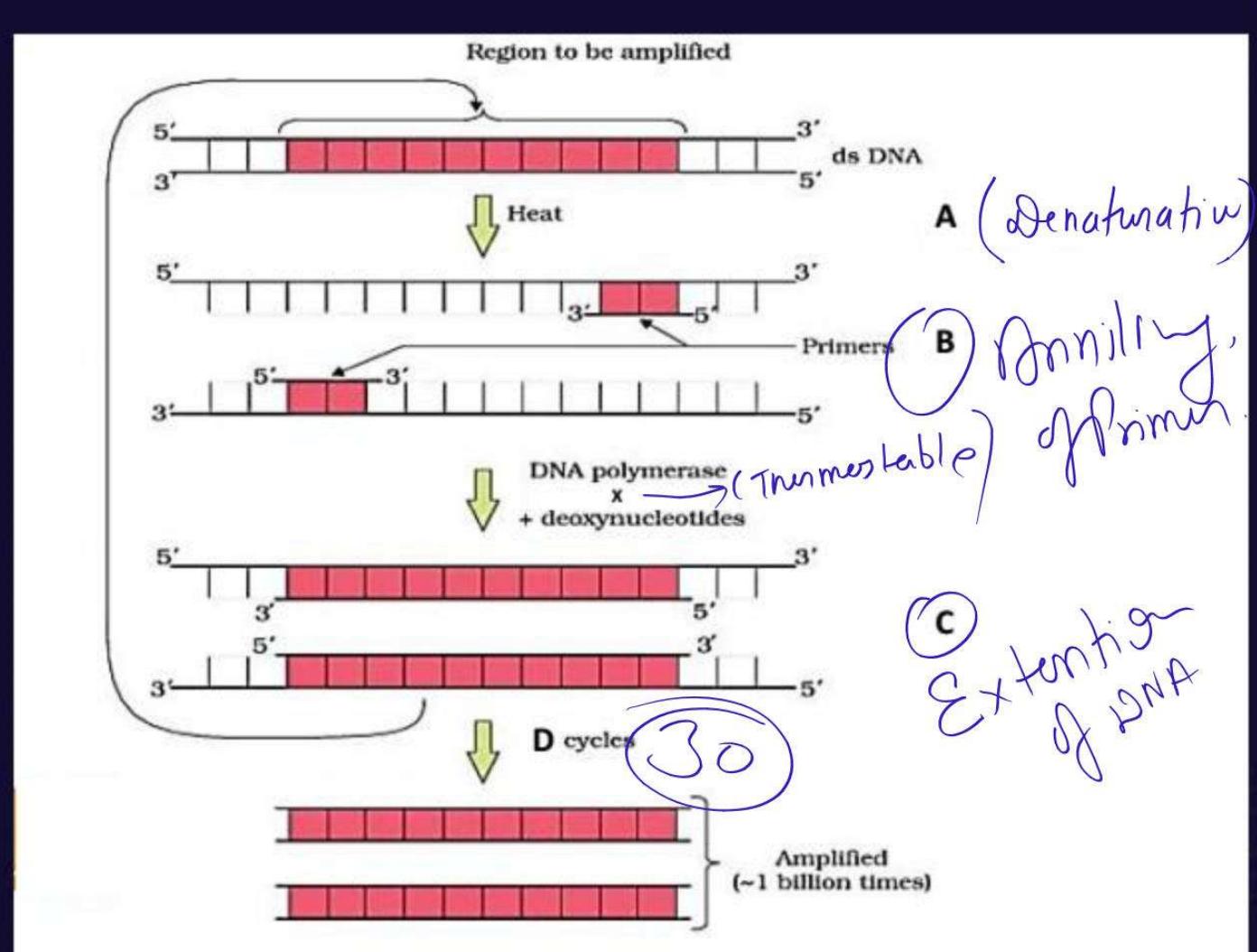
Process is known as Spooling which is done with
the help of _____ to separate DNA.
Chilled Ethanol



Name the stages A, B and C along with temperatures.

Peculiar feature of enzyme X

What is the count of cycles to get almost a billion copies.

