ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Biology
XII
Assessment

Contents

Topic -1

1. Respiratory surface of animal bear

a. Permeable surface
c. non-permeable surface
b. Semipermeable surface
d. None of these

2. In hydra respiration takes place by

a. Ectoderm and endoderm
c. Protonephridia
b. Mesoderm
d. Lungs

3. Earthworm uses its wet skin as
c. Excretory system

a. Respiratory surfaces

b. Circulatory system
d. None of these.

4. Cockroach as well as other insects has evolved a special type of respiratory system called

a. Tracheal system
c. Triploblastic organization
b. Moist skin
d. None of these

5. Tracheal system of cockroach (and other insects) consists of number internal tubes called

a. Tracheae
c. Endoderm
b. Ectoderm
d. Spiracles

6. Tracheae open outside the body through minute silt like pores known as

a. Spiracles
c. Ostia
b. Tracheae
d. Osculum

7. In cockroach, total pairs of spiracles are

a. Ten pairs c. two pairs

b. thirteen pairs d. nine pairs

8. The cockroach takes in air directly from the atmosphere into tracheae by

a. Tracheae c. Osculum

b. Ostia d. Spiracles

9. Respiratory organs in fish are called

a. Tracheal system c. Lungs

b. Gills d. none of these

10. Each gill is highly vascularized structure which is composed of hundreds of

a. Spiracles c. Tracheae

b. filaments d. Alveoli

11. Each filament is folded to form numerous plate like

a. Gill bar b. Gill arch

c. Lamellae d. Muscle fiber

12. in bony fishes ventilation is brought about by combined effect of mouth and

a: Operculum b: Gill arch

c: Lungs d. Nostrils

13. gas exchange in gills is facilitated by

a. Counter current flow b. E-current flow

c. Tracheae d. buoyancy

14. Respiration which takes place during day time is called

a. aerobic c. photorespiration

b. respiration d. anaerobic

15. Dome-shaped part under chest is called

a. lungs
c. diaphragm
b. bronchi
d. alveoli

Topic-2

1. Procedure of maintaining amounts of salt and water in tissue fluids and blood is called

A. homeostasis

B. excretion

C. osmoregulation

D. thermoregulation

1. Procedure of maintaining internal temperature of body is classified as

A. thermoregulation

B. osmoregulation

C. excretion

D. glucoregulation

2. If change in temperature occurs then this change may affect

A. fasten up the metabolism

B. functions of enzymes

C. process of diffusion

D. process of osmosis

3. Process of maintaining balance of internal conditions in body is called

A. homeostasis

B. peristalsis

C. excretion

D. respiration

4. Process in which metabolic wastes are to be eliminated from body to maintain balance of internal condition is called

A. thermoregulation

B. osmoregulation

C. binary fission

D. excretion

5. Percentage of water in chemical composition of urine is

A. 100%

B. 95%

C. 50%

D. 60%

6. Considering human skin, outer protective layer in which blood vessels are not present is classified as

A. epithelial

B. epidermis

C. dermis

D. epidermal

7. Salts, water, urea of blood and glucose which is passed out of glomerular capillaries into Bowman's capsule is classified as

A. proximal filtrate

B. papillary filtrate

C. glomerular filtrate

D. Bowman's filtrate

8. capillaries of glomerulus join to form

A. Afferent arteriole

B. Renal artery

C. Efferent arteriole

D. Bowman's capsule

9. In each human kidney, number of nephrons are

A. over three million

B. over one million

C. over two million

D. over half million

10. Steps in urine formation are

A. pressure filtration

B. selective re-absorption

C. tubular secretion

D. all of above

11. Osmoregulatory function in humans is performed by

A. Ureter

B. Urethra

C. Urinary bladder

D. Kidney

12. Kind of kidney dialysis in which fluid of dialysis is pumped into peritoneal cavity is

A. hypotonic dialysis

B. vertebral dialysis

C. peritoneal dialysis

D. abdominal dialysis

13. Considering human kidneys, Bowman's capsule and Glomerulus are two parts of

A. renal proximal

B. renal tubule

C. renal corpuscle

D. distal tubule

14. In humans, urinary system is also known as

A. excretory system

B. mineral absorption system

C. salt absorption system

D. blood oxygenation system

15. Causes of kidney failures are

A. hypertonic

B. diabetes

C. hypertension

D. both b and c

16. Kidneys in humans are placed against back side wall of

A. renal cavity

B. abdominal cavity

C. vertebral cavity

D. glomerulus cavity

17. Conversion of glucose to glycogen occurs in

A. kidneys

B. liver

C. small intestine

D. pancreas

18. Sweat glands are embedded into

A. epidermis

B. dermis

C. subcutaneous adipose tissue

D. all of these

19. Hypothalamus functions as a

A. negative feedback organ

B. self-corrective mechanism

C. detector

D. stimuli

20. Burrows help small mammals to

A. enable heat loss

B. prevent heat loss

C. increase metabolic rate

D. decrease metabolic rate

Topic-3

In an antagonistic pair muscles work

Parallel

Opposite

Equal

Perpendicular

Main support to our body mass is provided by

Skeleton

Vertebral column

Rib cage

Spinal cord

Examples of slightly moveable joints is joints

between the vertebrae

between the skull bones

between ear ossicles

betweeninvertebral discs

Hyaline cartilage is strong yet

Flexible

Hard

Soft

Non flexible

Arthritis is defined as inflammation in

Bones

Joints

Cartilage

Muscles

Longest bone in our body is

Leg bone

Arm bone

Vertebral column

Thigh bone

Cranial bones are

In some invertebrates, skeleton is present on outside of body is called

endo-collagen

exoskeleton

endoskeleton

exo-collagen

Movement of whole animal from one place to another place is called

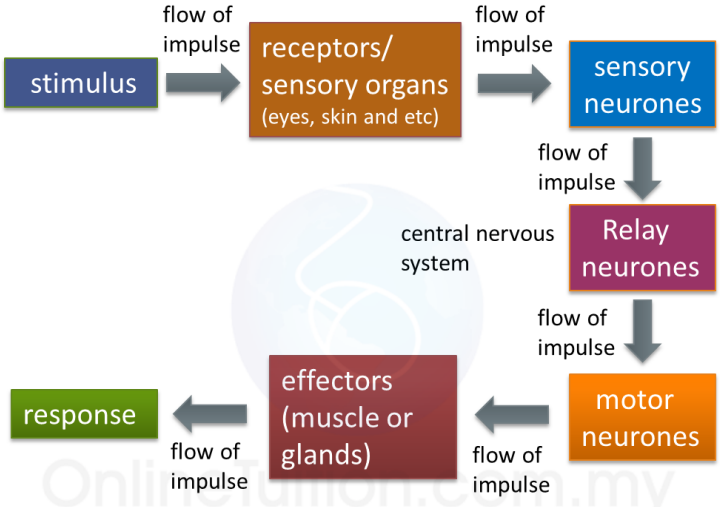
skeletal movement

non-skeletal movement

movement

locomotion

Chapter overview



The pathway of impulses in the nervous coordination

DIFFERENCE BETWEEN NERVOUS COORDINATION AND CHEMICAL COORDINATION

NERVOUS TISSUE

NEURON

Special kind of animal cell which can generate and conduct electric current.

