بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

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Part one: Direct questions

Unit 1: Microorganisms and humans

1- What is meant by the terms health and disease.

- **Health** is defined the physical, mental and social state of a person or is the state of person physically, mentally and socially well-being.
- **Disease** is disorder or bad functioning (malfunction of mind or body).

2- State traits of good health and traits of poor health?

Traits of good health	Traits of poor health
• Physically fit	* Physically unfit
• Optimistic	* Pessimistic
• Respect norms	* Violates norms

3- What is the different between unit-factorial diseases and multi-factorial diseases?

- Unit-factorial diseases this type is caused by single factor such as malaria.
- Multi-factorial diseases this type is caused by many factors such as heart disease.

4- What is the difference between Acute and Chronic disease?

- **Acute disease** is a disease that lasts a short period of time and comes on rapidly such as influenza.
- **Chronic disease** is disease that persists for a long period of time and does not appears suddenly such as TB.

5- State nine broad categories of disease and give one example of each?

Diseases	Examples
• Physical diseases	Leprosy and broken leg

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- Infectious diseases — Cholera , Aids, TB , syphilis Gonorrhea and malaria
- Non-infectious diseases — Cancer , Heart disease and stroke
- Inherited diseases or genetic diseases — Sickle cell anemia, cystic fibrosis and Huntington's disease
- Degenerative diseases — Alzheimer's and osteoporosis
- Social Diseases — Hypothermia and CHD
- Self-inflicted diseases — diabetes , Accidents and lung cancer
- Mental diseases — Schizophrenia and dementia

6- Explain the terms pandemic, epidemic and endemic?

- **Pandemic**: this is when a disease spreads over large area such as continent or worldwide e.g. AIDS.
- **Epidemic:** This occurs when a disease suddenly spreads rapidly to affect many people as influenza.
- **Endemic:** Is the when a disease is always present in population or region such as malaria

7- What are infectious diseases or communicable diseases?

- Are those caused by pathogen such as viruses, bacteria, fungi and protozoa.

8- State infectious diseases caused by viruses, bacteria, fungi and protozoa?

D. Caused by bacteria	**D. caused by viruses**	**D. Caused by Fungi**	**D. Caused by protozoa**
1- Tetanus(lock jaw)	1- Aids	1- athlete's foot	1- Malaria
2- Cholera	2- common cold	2- Jock itch	2- Amoeba
3- TB	3- viral hepatitis	3- ringworm	
4- Diphtheria	4- chicken box	4- yeast infections	
5- Syphilis	5- measles		
6- Gonorrhea	6- mumps		
7- Whooping cough			

Note: **D** short by diseases

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Disease	Pathogen	Transmission	Symptoms
1- Cholera	Vibriocholorea	Food and water bone disease	• Dehydration • loss of salt and water and weakness
2- Tuberculosis	Mycobacterium tuberculosis and mycobacterium bovid	Air bone and via un-pasteurized milk from cattle	• Racking cough • coughing blood • chest pain • fever • sweating and weight loss
3- Diphtheria	Corinne bacterium diphtheria	Via inhalation of cough droplets from an infected person	• Sore throat • nose and throat get blocked
4- Syphilis	Treponema palladium	STD (Sexual transmitted disease)	• Primary lesion or chancre progress from macule to papule • secondary lesions : Many rashes mucous patches lymphadenopathy
5- Gonorrhea	Diplodocus (Neisseria go rhea	STD	**Female**: Increased vaginal discharge ✓ Lower abdominal pain ✓ Pain during sex ✓ Painful urination **Male**: ✓ Testicular pain or swelling ✓ Rectal pain

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			✓ Painful urination
6- Whooping cough	Bordet Ella pertussis	Air bone and via inhalation of cough droplets from an infected child	• Mild sneezing • running nose • fever , vomiting and wheezing • whooping and pneumonia
7- Malaria	Plasmodium falciparum	By the bites of infected mosquitoes of the genus anopheles (insect vector)	• Fever, anemia and nausea • headache, muscle and joint pain • backache, shivering • enlarged spleen
8- Amoeba	Entamoebna histolytic	Water bone and food bone	• Diarrhea , vomiting ,and dehydration • faces with blood
9- Tetanus (Lock jaw)	Clostridium tetani	The spores may found in environment Or iron getting cut or laceration and animal bite	• The bacteria make a toxin , which is absorbed by body muscles • Stiff muscles & causing spasm that make it difficult to breath

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UNIT 2: Livestock health and diseases

1- Define livestock health and disease?

- Health : is the state of well-being of animal's body
- Disease: is an alteration in the state of the body of an animal or its organs.

2- State importance of keeping livestock health?

- Healthy animals produce high quantity and quality products and we obtain milk, meat , honey and eggs
- Healthy animals have low production costs
- Healthy animals work long period
- Healthy animals produce healthy offspring

3- State the predisposing factors of livestock diseases?

- Age of the animal
- Sex of the animal
- Color of the animal
- Climate change
- Health of the animal

4- List four signs that the animal is in poor health or ill-health?

- Low production
- Reduce appetite
- Restlessness
- Excessive salivation

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5- State four factors that cause livestock disease?

- Nutritional causes
- Physical causes
- Chemical causes
- Living organisms

6- State microscopic organisms and parasitic organisms that cause livestock diseases?

- Micro-organisms include bacteria , protozoa , viruses and fungi
- Parasitic organism include insects such as fleas , ticks and Mites

7- Name the causes of the following diseases and their symptoms?

a- Foot root **b**-Fowl typhoid **c**-Anthrax **d-** Newcastle **e-** Foot and mouth disease **f-** Fowl box

Disease	**Causal agent**	**symptoms**
1- Foot root	Fusiformis spp	• Lameness , • swollen and painful hoof • hoof contains pus and smells rotten
2- Fowl typhoid	Salmonella bacteria	• Sudden death • Comb and wattle pale • Less feeding • Greenish yellow • diarrhea
3- Anthrax	Bacillus anthraces	• Sudden death • Watery blood • High temperature •
4- Newcastle	Newcastle disease virus	• Nasal discharge

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		• Watery greenish diarrhea • Breathing difficulties • Coughing and sneezing
5- Foot and Mouth disease	Foot and mouth disease virus	• Lameness • Loss appetite • High fever • Blisters in the mouth , teats and udder
6- Fowl box	Fowl box virus	• Poor growth • Poor egg production • Breathing difficulties • Lesions of skin ,comb , leg and vent

8- Explain the classification of livestock diseases?

Bacterial diseases	**Viral diseases**	**Protozoa diseases**	**Nutritional diseases**
1- Anthrax	1- Foot and Mouth	1- East coast fever	1- Milk fever
2- Mastitis	2- Newcastle	2- Anapalasmosis	2- Bloat
3- Fowl typhoid	3- Fowl pox	3- Coccodiosis	
4- Foot rot	4- Rinderpest	4- tripanosomiasis	
5- Brucellosis	5- Gambaro		
6- Black quarter	6- African Swine fever		
7- Scours			

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9- Name and describe the general methods of livestock diseases control?

- **Sanitation:** The provision of an appropriate clean environment that is free from disease causing organisms.
- **Proper feeding:** Providing animals with balanced diet
- **Quarantine:** sick animals are deliberately isolated from healthy animals.
- **The regular vaccination of animal:** Vaccination enables the animal's body to produce those antibodies that will help to make it immune to the disease concerned
- **The control of parasite:** This may do through dipping and spraying
- **Culling:** The removals of sick animals from the herd
- **Proper housing of animals :** Housing should match the animals known needs

10 – Sate appropriate methods of handling livestock?

- Hoot trimming
- Dehorning or disbudding
- Castration
- Culling
- Docking
- Canonization

12- Define hoof trimming?

- This is cutting back of overgrown hooves on animal.

12- Why is hoof trimming necessary in goats?

- To facilitate easy movement
- To control foot rot disease
- To prevent the ram from injuries the ewe during mating or prevent injury during mating

13- Define dehorning?