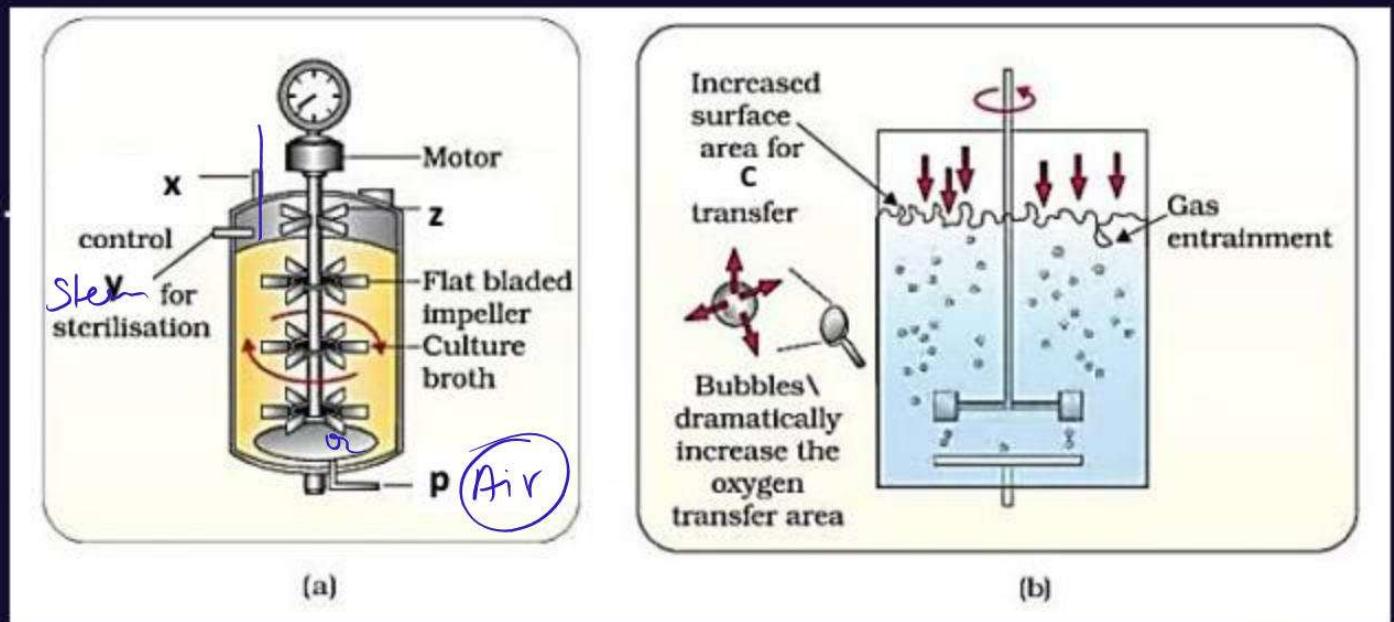


(Q)

Name these
2 different
Bioreactors a, b.

(Q)

Name diff.
hidden
components
x, y, z, p and c.



17

Biotechnology and Its Applications



(Q) Identify x and y

(Q) No of amino acids in A/B and C

(Q) Chain A & B are produced separately with recombinant DNA technology and later on fused to form Matured Insulin with introduction of Disulphide bonds at proper places.

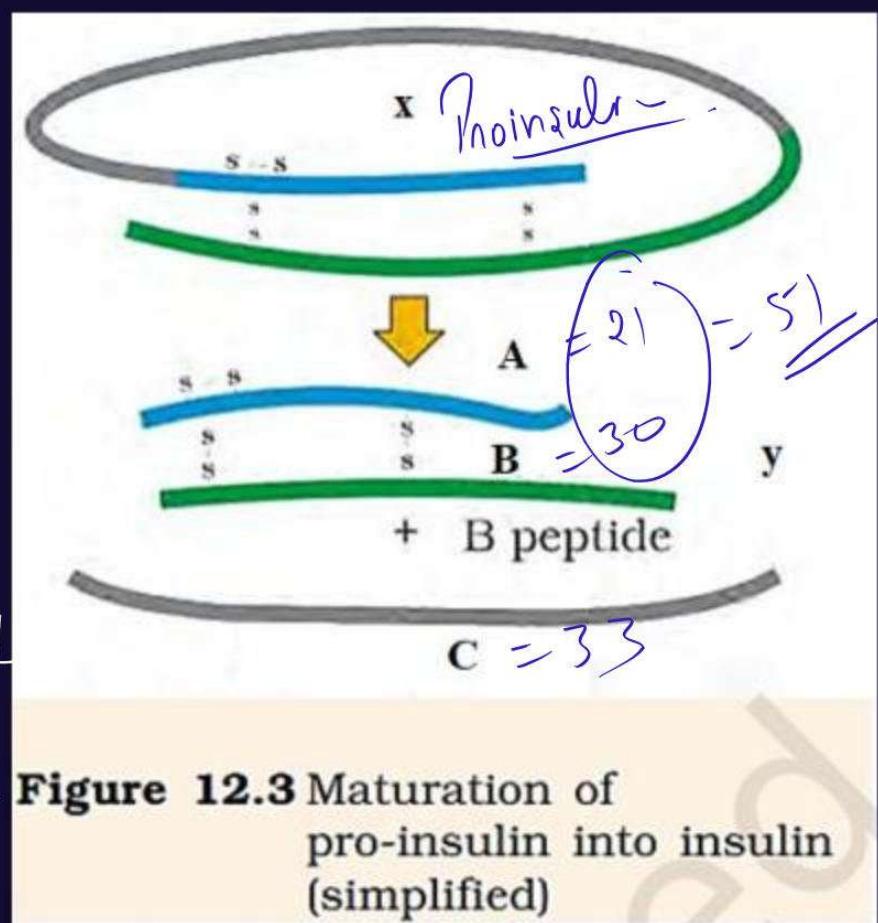


Figure 12.3 Maturation of pro-insulin into insulin (simplified)