STRUCURE OF NEURON:

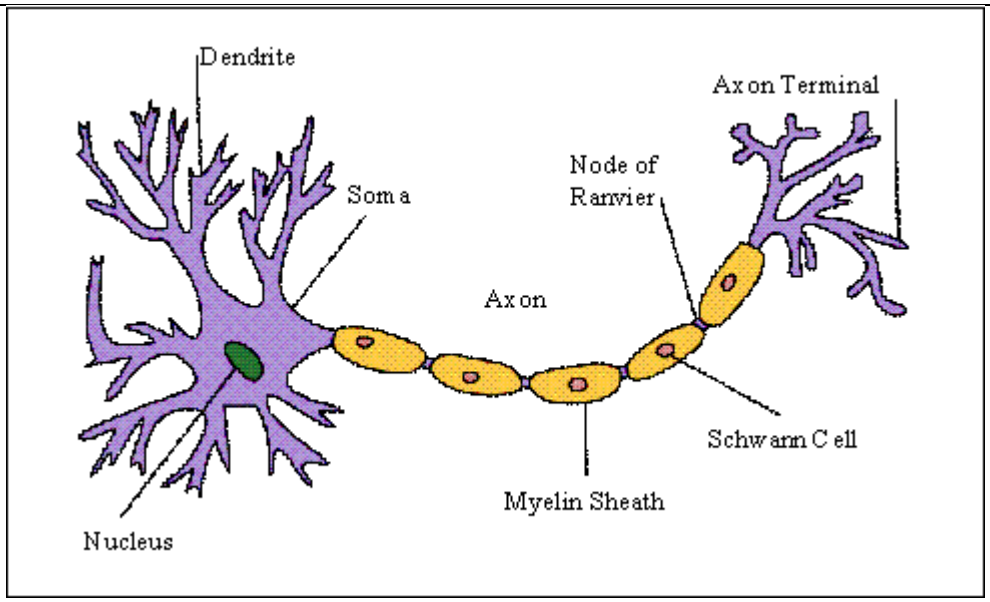
Following are the components of neuron

1. SOMA(CELL BODY): contains cytoplasm and nucleus, contain organelle Nissl Substance which consist ribosomes

2. AXON: Long slender projection that conduct electrical impulse away from the cell body

3. DENDRITES: Tree like structures arise from soma that receive messages from neuron.

4. AXON TERMINALS: Axon terminals are distal terminations or branches of an axon



Structure of neuron

TYPES OF NEURON: (ON THE BASIS OF FUNCTION)

1. SENSORY NEURON: carries sensory information from receptor to CNS
2. MOTOR NEURON: they take commands of CNS to effector
3. INTERNEURON: they are found in CNS.

GLIAL CELLS/NEUROGLIA

Neuron in CNS are separated by smaller cell called glial cells.

Schwann cell form the myelin sheath.

FUNCTION:

- They surround neuron and hold them in place
- Provide nutrients and oxygen to neuron
- Insulate one neuron from another
- They perform trophic and phagocytic functions

NERVE IMPILSE

Definition: " Nerve impulse is a wave of electro-chemical changes which passes through body of Neuron.

Neurons work for nerve impulse. When the neurons send messages they produce electric wave.

Neuron develop impulse in the following way:

1. Resting membrane potential (RMP)
2. Action potential
3. Propagation of impulse.
4. Synapse

1. RESTING MEMBRANE POTENTIAL (RMP)

The resting (non signaling) neuron has a voltage across its plasma membrane called resting membrane potential.

- The resting potential is determined by concentration gradient of ions across membrane and by membrane permeability to each type of ion.
- In this process Na+ ions are involved. The neurolemma (plasma membrane of neurons) carries positive charge on its outer surface and negative charge in its inner surface. When messages does not pass through nerve cell the current difference outside and inside of neurolemma is usually -64mv. This amount of current is called RMP.
- RMP is produced when the positive and negative charge outside and inside the neurolemma is different. On outer side Na+ ion is greater and its amount is less inside the neurolemma. Potassium ions are concentrated much inside than outside the membrane. The negative charge inside is due to organic acids and protein.

2. ACTION POTENTIAL When neurolemma of neuron is affected by electric shock, touch, sound etc. the amount of positive and negative charge is distributed and a charge occurs in RMP. This is a nerve impulse.

During action potential the polarity of neurolemma first changes to +40 mv(i.e. depolarization) and then restores to -65 mv again (i.e. repolarization). This action potential is very rapid and it occurs in only few milliseconds.

The change in potential across membrane is due to the presence of Na+ and K+ channels in neurolemma upon stimulation, the sodium channels open and Na+ start to transfer inside the cell, membrane potential changes from negative to zero then proceeds up to +40 mv at this stage sodium channels are automatically shutdown but simultaneous potassium channels open to allow their outward movement. As a result negative charge gradually restores (-65).

Since the sodium ion accumulate inside and potassium outside at this stage the sodium potassium pump become operational to restore the initial accumulation of sodium outside and potassium inside.

3.PROPAGATION OF NERVE IMPULSE

When action potential develops and spread along the entire length of neurolemma, it is called propagation of nerve impulse

4.SYNAPSE

The loose connection between neurons are called synapse.

PARTS OF SYNAPSE:

The synapse consists of 3 parts:

a. Pre synaptic membrane: It is the membrane of axon terminal.

b. Synaptic cleft: The narrow space between neurons is synaptic cleft.

c. Post synaptic membrane: this is the membrane of dendrites of another neuron. When it is the membrane of muscle cell it is called as motor end plate.

The nerve impulse is transferred from Pre synaptic part to the Post synaptic part at axon terminals, because at their ends vesicles are present, which contain a chemical called neuro transmitter. This neurotransmitter takes part to transfer the nerve impulse.

When a message is reached at axon terminals, the Calcium channels present there are opened. From synaptic cleft calcium ions are diffused into the calcium channels due to this process the vesicles containing neurotransmitter are connected with axon terminals and from these vesicles neurotransmitter is released into the synaptic cleft. The neurotransmitter are attached to the post synaptic membrane of dendrites of other neuron. It causes action potential and nerve impulse is started. After that this neurotransmitter is diffused back into the pre-synaptic membrane of the neurons. It can be used again in the process.