Dehorning is the practices of removing, stopping or discouraging the growth of horns in cattle

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14- Why dehorning is important? Give to reasons

- ❖ Easy to transport
- ❖ Easy feeding
- ❖ It prevent the injuries

15- Write down methods of used for dehorning?

- Chemical method & Hot iron

16- Define the following terms:

Castration: Are the practices of making the testicles of male none functional

Culling: is the practice of removing unproductive animals for the breeding herd or flock

docking: Is the removal of tail in sheep

Canonization: is the process of removing tests from male birds or cock

17- Explain what is the nodifiable disease?

- ➢ Is a disease whose out brake must be reported to a government authority officer or police

18- State three notifiable diseases in livestock?

- ✓ Rider pests
- ✓ Anthrax
- ✓ Newcastle diseases

19- If the Newcastle diseases affect poultry .how do you control it?

- ❖ By vaccination
- ❖ Quarantine
- ❖ Killing infected birds

20- Mention two methods of caponization?

- ➢ Surgical operation
- ➢ Stil bestrol

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21- State three reasons for castration?

- ❖ To control breeding and inbreeding
- ❖ To encourage fast growth rate
- ❖ To control breeding diseases

22- State two methods used for castrating livestock?

- ❖ Open castration
- ❖ Closed castration

23- State the best definition of vaccination?

- Is a dead disease causing organisms which are injected in to the body assist in developing its own antibody?

24- Discuss foot and mouth diseases under the following sub-headings

a. Causal organisms

- ➢ Viral

b. Livestock species attacked

- ➢ Sheep , goats and pigs

c. symptoms of attack

- ✓ Fever
- ✓ Loss appetite
- ✓ Lameness

e- Control measures

- ✓ Vaccination
- ✓ Quarantine
- ✓ Slaughtering

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Unit3: Livestock parasites

1- Define parasite?

- Is an organism which obtains its live hood from another organism (host) which suffers damage.

2- Define the term host?

- Is an organism that supports another living organism (parasite) for food and shelter.

3- Explain the term parasitism?

- Is a relationship between two different organisms where the parasite harms the host.

4- State the effects of parasite?

- They cause anemia
- Sucking blood
- Damage the organs of the host
- Cause irritation on the skin of the host
- Transmission of diseases

5- Identify signs of parasite infestation

- Emaciation
- Potbellied condition
- Swelling in the jaw or other areas
- Anemia
- Diarrhea
- Presence of worm segment and blood

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6- State types of parasites?

- ✓ External parasites (exoparasites)
- ✓ Internal parasites (end parasites**)**

7- Give three examples of external parasites and internal parasites?

- **External parasites :** Ticks , fleas , mites, and keds
- **Internal parasites :** Liver flukes , round worms and tape worm

8- Write down the effects of lice on livestock? And how to control it?

Effects

- ❖ Cause irritation
- ❖ Suck blood causing anemia
- ❖ Reduced feeding
- ❖ Reduced production in birds

Lice can be controlled by:

- Dipping infested animals in an insecticide
- Spraying
- Washing

9- List four effects that tsetse fly have on livestock?

- ❖ Dry coat
- ❖ Loss appetite
- ❖ Irregular fever
- ❖ Anemia

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10- State effects of liver fluke and round worm?

Effects of Liver flukes

- Loss of weight
- Rough coat
- Blockage of intestine
- Presence of proglottide in animal faces

Effects of round worm

- Blood may be found in feces
- The animal may get diarrhea
- Coughing
- Loss of weight
- The animal may become anemic

11- What are external parasites and internal parasites?

- **External parasites:** are parasites that live outside of the body of the host.
- **Internal parasites:** are the organisms that live inside of the body of the host.

12- State two types of liver fluke?

- Fasciola gigantica
- Fasciola hepatica

13- State control measures of round worm?

- Drenching using recommended drugs
- Proper disposal of fecal matter
- Rotational grazing
- Ploughing in pasture

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Unit 4: Immune system/immunology

1- What is meant by immunology?

- Is the study of the physiological defense by which the body (the "host" destroys or neutralizes foreign matter, both living and non-living things.

2- State two types of immune defense?

- ✓ Non-specific immune defense (innate immunity).
- ✓ Specific immune defense (acquired immunity/ adaptive immunity).

3- State the functions of non-specific immune system?

- Protect against foreign substance
- The mechanisms of protection used by these defenses are not unique to the particular foreign substance.
- Protect against cells without having to recognize their identifies.

4- Mention function of specific immune defense?

- Depend upon specific recognition, by lymphocytes, of the substance or cell to attack and the launching of an attack against it that is unique for that substance or cell.

5- State three successive ways in which human body is defended from infection?

- ✓ Walls and moats
- ✓ Roaming patrols
- ✓ Skin and other external barriers

6- State the largest organ of the vertebrate body?

- The skin is the largest organ of the vertebrate body, accounting for 15% of an adult human's total weight.

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7- Define antigen, antibody, cell mediated response, and humeral immune response?

- **Antigen:** is a foreign or non-self-substance produced by an invading organism which can stimulate the immune response
- **Antibody:** is a protein molecule known as immunoglobulin by the body (Plasma cells) in response to the presence of antigen or foreign substance to facilitate its destruction.
- **Cell-mediated immune response:** is an immune response that involves the T-lymphocytes or T-cells.
- **Humeral immune response:** is an immune response that involves the B-lymphocytes or B-cells and T-cells.

8- State the functions of antibodies?

- Some act as labels to identify antigens as appropriate target and making it impossible for them to divide or making it easier for phagocytes to destroy them.
- A special group of antibodies are antitoxins which block the toxins released by bacteria such as diphtheria and tetanus.
- Prevent bacteria from sticking to body tissues.
- Bind to viruses and prevent those infecting cells.
- Some antibodies together with other molecules punch a hole in the wall of pathogen causing them to burst
- Antibodies agglutinate bacteria, preventing them spreading throughout the body.

9- Explain the following terms:

Active immunity , Natural active immunity , artificial active immunity , Passive immunity , natural passive immunity , artificial passive immunity?

- **Active immunity:** This immunity developed after contracting pathogens inside the body.

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- **Natural active immunity:** This immunity has developed naturally, because the immune system has been stimulated to make a particular type of antigen and produce this same one more quickly and in larger quantity if it is exposed to the same pathogen.
- **Artificial active immunity:** This way of acquiring active immunity is not natural and is called artificial active immunity .in this way active immunity can develop by vaccination. This involves injecting the antigen into the body.
- **Passive immunity**: is immunity developed from antibodies or antitoxins, provided from outside of the body.
- **Natural passive immunity:** This immunity a young baby's immune system occurs during pregnancy, when maternal antibodies are transferred to the fetus through the placenta or when fetus obtains antibodies from the mother's blood across the placenta.
- **Artificial passive immunity:** is short time immunization by the injection of antibodies.

10- Define inherited immunity?

- Is the genetic or chemical immunity to a disease passed on passed from parents to offspring.

11- Explain the term vaccination?

- **Vaccination** is the administration of antigenic material to stimulate an individual's immune system to develop adaptive immunity to a pathogen.

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Unit 5: Genetics

1- Define the genetics?

- Is the study of inheritance, and how the characteristics of living things or genetic information transmitted from generation to the next.

2- Define the following terms:

Chromosome, gene, genome, and DNA and RNA?

- **Chromosome:** is a thread-like structure of DNA and protein found in the nucleus of most living cells, carrying genetic information.
- **Gene:** is portion of a chromosome that serves as the basic unit of heredity.
- **Genome**: Is an organism's complete of DNA, including all of its genes.
- **DANA**: is a deoxyribonucleic acid or DNA is a molecule that contains the instructions of an organism needs to develop, live and reproduce.
- **RNA:** ribonucleic acid (RNA) is a polymeric molecule essential in various biological roles in coding, decoding, regulation and expression of genes.

3- Describe the structure of DNA?

- ❖ DNA is made up of smaller molecules called nucleotides , each nucleotide contain a phosphate group , a pentose sugar group and nitrogen base which are held together by covalent bonds

4-What is the polynucleotide?