TYPES OF NEUROTRANSMITTER

Neurotransmitter are of different types, some of them have been identified such as acetylcholine, non-epinephrine, glycine, GABA, serotonin, Dopamine etc.

REFLEX ACTION

Reflex action are automatic,involuntaryresposnes which occur either due to internal and external stimuli

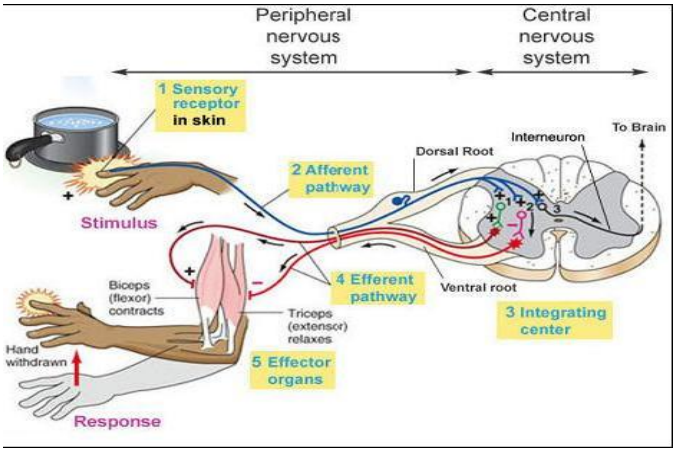
Example: Knee jerk or withdrawal of hand from hot plate.

Reflex action involves two neuron: sensory neuron and motor neuron.

Reflex Arc

Pathway of such transmission is called reflex arc. Reflex arc consist of

1. Receptor or sense organ
2. Sensory neuron
3. Reflex center (CNS)
4. Motor nerve
5. Effector(muscle/gland)



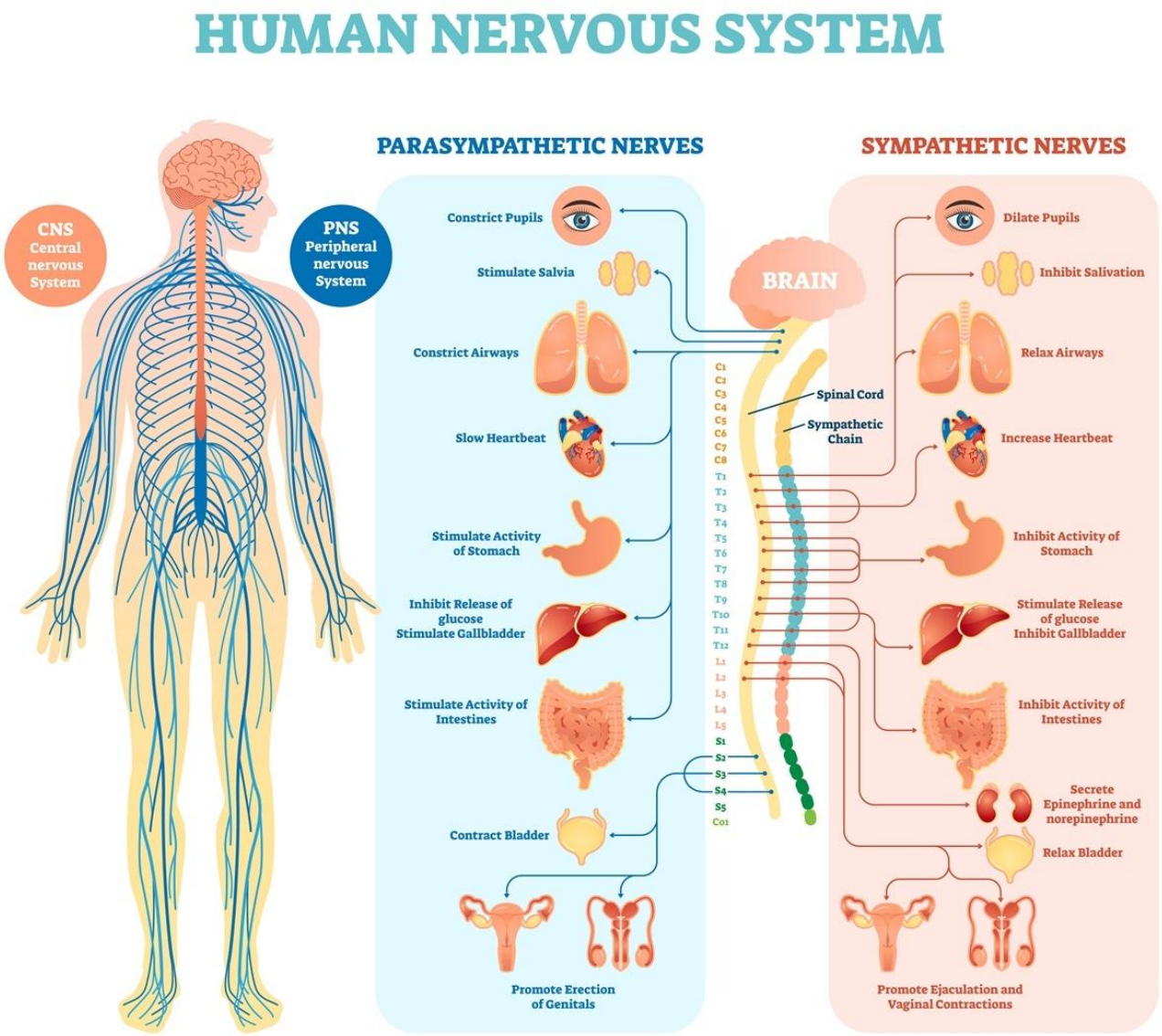
Reflex action type:

Monosynaptic: Reflex action is said to be monosynaptic when only one synapse is involved.