- Is a sequence of nucleotides, bound into a long chain**.**

5- State the functions of DNA?

- ✓ DNA controls all the activities of the cell.
- ✓ DNA codes for proteins.
- ✓ DNA is capable of self-replication.
- ✓ DNA controls the development, reproduction and characteristics of organisms.

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- ✓ DNA forms ribonucleic acids

6- Define DNA replication?

- Is a biological of producing two identical replicas of DNA from one original DNA molecule.

7- Define genetic engineering?

- Is the modification of an organism's genetic composition by artificial means, often involving the transfer of specific traits, or genes, from one organism into a plant or animal of an entirely different species.

8-Define the term insulin?

- Is a hormone made by the pancreas that allows your body to use sugar (glucose) from carbohydrates in the food that you eat for energy or to store glucose for future use.

9- Describe these terms: enzymes, Chymosin, Alpha-1 antitrypsin?

- **Enzymes**: Are biological catalysts which speed up a chemical reaction.
- **Chymosin**: is an enzyme is naturally secreted by gastric glands in the stomach lining of calves.
- **Alpha-1 Antitrypsin (ATT**) is a protein produced by the liver which, when released into the bloodstream travels to the lungs to protect the lung tissue from diseases.

10- List the types of chromosomes?

- ✓ Somatic (body) chromosomes also called autosomes.
- ✓ Sex chromosomes (related to reproduction).

11- What is the antibiotic?

- Is a chemical substance used to kill bacteria.

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12- Explain the structure of chromosome?

- Chromosome is a double structure which made up of two identical structures called chromatids. The two chromatids are held together by a narrow region called centromere. Each chromatid contains one DNA molecule, so the two DNA molecules in sister chromatids and their genes are identical**.**

13- In cell division there are two types of cell division which are mitosis and meiosis, so what is the different between them?

- **Mitosis:** is the separation of chromosomes during cell division in which two cells are produced.
- **Meiosis:** is a form of cell division that converts a single diploid cell into four haploid Cells.

Mitosis	**Meiosis**
Homologous chromosomes do not pair	Homologous chromosomes pair up
No crossing over occurs	Crossing over occurs
One cell division	Two cell division
Two diploid cells are produced	Four haploid cells are produced
Results growth , repair and replacement of worn our cells	Results gamete production (sex cells)
Genetic identical	Genetic variation
Occurs in somatic cells	Occurs only in reproductive cells

14- Explain the phases or stages of mitosis?

Mitosis is divided into four stages:

- ✓ **Prophase:** this is the first of the four stages.
- ✓ **Metaphase:** this is the second phase of mitosis.
- ✓ **Anaphase:** this is the third phase of mitosis.
- ✓ **Telophase:** this is the fourth and last phase of mitosis.

15- State several important events take place during each of these stages?

Prophase:

- The chromosomes become shorter and thicker which become visible.
- The nuclear membrane and nucleolus disappear.
- Two chromatids make one chromosome.
- The centriole move to the opposite poles of the cell.

Metaphase:

- The sister chromatids attach to the spindle by their centromeres.
- The chromosomes line up along the center of the cell.

Anaphase:

- The centromeres split apart.
- The spindle fibers pull the separated chromatids to the poles of the cell.

Telophase:

- The chromosomes reached the poles of the cell.
- The chromosomes uncoil and lengthen.
- The spindle breaks down.
- The centrioles replicate.

16- Define the cytokinesis?

- Is the separation of the cytoplasm and formation of two new daughter cells.

17- Define mutation?

- Is a permanent change in the genetic material of an organism.

18- What are the somatic cell mutations?

- Mutations that arise in the other cells of an organism during its lifetime.

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19- What is the germ cell mutation?

Is the change that effect the information contained in the reproductive cells of an organism.

20- Explain chromosomal mutation?

- Mutations which occur in chromosomes or change in nature, structure or number of chromosomes are called chromosomal mutations.

21- Explain how the following chromosomal mutations occur?

Duplication

- A section of chromosomes is repeated/replicates.
- Therefore genes are repeated.

Inversion

- Occurs when chromatids break at two places and when rejoining the middle piece rotates and joins in inverted position.

Deletion

- Portion of a chromosome is removed after it breaks off.
- Alters number and sequence of genes.

Translocation

- Occurs when a section of a chromatid breaks off and become attached to another chromatid of another chromosome.

22- Define nondisjunction?

- Is the failure of homologous chromosomes or sister chromatids to separate properly during meiosis.

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23- Explain the polyploidy?

- Is the heritable condition of possessing more than two complete sets of chromosomes.

24- What is gene mutation?

- An alteration in the structure of a gene**.**

25- What is variation?

- Are the differences between individuals of the same species.

26- State causes of variation in organisms?

- ✓ Random assortment of genes during meiosis
- ✓ Crossing over
- ✓ Fertilization
- ✓ Doubling of chromosome number (mutation) and Environmental conditions.

27- Name types of variation?

- Continuous variation
- Dis continuous variation

28- Explain the following terms:

Allele: any one of the variant of a gene**.**

Gene: the basic unit of heredity**.**

Genotype: the alleles of an organism.

Phenotype: the characteristics of organisms.

Dominant allele: an allele that has the same effect on the phenotype whether it is present in the homozygous or heterozygous state or the allele that masks the recessive allele.

Recessive allele: an allele that only has an effect on the phenotype when present in the homozygous state.

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Co dominant alleles: pairs of alleles that both affect the phenotype when present in a heterozygote.

Homozygous: having two identical alleles of a gene.

Heterozygous: having two different alleles of genes.

Carrier: an individual that has one copy of a recessive allele that causes genetic diseases in individuals.

Test cross: testing a suspected heterozygote or homozygote by crossing it with a known homozygous recessive organism.

Acquired characteristics: they are as result of adaptations due to the environment and are not inherited

Inherited characteristics: are passed down to offspring during sexual reproduction.

F1: F1 means first filial generation

F2: f2 means second filial generation

30 – Explain Mendel's first law of inheritance or law of segregation?

- **Mendel's law of segregation** states that allele pairs separate during gamete formation, and randomly unit at fertilization. There are four main concepts related principle they as follow:
- A gene can exist in more than one forms or allele.
- Organisms inherit two alleles for each trait.
- When sex cells are produced (by meiosis), allele pairs separate leaving each cell with a single allele for each trait.
- When the two alleles of a pair are different, one is dominant and the other is recessive.

31- What is monohybrid inheritance?

- When inheritance of once character is studied one at a time.

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- The f2 generation (when selfed) always gives a phenotypic ratio of 3:1 and genotypic ratio of 1:2:1 in a complete dominance.

32- What is complete dominance?

- Is where only one dominant character is exposed while the other character which is recessive is not exposed in the heterozygous state.

33- What is meant by co dominance?

- When genes produce independent effects where heterozygous/none of the genes is dominant over the other /where two or more alleles does not show complete dominance/receiveness due to the failure of any allele to be dominate in heterozygous condition.

34- If the plants form F1 were selfed, work out the phenotype ratio for the F2 generation?

- Phenotypic ratio: 1red:2pink:1 white
- Genotype ratio: 1:2:1

35- Explain the inheritance of ABO blood groups?

- In humans blood groups are determined by three alleles i.e. A, B and O.
- It is only possible to have two genes at a time.
- Genes A and B are co-dominant while gene O is recessive to gene A and B.

36- Explain the inheritance of Rhesus factor (Rh) in human beings?

- In humans blood is either Rh positive or Rh negative
- People who have Rh antigen are Rh(+ve) while those without Rh antigen in their blood are Rh(-ve)
- Rh (+ve) is due to a dominant gene while the recessive gene causes lack of Rh factor.

When a person who is homozygous dominant marries a person who is homozygous recessive the result shown below

- Let the gene for dominant Rh factor is R while the gene for recessive is r.

37- How is sex determined in human beings?

- There are two sex chromosomes in humans , x and y
- Males are xy and females are xx
- In females all ova have sex x chromosome
- In male 50% of sperms contain x chromosomes while 50% of sperms contain y chromosome
- When a sperm containing x chromosome fuses with an ovum this result into a girl
- When a sperm containing y chromosome fuses with an ovum the result is a boy
- An example is given below

38- What does the term linkage mean?

- These are genes which occur together on a chromosome and are passed to offspring without being separated.

39- Define the term sex-linked genes?

- Genes carried in the sex chromosome that is transmitted along with genes that determine sex.

40- What is meant by the term sex linkage?

- Genes are located on the sex chromosome
- They are transmitted along with those that determine sex

41- Name the sex-linked traits in humans?

- Color blindness
- Hemophilia
- Hairy ears , pinna , nose
- Baldness
- Duchene muscular dystrophy (DMD) muscular wasting

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42- Give an example of sex linked trait in humans on:

Y chromosome

- Tuft of hair sprouting from pinna/baldness

X chromosome

- Color blindness/hemophilia

43- In human red-green color blindness is caused by a recessive gene C, which is sex linked. A normal man married to carrier woman transmits the trait to his children. Show the possible genotypes of the children. ?

- ✓ Let C represent the gene for normal color vision (dominant)
- ✓ Let c represent the gene for color blindness
- ✓ Parental phenotype Normal man x carrier woman

44- Define hemophilia?

- It is disorder that affects the rate of blood clotting.

45- What is dihybrid cross?

- Dihybrid cross refers to a cross between two individuals having two different pairs of alleles which belongs to two different characteristics or inheritance of two genes is investigated together. Such as the height of a plant and the seed color.

46- What is meant by multiple allele?

- Refers to when there are more than two allele of a gene.

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Unit 6: Livestock selection and breeding program

1- What is a livestock selection?

- Is the process of choosing individual with desired characteristics for breeding purpose.

2- State the factors considered when selected breeding selection?

Cattle	**Goats**	**Sheep**	**Camel**
The level of production should be high	Have high feed conversion efficiency	The sheep should be free from disease	Be suitable to the environment they are they kept
The individual animal should be free from diseases	Be good size	Have mothering ability	Be strong enough to carry big luggage
The animal should be produce high quality products	Should be hardy	Have no hereditary defects such as overshot and undershot jaws	Be hardy
They should have mothering ability	Should have high growth rate	Should be young	Have high resistance to disease
They should have high growth rate	Should resistant to disease	The animal should be fertile	Conform to the purpose for which is reared for
They should have high disease resistance	Be heat tolerant	Have resistance to parasite and disease	
The animal should be fertile	Body should conform to the purpose of the breed		

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3- Name methods of livestock selection?

- **Mass selection:** is the selection of individual based on their performance relative to the performance of other animals of the same sex and age and are effected by the same environment.
- **Contemporary comparison:** is the selection of bulls by comparing the performance of their daughters, the bull is selected if the daughter performance is the best.
- **Progeny testing:** refers to family based on selection**.**

4- What are the reasons for making breeding selection?

- To expand the inherited potential of the animal
- To overcome production problems created by environmental.
- When productivity is limited by poor genetic makeup of the animal
- For economic reasons , breeding animals with high grow rate
- To certify consumer's taste

5- Define the terms dominant characteristics and recessive characteristics?

- **Dominant:** means the breeding characteristics by suppressing other character.

In this there are genes that suppress other and express themselves outright.

- **Recessive:** means suppressed or dominant by the other character.

6- What is the different between the heterosis (hybrid vigor) and epitasis?

- Heterosis: is the improved performance from offspring that comes about due to the mating two animals with superior characteristics
- Epitasis: is the situation where different genes located in different chromosomes influence the outcome of another unrelated gene.

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Unit 7: cell biology

1- What is the cell?

- Is the smallest structural and functional unit of all living things.

2- State three components of all cells have?

- ❖ Plasma membrane
- ❖ Genetic material
- ❖ Cytoplasm

3- What are the different types of cells?

- **Prokaryotic cells:** these are cells with no nucleus. Moreover the cell organelles are not bounded by any membrane. Bacteria are example of prokaryotes.
- **Eukaryotic cells:** these are cells with nuclei. The cell organelles are surrounded by a cell membrane. Protozoa is example of eukaryotes.

4- State the main different between prokaryotes and eukaryotes?

Prokaryotes	**Eukaryotes**
No membrane bound nucleus	Membrane bound nucleus
Cell walls made of peptidoglycan	Cell walls, if present , made of cellulose
No membrane bound organelles	Membrane bound organelles
Have pili & fimbriae(for adhesion)and flagella(for propulsion)	Have cilia or flagella (for a movement)
unicellular	Multicellular
No true nucleus	Have true nucleus

Network

5- State main parts of the cell?

- The nucleus
- The cytoplasm
- The cell membrane

6- State the functions for each of the following cell structures?

Structure	functions
Nucleus	• **It is the control center of the cell, it controls the activity of the cell** • **It produces the information needed to synthesize proteins** • **It is essential for cell division**
Cytoplasm	• **Contains few organelles** • **Contains enzymes**
Cell membrane	• **Separates cell from the environment** • **Maintains homeostasis** • **It allows interaction with other cells**
Ribosomes	• **Synthesizes all sorts of proteins**
Endoplasmic reticulum (ER)	• **Transport materials inside the cell** • **Synthesis proteins (RER)** • **Synthesis lipids (SER)** • **Stores synthesized substances** • **Breaks down foreign chemical substance (SER)** • **Maintains the cell's shape**
Golgi body	• **Produces lysosomes** • **Produces carbohydrates** • **Transports and stores lipids** • **Forms cell wall**

Network

Mitochondria	• **It is the power house of the cell**
Lysosomes	• **Some microorganisms (amoeba) to digest food** • **They destroy bacteria** • **They break down unwanted substances** • **They destroy damaged cells for self-digestion**
Cytoskeleton	• **Maintains the shape of the cell** • **Anchors its organelles in position** • **Involves in animal cell mobility** • **Moves substances within the cell**

7- State two types of the cell?

- Anima cell
- Plant cell

8- What is the different between animal cell and plant cell?

Animal cell	**Plant cell**
Have no cell wall	Have cell wall
Have no permanent vacuole	Have large permanent vacuole
Nucleus is large and often present at the center of the cell	Nucleus is small and mostly at the edge of the cell
Have no plastids	Plastids present
Store glycogen	Store starch
Have irregular shape	Have regular shape

Network

9- Describe the following terms:

Vacuoles: are sacs that most cells contain which are bounded by a single membrane**.**

Microfilaments: are strands that consist mostly of the protein actin.

Microtubules: are hollow cylinders made from many dumbbell-shaped subunits of the protein tubulin.

Cilia and flagella: are whip like extensions of the plasma membrane.

10- Define molecular biology?

- Is the study of the structure and functioning of biological molecules.

11- Define metabolism?

- All chemical reactions taking place inside the cell or a living organism are called metabolism.

12- What does meant by the term macromolecule?

- The term macromolecule means "giant molecule**".**

13- State three types of macromolecules in living organisms?

- Polysaccharides (many sugars)
- Proteins (polypeptides)
- Nucleic acids (polynucleotides)

14- List biological molecules?

- Carbohydrates
- Proteins
- Lipids
- Water
- In organic ions

Network

- Nucleic acids
- Minerals
- Vitamins

15- Explain carbohydrates?

- All carbohydrates are either small, water-soluble sugars (glucose, fructose) or chains made by stringing sugar subunits together (starch, cellulose) and made up of carbon atoms .hydrogen atoms and oxygen atoms. The ratio of these atoms is: C: H: O: 1:2:1.

16- State the different groups of carbohydrates?

- Monosaccharide's
- Disaccharides
- Polysaccharides

17- What are monosaccharaides?

- Are small molecules, which made up of a single sugar unit.

18- What are disaccharides?

- They are carbohydrates whose molecules are made up of two monosaccharaides linked together.