Polysynaptic: Reflex action is said to be polysynaptic when it involves one or more interneurons imposed between sensory and motor neurons

Reflex action and reflex arc

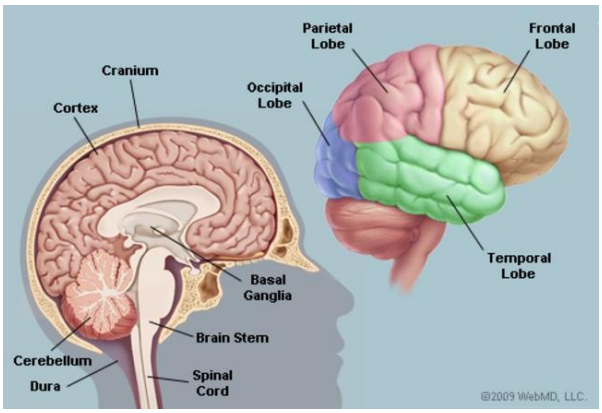
HUMAN NERVOUS SYSTEM



- HUMAN HAS CENTRALIZED NERVOUS SYSTEM..
- CENTRAL NERVOUS SYSTEM CONSIST OF BRAIN AND SPINAL CORD.
- BOTH CONSIST OF 100 BILLION INTERNEURON.
- BOTH ARE PROTECTED IN BONY STRUCTURES i.e., SKULL AND VERTEBRAL COLUMN

BRAIN

- ONE OF THE LARGEST AND MOST COMPLEX ORGAN
- BRAIN IS SURROUNDED BY A LAYER OF TISSUE CALLED MENINGES
- SKULL (CRANIUM) HELP PROTECT THE BRAIN FROM INJURY
- CNS DEVELOPS IN EMBRYO FROM DORSAL HOLLOW NERVE CORD AND FILLED WITH CSF(Cerebrospinal fluid)



SUBDIVISION OF BRAIN AT EARLY DEVELOPMENT STAGES

How the Human Brain Gets Its Wrinkles?

POSSIBLE REASONS:

- The human brain is relatively large and very wrinkled. Wrinkles increase the surface area for neurons.
- The reason our brains have that wrinkly, walnut shape may be that the rapid growth of the brain's outer brain — the gray matter — is constrained by the white matter. A folded brain surface has a greater surface area — which means a greater power for processing information.

CEREBRAL CORTEX(LARGEST/MOST COMPLEX PART OF BRAIN)

- IT CONTROL ALL THE CONSCIOUS ACTIVITIES
- IY IS THE PLACE WHICH IS INVOLVED IN INTELLIGENCE, REASONING, MEMORY ETC.
- FUNTIONALLY IT IS DIVIDED INTO:

i. Frontal lobe

ii. Parietal lobe

iii. Temporal lobe

iv. Occipital lobe

Frontal lobe

COORDINATES MESSAGES FROM OTHER CEREBRAL LOBES, INVOLVED IN COMPLEX PROBLEM SOLVING TASKS.

Parietal Lobe

RECEIVES SENSORY INFORMATION FROM SENSE RECEPTORS ALL OVER THE BODY

Temporal lobe

INVOLVED IN COMPLEX VISUAL TASK, BODY BALANCE, REGULATES EMOTION, PLAY STRONG ROLE IN UNDERSTANDING LANGAUGE.

Occipital lobe

RECEIVES AND PROCESSES VISUAL INFORMATION

THALAMUS

- The thalamus is a small structure within the brain located just above the brain stem between the cerebral cortex and the midbrain
- It has extensive nerve connections to both.
- The main function of the thalamus is to relay motor and sensory signals to the cerebral cortex.
- It is known as clearing house for sensory impulses as it receives them from different parts of brain and send them to appropriate part of motor cortex

LIMBIC SYSTEM

Limbic system consists of hypothalamus , Amygdala, Hippocampus, and some part of thalamus

HYPOTHALAMUS

The hypothalamus is a small region of the brain. It's located at the base of the brain, near the pituitary gland. It's very small

- The Hypothalamus is important in of homeostasis
- It regulates pituitary gland.
- It is also involved in regulation of body temperature, blood pressure, hunger, thirst , aggression, pleasure and pain.

AMYGDALA: PRODUCES SENSATION OF PLEASURE PUNISHMENT OR SEXUAL AROUSAL UPON STIMULATION.

HIPPOCAMPUS: INVOLVED IN LONG TERM MEMORY.

BRAIN STEM

The brain stem consists of the midbrain, pons, and medulla oblongata.

FUNCTION

The brain stem controls the flow of messages between the brain and the rest of the body, and it also controls basic body functions such as breathing, swallowing, heart rate, blood pressure, consciousness, and whether one is awake or sleepy.

SPINAL CORD

The spinal cord is a long, fragile tube like structure that begins at the end of the brain stem and continues down almost to the bottom of the spine.

FUNCTION

The spinal cord consists of nerves that carry incoming and outgoing messages between the brain and the rest of the body.

SPINAL CORD HAS TWO AREAS WHITE OUTER REGION CONSIST OF NEURON AND GRAY MATTER INNER CONSIST OF NERVE FIBRE

PERIPHERAL NERVOUS SYSTEM

PERIPHERAL NERVOUS SYSTEM

- From brain and spinal cord many nerves are produced which spread in various part of the body. These nerves form peripheral nervous system.

 CRANIAL NERVES: The nerves which arise from brain are called Cranial Nerves. There are 12 pairs.

 SPINAL NERVES: The nerves of spinal cord are called Spinal Nerves. There are 31 pairs.

- Through these nerves impulses are carried from body parts to the brain and spinal cord. These nerves are further divided according to their function

TYPES OF NERVOUS SYSTEM

There are two types of nervous system:

i. SOMATIC NERVOUS SYSTEM:

 The nerves which are reached to the skeletal muscles, control their movement and function, form Somatic nervous system.

 It is voluntary nervous system.

 By this nervous system man can control body parts.

ii. AUTONOMIC NERVOUS SYSTEM

 The nerves which are reached to the smooth muscles, control heart and glands form Autonomic nervous system.

 It is involuntary nervous system.

 It controls internal body organs.

TYPES OF AUTONOMIC NERVOUS SYSTEM

a. Parasympathetic nervous system

b. Sympathetic nervous system

PARASYMPATHETIC NERVOUS SYSTEM

Parasympathetic nervous system consists of some cranial nerves, spinal nerves and vagus nerves. It controls some internal stimuli during rest, such as heart beat, food digestion and contraction of pupil of eye etc.

VAGUS NERVES: each of the tenth pair of cranial nerves, supplying the heart, lungs, upper digestive tract, and other organs of the chest and abdomen.

SYMPATHETIC NERVOUS SYSTEM

This nervous system is formed by nerves present in the thoracic vertebrae and lumber vertebrae.This nervous system works at the time of emergency and fight or flight. It helps for rapid heart beat, fast breathing. Proper digestion etc. In this process a hormone epinephrine is involved.

RECEPTOR(s):

- An organ or cell able to respond to light, heat, or other external stimulus and transmit a signal to a sensory nerve.
- These are found in epithelial layer of external and internal body organs.
- Receptors convert the receiving stimuli into nerves impulses,this awareness or feeling of stimulus is called sensation. In the control Centre of nervous system, impulses are converted into perception.