19- What are polysaccharides?

- Are large substance whose molecules are polymers made up of many sugar units linked together.

20- What are lipids?

- Are diverse assortment of molecules and lipids including fats and oils .they contains carbon, hydrogen, and oxygen.

Network

21- What are triglycerides?

- Are the commonest forms of lipids in nature and are further classified as fats or oils.

22- What are phospholipids?

- Are lipids containing a phosphate group.

23- Briefly explain steroids?

- Are structurally different from all the other lipids or unlike other groups of lipids.

24- What are proteins?

- Are molecules composed of one or more chains of amino acids.

25- What is an amino acid?

- Is the smallest molecule of proteins.

26- What is a polypeptide?

- Is a long chain of amino acids that are linked together.

27- Briefly the primary structure of protein?

- Primary structure of protein is the arrangement of amino acids in a sequence linked together by peptide bonds in a polypeptide chain. A polypeptide chain contain of amino acid and carboxyl terminals. Total number of amino acids and their functional groups determine protein to be acidic or basic.

28- Explain the secondary structure of protein?

- Secondary structure is a repeating three dimensional structure of the polypeptide backbone. There two common repeating structure, the a-helix and b-pleated sheet structure .how ever parts of polypeptides may have neither an a-helix. Nor a b-pleated sheet structure. An a-helix structure gives high elasticity, while b-pleated sheet structure is for cushion and padding. The secondary structure is largely maintained by hydrogen bonds .examples of such proteins are collagen and keratin.

Network

29- Explain the structure of a tertiary protein?

- Tertiary structure is the next level of folding of chain. It forms a globular structure or three dimensional shape of a polypeptide chain. This three dimensional structure determines biological activity such as protein specific configuration. The tertiary structure is largely maintained by disulphide bridge, ionic bond, hydrophobic interaction (interactions between non-polar, water –repellent groups in the protein and van der waals' effect. protein denaturation occurs when this three dimensional structure is broken or destroyed. example: Enzymes.

30- What are nucleic acids?

- Are nitrogen based organic substances.

31- Explain the formation of polypeptides?

- Nucleotides can link together condensation reactions to form a polynucleotide.
- If the nucleotides contain ribose, then the resulting polynucleotide is RNA.
- If the nucleotides contain deoxyribose, then the resulting polynucleotide is DNA.
- DNA molecules are much longer than RNA molecules. They never contain uracil and consist of two polynucleotide strands.

32- What is an enzyme?

- ❖ Is an organic catalyst produced by a living cell.

33- What is the main function of enzymes?

- ❖ Enzymes act as catalysts and lower the activation energy of a chemical reaction. By changing the shapes of their substrates, enzyme molecules reduce the energy needed for the formation of transition state (reaction intermediates).

Network

34- State properties of enzymes?

- ❖ They are denatured by heat.
- ❖ They increase the rate of a reaction.
- ❖ They are high specific for their particular reactants, called substrates.
- ❖ They are present in cells in small amounts.
- ❖ They are produce only appropriate metabolic products.
- ❖ They precipitated by ethanol.

35- Mention the effects of enzyme activity?

1) Temperature
2) PH
3) Inhibitors
4) Substrate concentration

36- What is the effect of PH on rate of enzyme activity?

- Maximum activity occurs at a particular PH (Optimum PH), and deviation from it causes decreased rate of activity.

37- What is the effect of temperature on rate of enzyme activity?

- Starting at a low temperature, the rate increases as temperature rises until the optimum is reached. Further results in decreased activity and eventual destruction of the enzyme.

38- Briefly explain what is a cofactor?

- Many enzymes need cofactors to be present with in active site before they can become active and work correctly. They bond only briefly and loosely before the reactions they are to catalyze take place. When they unite, the two form an enzyme –cofactor complex identified as the coenzyme. The cofactor acts as a bridge between the enzymes and its substrate. Sometimes a cofactor provides a source of chemical energy to help drive the reaction to take place. There are three types of cofactors; coenzymes metal ions and prosthetic groups.

Network

39- Briefly explain the coenzyme?

- Coenzymes are organic enzyme conjugates. Coenzyme is a low-molecular weight organic molecule that is much smaller and has a lesser weight than protein enzyme molecules. They are not used up or permanently altered by the reactions in which they participate. Hence, they can be used repeatedly. Example, NAD. FAD and NADP. The integral part of some coenzyme is a vitamin for example vitamin B.

40- What are enzyme inhibitors?

- Enzyme inhibitors slow down the rates of enzymatic reactions. Enzyme inhibitors can be reversible and irreversible.

Irreversible inhibitors bind tightly to the enzymes, reversible inhibitors bind loosely to the enzymes.

41- Define the following terms:

- **Diffusion:** is the movement of particles, such as molecules or ions, from a region of higher concentration to a region of lower concentration, i.e. "down a concentration gradient.
- **Simple diffusion:** is the simplest form of movement across biological membranes depends on the size and polarity of particles.
- **Osmosis:** is the diffusion of water across membrane from a region where water potential is greater to a region where water potential is lower.
- **Active transport:** is the movement of a substance against its concentration gradient from a low concentration to a higher concentration by carrier proteins.
- **Bulk transport:** is the movement of substances across a membrane with in a small vacuole.

Network

42- State the functions of membrane proteins?

There are three principle categories of membrane proteins: transport proteins, receptor proteins, and recognition proteins.

- **Transport proteins**

Transport proteins regulate the movement of most water-soluble molecule through the plasma membrane .some called channel proteins.

- **Receptor proteins**

Receptor proteins are molecular triggers that set off cellular responses when specific molecules in the extracellular fluid, such as hormones or nutrients, bind to them.

- **Recognition proteins**

Recognition proteins and glycoproteins serve as identification tags and cell-surface attachment sites.

Unit 8: Nutrition and Respiration

1- What does the meaning of nutrition?

- Is the process by which an organism obtains food for consume and use in the body.

2- State two types of nutrition?

- Autotrophic and heterotrophic nutrition.

3- What is the autotrophic nutrition?

- Is the process in which the organism produces their food from simple inorganic materials such as water, carbon dioxide and mineral salts in the presence of sunlight.

4- What is the heterotrophic nutrition?

- Is the process in which organisms consume already synthesized complex food substance to obtain energy.

Network

5- Define photosynthesis?

- Is the process by which green plant manufacture complex food substances using simple compounds in the presence of light trapped by the chlorophyll.

6- State importance of photosynthesis in nature?

- It provides food for plant.
- It produces food for herbivores, omnivores and indirectly for carnivores.
- It removes carbon dioxide from the atmosphere.
- It produces oxygen which is used during respiration by living organisms.

7- Explain what is the process of photosynthesis?

- The process of photosynthesis is enzyme controlled and involves a series of reactions. The process requires the raw materials water and carbon (IV) dioxide.

The process is divided into two main stages namely the light-reaction stage that is light dependent and dark reaction stage, which is independent light.

8- State the factors that affect the rate of photosynthesis?

- Availability of water
- Light
- Concentration of carbon(iv) oxide
- Temperature

9- Define the following terms:

- **Phagocytosis:** is a mode of feeding in which single celled organism like amoeba and certain white blood cells feed on solid food materials.
- **Parasitism:** is the type of feeding where organism, the parasite obtains food from another one called the host.
- **Saprophytes:** is a type of feeding where the organism feeds on decaying organic matter.
- **Holozoic nutrition:** The organisms ingest, digest, absorb, assimilate and egest complex organic matter.

Network

9- State three layers of the tooth? And explain them?

- **Enamel:** is the outer which is the white non-living part.
- **Dentine:** is the middle layer which is less hard than animal but alive tissue.
- **Pulp cavity:** is the soft tissue which contains nerve fibers, blood vessels and connective tissues.

10- State types of teeth?

There are four types of teeth in the mammals and they are:

- Incisors
- Canines
- Premolars
- Molars

11- State the functions of teeth?