KINDS OF RECEPTORS:

According to the sensation there are different types of receptors:

1. Thermoreceptors: These receptors receive sensation of change in temperature.
2. Chemoreceptors: These receptors receive presence of certain chemical in their surroundings.
3. Mechanoreceptors: These receptors receive sensation about touch, movement, gravity, sound, pressure etc.
4. Photo-receptors: These receptors receive light and ultraviolet rays.
5. Pain receptors: These receptors feel pain in the body organs

Topic-4

Outer layer of adrenal gland is called

adrenal cortex

adrenal medulla

cortex

medulla

When an impulse reaches a synaptic knob, synaptic vesicles fuse with the

pre-synaptic membrane

post-synaptic membrane

synaptic cleft

neurotransmitters

Main transmitter for synapses that lie outside central nervous system is

serotonin

adrenaline

acetylcholine

dopamine

Medulla of adrenals produces hormone

adrenaline

nor-adrenaline

cortico-steroids

both A and B

Gastrin is hormone produced by mucosa of pyloric region of the

kidney

lungs

stomach

intestine

side of neuron, membrane is made more negative by

carbohydrates

fats

proteins and organic acids

lipids

A nerve impulse is passed from one neuron to other through

node of ranvier

synapse

cell body

dendrites

Sympathetic nervous system is associated with

hormonal secretions

fear and rage

skeletal muscles

fight and flight

Lobe of pituitary often referred to as master gland, is the

frontal

posterior

anterior

median

Hypothalamus is a part of

midbrain

forebrain

hindbrain

future brain

Bilobed-mass composed of two ganglia are present in body of

hydra

planaria

humans

rats

In rats, ability to withstand any stress situation such as cold is diminished, if

adrenal cortex is removed

adrenal medulla is removed

cortex is removed

medulla is removed

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CHAPTER OVERVIEW

REPRODUCTION

The process in which one or two parent organism form or produce a new individual is called reproduction

MODES OF REPRODUCTION

There are two modes of reproduction

1. Asexual reproduction
2. Sexual reproduction

1. ASEXUAL REPRODUCTION

Asexual reproduction, in which cell divide into two new cells. It is a simple process and does not require fusion of gametes. In this process only mitosis is involved. There is no need of meiosis.

METHODS OF ASEXUAL REPRODUCTION

1. FISSION: when parent cell divides into daughter cells in a simple manner it is called fission. It is simplest form of asexual reproduction.

TYPES OF FISSION

a. Binary Fission: In this process the parent cell divides into two daughter cells.

Example: Amoeba

b. Multiple Fission: In this process the parent cell divides into more than two daughter cells.

Example : Plasmodium

2. BUDDING:

In this process an outgrowth is produced from the parent body called bud. It gradually increase in size and than separates from parent body. This bud develops into new individual.

3. REGENERATION :

Regeneration is the process of re-growing the missing parts which has been lost by accident. Regeneration is very common is Sponges, Coelenterates, annelids, Mollusca, Arthropoda and Echinoderms.

4. PARTHENOGENESIS:

It a natural form of asexual reproduction in which growth and development occurs without fertilization it is common in

some Arthropoda (insects) honey bee, wasps, and ants etc.

5. CLONING:

Cloning is recent techniques of a special type of reproduction. Technically it is an asexual type of reproduction because formation of the new individual requires only one unfertilized egg.

STEPS OF CLONING

i. Formation of the new individual requires only one unfertilized egg.

ii. Nucleus of egg is replaced by the diploid nucleus of somatic cell.

iii. This egg is transplanted in the uterus of a female where it behaves like a fertilized egg and develops into an organism, which is an exact copy of the parent who donated the diploid nucleus.

TWINS

Twins are the children which develop and born almost at same time.

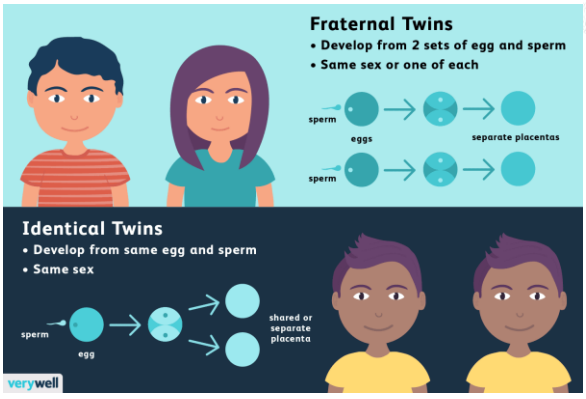
TYPES OF TWINS

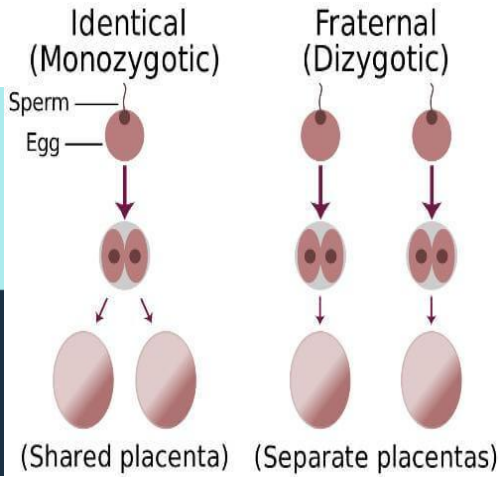
1. IDENTICAL TWINS:

These twins are quite identical and developed from one zygote and also known as monozygotic twins. They have same sex.

2. FRATERNAL TWINS:

These twins are developed from two different zygotes. Each egg is fertilized by separate sperm and also known as dizygotic twins. The zygotes develop into twins under the same condition and birth is also at the same time but they are not identical they have different sex.





2.SEXUAL REPRODUCTION

Fusion of male and female gametes is known as Sexual reproduction

IMPORTANCE OF SEXUAL REPRODUCTION

1. By process of sexual reproduction different kinds of organisms are produced because they get characteristics from two parents.
2. Genetic changes of sexual reproduction play an important role in evolution
3. New organism can be identified easily as a result of sexual reproduction the members of same family are different from each other.

Necessary steps of Sexual reproduction

Following are the necessary steps of Sexual reproduction

1. Gametogenesis
2. Mating
3. Fertilization

1. GAMETOGENESIS

The process in which cells undergo meiosis to form gametes. Gametogenesis in the male is known as spermatogenesis and produces sperm. Gametogenesis in the female is known as oogenesis and result in the formation of ova.

SPERMATOGENESIS

Spermatogenesis i.e. sperm formation takes place in testes. The step of spermatogenesis are as follows.

1. In the testes germ cell take part in spermatogenesis. The germ cell produce spermatogonia (Singular : spermatogonium)
2. Spermatogonia are change into primary spermatocytes.
3. Primary spermatocytes divides into two cells by meiosis called secondary spermatocytes.
4. Secondary spermatocytes divide further into four haploid spermatids.
5. Spermatids change into sperm.

OOGENESIS

Oogenesis is the formation of ova in the ovary. Its steps are as follows:

1. In the ovary germ cell change into special cells called oogonia.
2. Oogonia convert into primary oocytes.
3. Primary oocytes divide into two cells by meiosis called secondary oocytes.
4. Secondary oocytes divide further into four cells, one ovum and three polar bodies
5. The ovum takes part in fertilization and form zygote. The polar bodies dissolves.

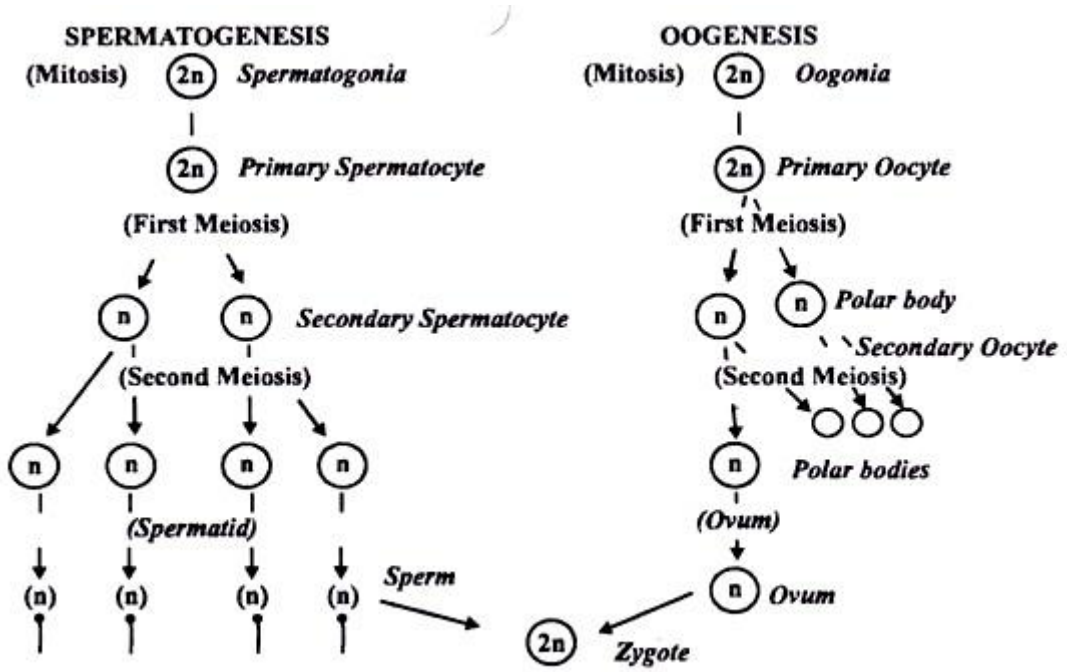


Fig. 4.5. A Schematic Diagram Showing Gametogenesis

2. MATING : It is a process in which male and female contribute their gametes for the process of fertilization.

3. FERTILIZATION

Fusion of haploid male and female gametes results in formation of diploid zygote.

Fertilization may be external and internal.

External Fertilization

In external fertilization sperm and egg unite outside the body of female in an aquatic medium. External fertilization is common in sessile organism. Among higher animals most of fishes and amphibians like frog exhibit the process of external fertilization.

Internal Fertilization

This type of fertilization occurs inside the body of female. Terrestrial animal reproduce by internal fertilization and some aquatic animals like prawn, dog fish etc also use this type of fertilization for reproduction.

SEX TYPES

UNISEXUAL/ DIOECIOUS/ HETEROPHRODITE

When male and female reproductive organs found in separate organisms they are called as Unisexual or Dioecious or Heterophrodite.

BISEXUAL/ MONOECIOUS/ HERMAPHRODITE

When male and female reproductive organs found in same organisms they are called as

Bisexual or Monoecious or Hermaphrodite

CROSS FERTILIZATION

It is a term used in reproduction describing fertilization of an ovum from one individual with sperm of another.

SELF FERTILIZATION

Self-fertilization occurs in hermaphrodite organisms where the two gametes fused in fertilization come from the same individual

OVIPARITY

Designating type of reproduction in which females lay egg which hatch outside the body.

For example birds and insect

VIVIPARITY

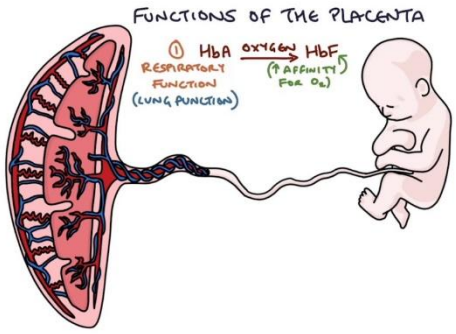
Designating type of reproduction in which females give birth to young one.

For example mammals

PLACENTA: Placenta is tissue which helps in attachment of embryo with the wall of uterus.

Function :

- It helps in exchanging material between embryo and its mother.
- Placenta secretes progesterone hormone for the maintaining of pregnancy



GESTATION

The period starting from conception upto the birth of as baby is called gestation.

EXTRA EMBRYONIC MEMBRANE

There are four extra embryonic membranes.

AMNION: In birds, reptiles and mammals a clear extra embryonic membrane is present called amnion, it surrounds the embryo. There is cavity in amnion filled with amniotic fluid called as amniotic fluid.

Function:

- Amniotic fluid keep the embryo moist.
- It protect embryo from injury
-

1. YOLK SAC: It contain yolk which is a mixture of protein and lipoprotein

Function:

- It is sole source of food until hatching
-

2. CHORION: it covers the embryo completely it is present in the outer side of embryo near the egg shell.

Function:

Chorion is permeable to gas, participates in exchange of O_2 and CO_2 between embryo and outside air.

3. ALLANTOIS: This structure arise from hindgut of embryo.

Function:

- It stores metabolic waste of embryo
- It also participates in exchange of gases

UMBILICAL CORD:

Rope like structure formed from allantois is called umbilical cord. It connect embryo to placenta. It contains blood vessels which carry food and O_2 from placenta to embryo and CO_2 from embryo. It serves as supply line between embryo and its mother.

TEST TUBE BABIES

Approximately 10% of couples fail to have children this condition is called infertility. In some females this is due to blockage of oviduct so that the sperm cannot reach the egg. Such sort of infertility is overcome by invitro fertilization technique

TECHNIQUE OF TEST TUBE BABIES

1. Sucking up of ova from the ovary before fertilization.
2. These eggs are fertilized with sperm outside female body in laboratory dish.
3. Egg fertilized are allow to develop for few days in laboratory.
4. One ovum is transplanted in uterus of female.
5. Complete development of embryo in uterus.
6. Normal birth of baby.