The table below summarizes the functions of teeth

Incisor	**Canine**	**Premolar**	**Molar**
✓ Biting off pieces of food	✓ Biting off pieces of food or similar function to incisors	✓ Tearing and grinding food	✓ Chewing and grinding food

12- Define respiration?

- Is the process by which living organisms break down organic food materials into simpler compound with release of energy.

13- Where tissue respiration occurs?

- Tissue respiration occurs in the mitochondria of the cell.

Network

13- State types of respiration?

There are two forms of tissue respiration namely **aerobic** and **anaerobic respiration.**

14- What is the aerobic respiration?

- This is a form of tissue respiration that involves the utilization of oxygen.

15- What is the anaerobic respiration?

- When free oxygen is not present, hydrogen cannot dispose of by combination with oxygen.

16- State the part of the organism through which gaseous exchange takes place?

- Gas exchange surface

17- Explain the gross structure of the human gas exchange system?

- Humans, like all mammals have lungs. Through which gaseous exchange takes place human have to breathe in order to bring fresh supplies of air into contact with this surface. The lungs are protected by ribs. Sternum and the vertebral column. Air can enter this system either through the mouth or the nose. From where it passes through the nasopharynx and into the trachea.

Network

END

Part two: Circle questions

1- Which of the following is one of the generalizations of the cell theory?

A- All cells contain a nucleus

B- DNA is a genetic material found in all cells

C- New cells arise from preexisting cells

D- Eukaryotic cells evolved from prokaryotic cells

2- When of the key distinctions between plant and animal cells in the presence of cells which is lacking in cells?

A- A Golgi body in plant: animal

B- A Golgi body in animal: plant

C- A vacuole in animal: plant

D- A vacuole in plant: animal

3- Which of the following is not found in a prokaryotic cell?

A- Villi

B- RNA

C- Ribose

D- Endoplasmic reticulum

4- Which structure is the site of the synthesis of proteins that may be exposed from the cell?

A- Lysosome

B- Golgi body

C- Mitochondria

D- Rough endoplasmic reticulum

Network

5- Which of the following relationship between cell structure and their respective functions is not correct?

A- Ribosome: proteins synthesis

B- Chloroplast : formation of ATP

C- Nucleolus: site of RNA synthesis

D- Golgi body: forms secretory vesicles

6- What determines the cohesiveness of water molecules?

A- Ionic bond

B- Covalent bond

C- Hydrogen bond

D- Disulphide bond

7- Polymers of polysaccharides, fats, and proteins are all synthesized from monomers by

A- Hydration

B- Condensation

C- Carboxylation

D- Dehydration

8- Which of the following is trace element that is essential to humans?

A- Iodine

B- Carbon

C- Nitrogen

D- Phosphorus

9- Which of the following are polysaccharides?

A- Glycogen and cellulose

B- Starch and sucrose

C- Glycogen and sucrose

D- Cellulose and sucrose

Network

10- Of the following functions: the major purpose of RNA is to

A- Act as a protein to form DNA

B- Function is the synthesis of protein

C- Transmit genetic : information to offspring

D- Make a copy genetic continuity

11- The structural feature that allows DNA to replicate itself is the

A- Sugar phosphate backbone

B- Complementary pairing of the bases

C- Three-part structure of the nucleotides

D- Twisting of the molecule to form an a-helix

12- Dehydration reactions are used in forming which of the following compounds?

A- Proteins

B- Triglycerides

C- Polysaccharides

13- Which of the following statements best summarizes structural differences between DNA and RNA?

A- DNA has different purine bases from RNA

B- DNA contains a different sugar from RNA

C- DNA is double helix , but RNA is not

14- The two strands making up the DNA molecule

A- Is a double helix

B- Cannot be separated

C- Contain thymine but not uracil

Network

15- Which of the following is made monomers?

A- A steroid

B- Glycogen

C- Enzyme

16- All of the following statements are true accepted;

A- O_2 released during photosynthesis comes from water

B- Thylakoid membranes contain photosynthesis pigment

C- ATP and NADH are produced only in the light reactions of photosynthesis

D- The light reactions of photosynthesis provide the energy for Calvin cycle

17- The color of light which is least effective in photosynthesis is

A- Red

B- Blue

C- Green

D- Orange

18- Which of the following statements best describe the relationship between photosynthesis and respiration?

A- Respiration is anabolic and photosynthesis is catabolic

B- ATP molecules are produced in photosynthesis and are used up in respiration

C- Respiration is the exact reversal of the biochemical pathway of photosynthesis

D- Photosynthesis stores energy in complex organic molecules, while respiration releases it

19- Which of the following are true of the enzyme ribulose bisphosphate carboxylase?

A- It catalysis a phosphorylation reaction

B- It has an affinity for both O_2 and CO_2

C- It participates in the Calvin cycle

Network

20- Which of the following features do all gaseous exchange systems have in common?

A- They are exposed to air

B- They are enclosed with in ribs

C- The exchange surfaces are moist

D- They are maintained at constant temperature

21- If the amount of interstitial fluid surrounding the capillary beds of the lungs were to increase significantly it would be expected that

A- The pressure would cause beds to burst

B- The amount of oxygen entering the circulation from the lungs would increase

C- The amount of oxygen entering the circulation from the lungs would decrease

D- The amount of carbon dioxide entering the lungs from the blood would increase

22- Arrange the following in the order of first contact with the air during breathing. Starting from the nose

A- larynx → bronchus → trachea → alveoli → haemoglobin

B- trachea → bronchus → larynx → alveoli → haemoglobin

C- trachea → larynx → bronchus → alveoli → haemoglobin

D- larynx → trachea → bronchus → alveoli → haemoglobin

23- Air rushes into the lungs of humans during inspiration because

A- The volume of the thoracic cavity increases

B- The diaphragm contracts and pushes upward on the chest cavity

C- Pulmonary muscles contact and pull on the outer surface of the lungs

D- Smooth muscle lining the trachea bronchi and bronchioles contracts and causes their volume to increase

Network

24- The blood level of which gas is most important in controlling human respiration rate?

A- Oxygen

B- Nitrogen

C- Carbon dioxide

D- Carbon monoxide

25- Breathing is usually regulated by the

A- Heamoglobin levels in the blood

B- Erythropoietin levels in the blood

C- The concentration of red blood cells

D- CO_2 and O_2 concentration and $_pH$-level sensors

26- Carbon dioxide is carried by blood in humans as

A- CO_2 dissolved in the plasma

B- CO_2 attached to heamoglobin

C- bicarbonate ions in the plasma

27- Which of the following are the functions of plasma proteins?

A- Blood clotting

B- CO_2 carrier

C- O_2 carrier

28-Which of the following types of cells is not involved in both antibody mediated immunity and cell-mediated immunity?

A- Plasma cells

B- Helper T cell

C- Memory cells

D- Pathogenic cells

Network

29- What attracts helper T-cells to macrophages?

A- Antigens
B- Interferon's
C- Antibodies
D- **Interleukens**

30- What are plasma cells?

A- The cells that are responsible for the phagocytosis of foreign organisms
B- The cells that are responsible for immunological memory
C- **The effector cells of humoral immunity**
D- Cells that produce few antibodies

31- A person suffering from AIDS would be unlikely to suffer from which of the following diseases?

A- Cancer
B- Tuberculosis
C- Influenza
D- **Pneumonia**

32- If a person's bone marrow were destroyed by radiation, which of the following cells could not be produced?

A- T cells
B- **B- cells**
C- Plasma cells

33- The lymphatic system involves which of the following organs?

A- Spleen
B- Lymph nodes
C- **Appendix and special positions of the small intestine**

Network

34- Which of the following statements about lymphocytes are true?

A- They may mature in their bone marrow or the thymus gland

B- They originate from the liver of a developing fetus

C- They are produced in the bone marrow

35- Mitosis is an important process for eukaryotes in order to

A- Multiply

B- Produce gametes

C- Synthesis protein

D- Differentiate into tissue

36- The number of chromosomes in daughter cells at the end of mitotic division is

A- Twice the number of the parental cells

B- Half the number of parental cells

C- Similar to the number of the parental cells

D- None of the above

37- in mitotic division, sister chromosomes move to the opposite poles during

A- anaphase

B- anaphase 1

C- metaphase

D- interphase

38- What is the longest stage in cell cycle of eukaryotes?