THE MALE REPRODUCTIVE SYSTEM

The male has reproductive organs, or genitals, that are both inside and outside the pelvis. The male genitals include:

- the testicles
- the duct system, which is made up of the epididymis and the vas deferens
- the accessory glands, which include the seminal vesicles and prostate gland
- the penis

TESTICLES

The two testicles or testes, produce and store millions of tiny sperm cells. The testicles are oval-shaped and grow to be about 2 inches (5 centimeters) in length and 1 inch (3 centimeters) in diameter.

The testicles are also part of the endocrine system because they produce hormones, including testosterone Testesterone is a major part of puberty in male Testosterone is the hormone that causes male to develop deeper voices, bigger muscles, and body and facial hair, and it also stimulates the production of sperm.

EPIDIDYMIS AND VAS DEFERENS

Alongside the testicles are the epididymis and the vas deferens , which make up the duct system of the male reproductive organs. The vas deferens is a muscular tube that passes upward alongside the testicles and transports the sperm-containing fluid called semen

The epididymis is a set of coiled tubes (one for each testicle) that connects to the vas deferens.

SCROTUM

The epididymis and the testicles hang in a pouch-like structure outside the pelvis called the scrotum. This bag of skin helps to regulate the temperature of testicles, which need to be kept cooler than body temperature to produce sperm. The scrotum changes size to maintain the right temperature. When the body is cold, the scrotum shrinks and becomes tighter to hold in body heat. When it's warm, the scrotum becomes larger and more floppy to get rid of extra heat. This happens without a guy ever having to think about it. The brain and the nervous system give the scrotum the cue to change size.

ACCESSORY GLANDS

The accessory glands, including the seminal vesicles and the prostate gland, provide fluids that lubricate the duct system and nourish the sperm.

- The seminal vesicles are sac-like structures attached to the vas deferens to the side of the bladder.
- The prostate gland, which produces some of the parts of semen, surrounds the ejaculatory ducts at the base of the urethra just below the bladder.
- The urethra is the channel that carries the semen to the outside of the body through the penis. The urethra is also part of the urinary system because it is also the channel through which urine passes as it leaves the bladder and exits the body.

PENIS

The penis help to transfer the sperm into vagina

THE FEMALE REPRODUCTIVE SYSTEM

The human female has a reproductive system located the lowest part of the abdomen.

OVARIES

The ovaries found in the lowest part of abdomen. The ovaries produce ova. About 3,000 to 30,000 ova are formed in the ovaries but only 350 to 450 ova are riped during whole life time.

GRAFFIAN FOLLICLE

Each ovum is formed in a sac like body called graffian follicle. In the formation and maturation of ovum hormones play important role.

FALLOPIAN TUBE or OVIDUCT

The mature ovum is released from the ovary into a duct called fallopian tube or oviduct. In this duct ovum is fertilized by sperm. In the oviduct cilia are present which help in the movement of ovum.

UTERUS

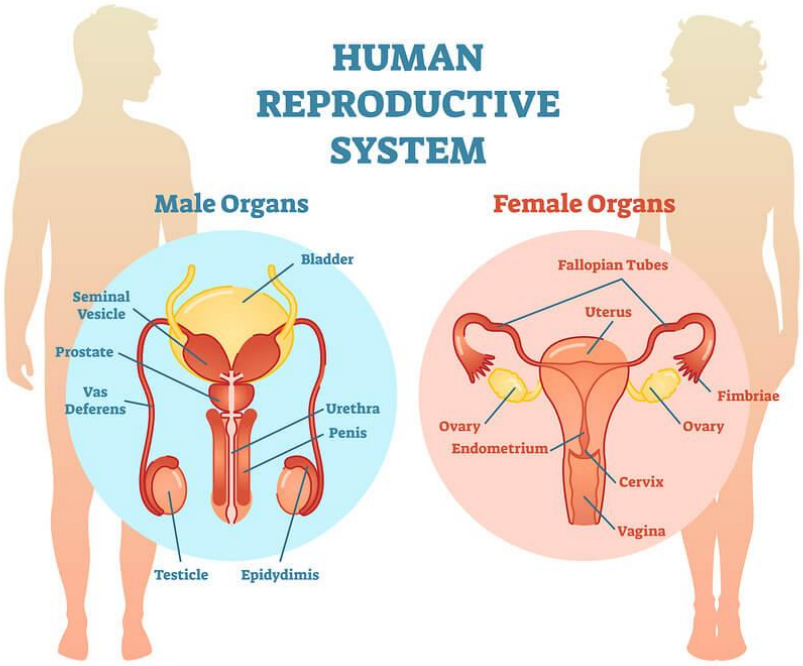
The two oviducts open into a large pear shaped structure known as uterus. In uterus development of embryo takes place.

- MYOMETRIUM: It is Muscular part of uterus
- ENDOMETRIUM: It is spongy lining with vascular tissues

VAGINA: From the lower side of uterus a tube is produced called vagina. It opens outside and receives sperms from male.

CERVIX: The lower part of uterus opens into vagina in the form of a narrow circular part known as cervix

VULVA: It is a part near the opening of vagina.



MENSTRUAL CYCLE

Each month during the years between puberty and menopause, a woman's body goes through a number of changes to get it ready for a possible pregnancy. This series of hormone-driven events is called the menstrual cycle. During each menstrual cycle, an egg develops and is released from the ovaries. The lining of the uterus builds up. If a pregnancy doesn't happen, the uterine lining sheds during a menstrual period. Then the cycle starts again.

A menstrual cycle is divided into four phases:

- menstrual phase
- follicular phase
- ovulation phase
- luteal phase

The length of each phase can differ from woman to woman, and it can change over time.

MENSTRUAL PHASE

- The menstrual phase is the first stage of the menstrual cycle.This phase starts when an egg from the previous cycle isn't fertilized. Because pregnancy hasn't taken place, levels of the hormones estrogen and progesterone drop.
- The thickened lining of your uterus, which would support a pregnancy, is no longer needed, so it sheds through vagina. Characterized by release a combination of blood, mucus, and tissue from your uterus.

FOLLICULAR PHASE

- The follicular phase starts on the first day of cycle and ends when female ovulate.It starts when the hypothalamus sends a signal to pituitary gland to release follicle-stimulating hormone (FSH).
- This hormone stimulates ovaries to produce around 5 to 20 small sacs called follicles. Each follicle contains an immature egg. Only the healthiest egg will eventually mature. The rest of the follicles will be reabsorbed into the body.
- The maturing follicle sets off a surge in estrogen that thickens the lining of uterus. This creates a nutrient-rich environment for an embryo to grow. The average follicular phase lasts for about 16 days. It can range from 11 to 27 days,

depending on your cycle.