A- Mitosis

B- G1 stage

C- Interphase

D- S stage

Network

39- Meiosis is different from mitosis by

A- producing four daughter cells

B- having spindle fibers

C- having synapsis between homologous chromosomes

D- having one nuclear division

40- Which of the following statements about mitosis are not true?

A- The nuclei of daughter cells contain haploid number of chromosomes

B- Undergo two nuclear division

C- The first stage is interphase

D- Producing two daughter cells

41- Which of the followings about sister chromatids are true?

A- Contain similar genetic information

B- Separate during prophase 1

C- Joined together by centromere

D- Thread-like structure

42- A cross between homozygous red flowered and homozygous white flowered results in offspring with red flowers. This condition express

A- true breeding

B- codominant

C- recombinant

D- dominance

43- A genetic cross between individual showing a dominant phenotype (but of unknown genotype) and a homozygous recessive individual is known as a

A- back cross

B- reciprocal cross

C- self-cross

D- test cross

Network

44- Which of the following examples are cross of X-linked inheritance in human?

A- Haemophilia

B- Baldness in men

C- Color blindness

D- Albinism

45- A genetic cross of two plants results in offspring with 9:3:3:1 ratio for a particular trait. This condition shows

A- The genes controlling the traits were located on same chromosomes

B- Multiple genes

C- That both parents were heterozygous

D- Monohybrid cross

46- Which of the following are not true about alleles?

A- They can be identical or different for any given locus in particular chromosomes

B- Two forms of allele in a locus is called a homozygous dominant

C- Combination of alleles is known as genotype

D- a cross which involve only one pair of allele is called a dihybrid cross

47- Which substance is found in DNA but not in RNA?

A- Guanine

B- Ribose

C- Deoxyribose

D- Cytosine

48- Which of the following can be found in both DNA and RNA?

A- Ribose

B- Uracil

C- Sugar-phosphate chain

D- Thymine

Network

49- Amino acids in polypeptide chain are joined by

A- Anticodons

B- Peptide bonds

C- Hydrogen bonds

D- Phosphoiester bonds

50- Which of the following is false?

A- RNA polymerase attaches to DNA at origin site

B- RNA molecules are products of transcription

C- Protein are translated in the cytoplasm

D- Histones are found only in eukaryotic chromosomes

51- The two pyrimidine bases found in DNA are

A- Adenine and guanine

B- Cytosine and thymine

C- Adenine and thymine

D- Cytosine and guanine

52- The functions of RNA include

A- Carrying genetic information from DNA molecule to ribosomes

B- It carrying amino acids to ribosome

C- As main component of ribosomes

D- Transmitting genetic information from cell to cell

53- All of the following are involved in translation except

A- mRNA

B- RNA polymerase

C- Aminoacyl-tRNA synthetize

D- DNA

Network

54- Which of the following are the stages in translation?

A- Mitration
B- Chain elongation
C- Termination
D- Inversion

55- Which of the following statements about gene mutation is false?

A- Mutation increases the number of base pairs in a gene
B- Mutation can occur in both somatic and sex cells
C- Mutation can be induced by ultraviolet radiation
D- Mutation can change a dominant allele into a recessive one

56- Non disjunction of the X chromosome which occurs during oogenesis may produce two types of eggs. If normal sperm fertilizes these eggs. What are possible genotypes produced?

A- XX and XY
B- XYY and YO
C- XXY and XO
D- XYY and XO

57- The chromosomal change that occurs when a chromosome breaks and the segment is rejoined but in a reversed direction is known as

A- Inversion
B- Deletion
C- Duplication
D- Translocation

58- A person with Tumer's syndrome has sex chromosome composition of

A- XXX
B- XXY
C- XO
D- XYY

Network

59- When an organism has a 2n + 1 chromosome composition. This condition is known as

A- Trisomy
B- Diploid
C- Monosomy
D- Haploid

60- Sperm is produced in the

A- Epididymis
B- Vas deferens
C- Seminiferous tubules
D- Interstitial cells

61- Which of the following results in addition of an extra chromosome to the chromosome complement of a cell?

A- Non-disjunction
B- Allopolyploidy
C- Autopolyploidy
D- Chromosome translocation

62- What determines the cohesiveness of water molecule?

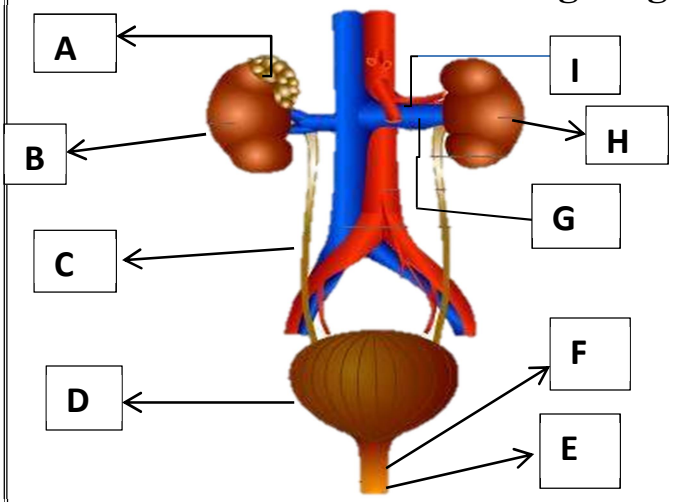
A- Ionic bond
B- Covalent bond
C- Hydrogen bond
D- Disulphide bond

END

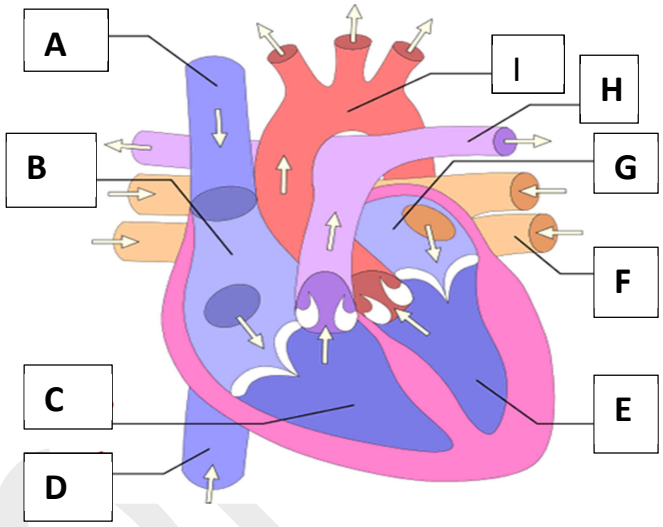
Network

Part three: Structured questions

1- Label the following diagrams



(A)



(B)

i. Name diagram (A) and the parts labeled A, B, C, D, E, F, G, H and I.

ii. Name diagram (B) and the parts labeled A, B, C, D, E, F, G, H and I.

Answers

I. The human excretory system

A	Adrenal gland
B	Right kidney
C	Ureter
D	Urinary bladder
E	Urethra
F	Urethral sphincter
G	Renal artery
H	Right kidney
I	Renal vein

ii. Human heart

A	Superior vena cava
B	Right atrium
C	Right ventricle
D	Inferior vena cava
E	Left ventricle
F	Pulmonary vein
G	Left atrium
H	Pulmonary artery
I	Aorta

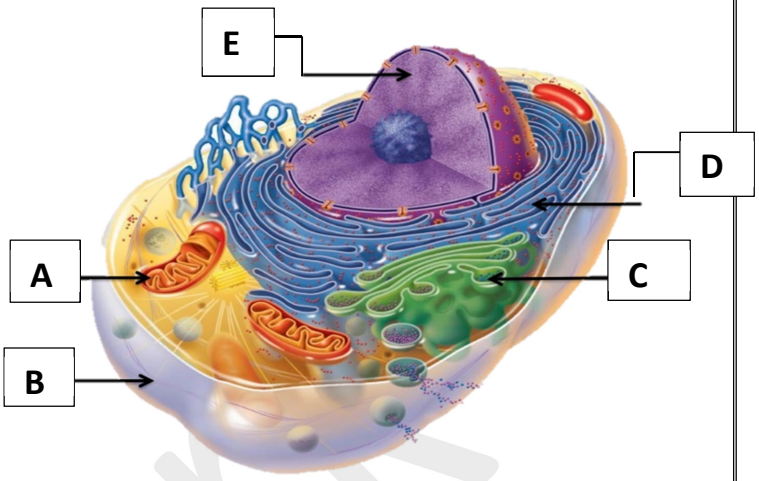
Netwo

2- Label the following diagrams



(A) i. Name the diagram?

ii- state its function?