•

OVULATION PHASE

• Rising estrogen levels during the follicular phase trigger pituitary gland to release luteinizing hormone (LH). This is what starts the process of ovulation.

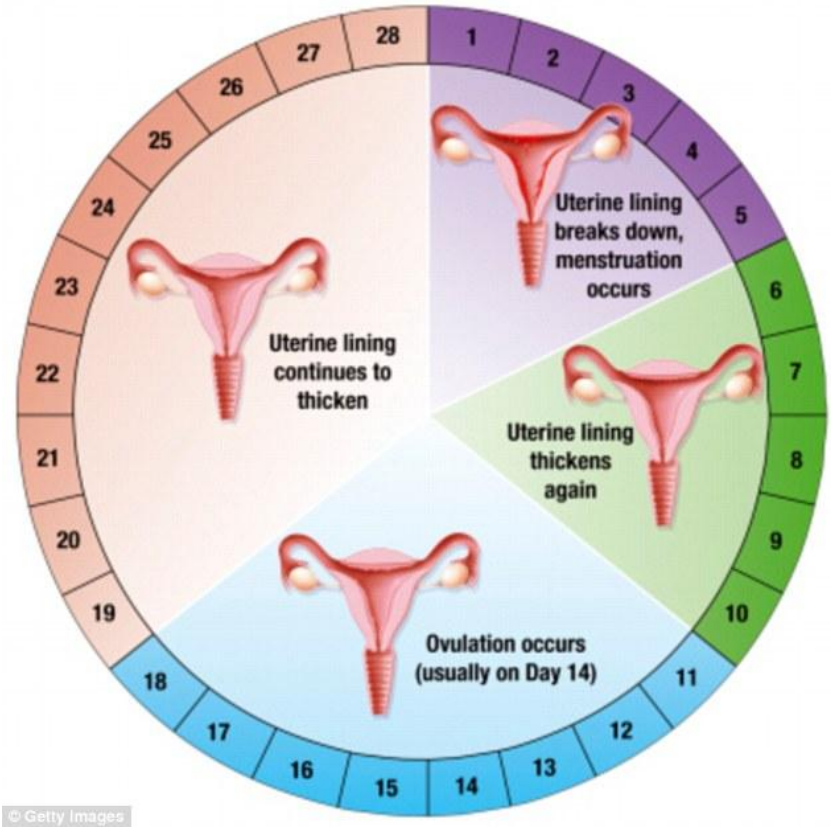
• Ovulation is when ovary releases a mature egg. The egg travels down the fallopian tube toward the uterus to be fertilized by sperm.

• Ovulation happens at around day 14 in a 28-day cycle — right in the middle of menstrual cycle. It lasts about 24 hours. After a day, the egg will die or dissolve if it isn't fertilized.

LUTEAL PHASE

• After the follicle releases its egg, it changes into the corpus luteum. This structure releases hormones, mainly progesterone and some estrogen. The rise in hormones keeps uterine lining thick and ready for a fertilized egg to implant.

• The luteal phase lasts for 11 to 17 days. From day 14 to the 28yh day of menstrual cycle.



HORMONAL CONTROL OF REPRODUCTIVE CYCLE

Following are the hormones which control the reproductive cycles:

1. FSH(follicle stimulating hormone)

This hormone acts upon the follicle cells of ovary. These cells take part in the formation of ova. The mature follicles are termed as graffian follicles.

2. LH (luteinizing hormone)

This hormone is involved in the stimulation of graffian follicles which releases mature ovum. In this way this hormone helps in ovulation.

3. Oestrogen

This hormone is secreted from follicle cells of ovary. It is an important hormone. tis hormone is involved in the rapid division of cells of endometrium layer of uterus. Oestrogen also help to develop female secondary sexual characteristics in the body.

4. Progesterone

When graffian follicle releases a riped ovum, this its empty spec is filled by new cells and it is converted into a special gland called corpus luteum. It secretes a hormone progesterone. This hormone is also important for preparation of uterus lining for pregnancy.

SEXUALLY TRANSMITTED DISEASES(STD)

1. GONORRHOEA

It is a dangerous disease of reproductive organs, caused by a bacterium Neisseria gonorrhoeae. The bacteria are transferred from affected person to a normal healthy person through seual contact. It causes infection in reproductive ducts.

TREATMENT: Proper antibiotics should be used for the treatment of disease.

2. SYPHILIS

This is a dangerous disease which causes infection in reproductive organs. This disease is caused by bacterium, Treponemapallidum. In this disease along with reproductive organs, nervous system, joints of skeleton, yes , heart and skin are affected.

TREATMENT: Proper antibiotics should be used for the treatment of disease.

3. GENITAL HERPES

Virus Herpes simplex is the causative agent of this disease. This disease is characterized by development of ulcers on the surface and around the reproductive organs. From mother the disease is also transferred to her baby.

4. AIDS(ACQUIRED IMMUNE DEFICIENCY SYNDROME)

Human immunodeficiency virus (HIV) is the virus that is responsible for causing acquired immune deficiency syndrome (AIDS). The virus destroys or impairs cells of the immune system and progressively destroys the body's ability to fight infections and certain cancers.

Vertical transmission. HIV can be spread to babies born to, or breastfed by, mothers infected with the virus.

Sexual contact. In adults and adolescents, HIV is spread most commonly by sexual contact with an infected partner. The virus enters the body through the lining of the vagina, vulva, penis, rectum, or mouth through sexual activity.

Topic-5

Simple division of cell that produces an exact duplicate of an organism is called

Cell division

Reproduction

Sexual reproduction

Asexual reproduction

Joining of male and female gametes is called

Fusion

Reproduction

Sexual reproduction

Asexual reproduction

Which of following is not true about reproduction?

It is an essential life process

It is one of the fundamental characteristics of living things

Species cannot survive without reproduction

None of these

Male copulatory organ used to transfer sperms into female reproductive tract is called

penis

testis

prepuce

rectum

Uterus opens into vagina through

ovary

oviduct

cervix

urethra

Placenta passes out through vagina

10-20 minutes after birth

10-15 minutes after birth

10-30 minutes after birth

10-45 minutes after birth

Identical gametes are also known as

heterogametes

isogametes

anisogamete

hypogametes

Secondary spermatocytes and spermatids are formed by meiotic division in

primary spermatocytes

spermatogonia

primary oocytes

polar body

Multiple fission is a characteristic reproduction mechanism in

plant like protoctists

animal like protoctistsk

hydra

earthworm

Menstruation stage lasts for about

1-2 days

3-7 days

5-10 days

10-15 days

Internal lining of uterus wall is called

endometrium

peritonium

epithelium

endothelium

End or complete stop of menstrual cycle is called

menuend

infertilization

menupause

ovulation

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