(B) i. Name the diagram?

ii. Label the parts A, B, C, D and E.

Answers

(A) i. Burdizzo castration

ii. Is used for primarily of farm animals such as cattle and sheep.

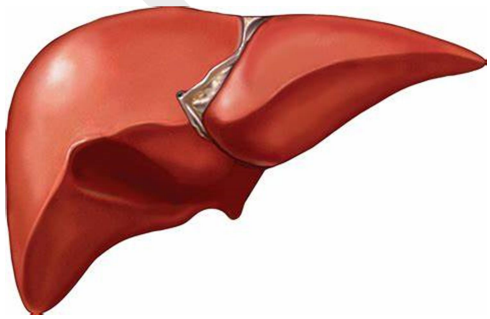
Or is used for castration.

(**B**) i. Animal cell

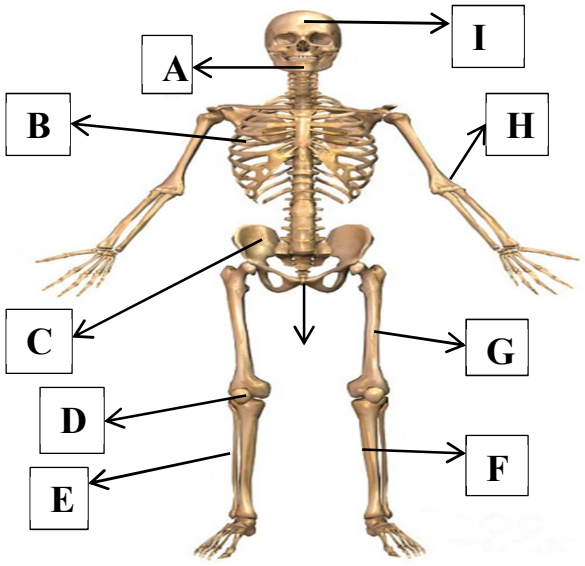
ii.

A	Mitochondria
B	Cell membrane
C	Golgi apparatus
D	Endoplasmic reticulum
E	Nucleus

(C)



(D)



(C) i. Name the diagram above?

ii. State its function?

(D) i. Name the diagram above?

ii. Label A, B, C, D, E, F, G, H, and I.

Answers

A- i. Liver

ii.

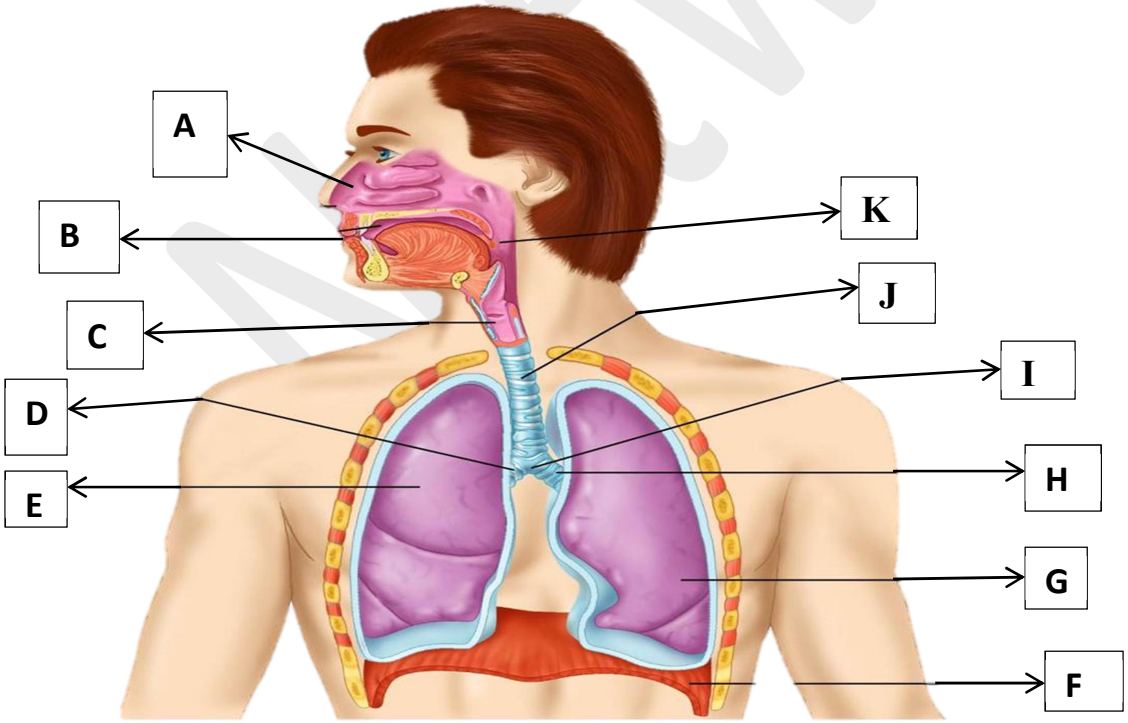
- Produces most proteins needed by the body.
- Removes toxic from the body
- Produces most substance that regulates blood clotting.
- Metabolizes, or breaks down the nutrients from food to produce energy.

B- i. Human skeletal system

ii.

A	Mandible
B	Ribs
C	Pelvis
D	Patella
E	fibula
F	Tibia
G	femur
H	radius
I	Skull

(E) Name diagram and label A, B, C, D, E, F, G, H, I, J, K.

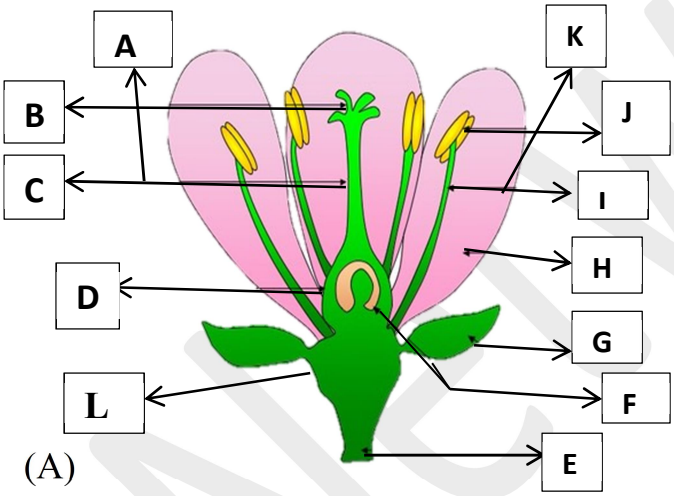


i. Human respiratory system

ii.

A	Nasal cavity
B	Oral cavity
C	Larynx
D	Right main (Primary bronchus)
E	Right lung
F	Diaphragm
G	Left lung
H	Left Main (Primary bronchus)
I	Trachea
J	Pharynx

(F) Name the following diagrams?



(A)



(B) ……Tape worm…

i. Label A, B, C, D, E, F, G, H, I, J, K, L.

Answers

A. i.

A	Stigma		
B	Style		
C	Pistol		
D	Ovary		
E	Receptacle	I	Petal
F	Peduncle	J	Filament
G	Ovule	K	Anther
H	Sepal	L	Stamen

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