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Final Term Test – 2024 A/L					
Grade 12					
Biology I			Time: 2 hours		

- This questions paper consists of 50 questions
- Answer all the questions.
- In each of the questions 1 to 50, pick one of the alternatives (1) , (2) , (3) , (4) , (5)
- Which is correct or most appropriate and mark on the number corresponding to your choice in the answer sheet provided.

- 1) Which of the following is **not essential** for an individual organism
 1. Adaptation
 2. Reproduction
 3. Metabolism
 4. Order and organization
 5. Irritability and coordination
 - 2) Which **property of water** is important to act as thermal buffer
 1. Cohesive behavior
 2. Ability to moderate temperature
 3. Expansion upon freezing
 4. High heat of vaporization
 5. Polarity
 - 3) Select the **correct** statement about carbohydrates
 1. Galactose is a hexose with keto carbonyl group
 2. H:O ratio is higher than 2:1 in disaccharides
 3. Hemicellulose is a branched structural disaccharide
 4. Inulin is a stored polysaccharide made up of fructose monomer units
 5. Arthropoda cell wall has chitin
 - 4) Which of the following is/are **correct** about organic compounds
 - a) Saturated fats are made up of fatty acids with hydrocarbon chains having no double bonds
 - b) All amino acids have asymmetric carbon atom
 - c) Secondary structure of protein is formed as a result of bonds between the H atom of carboxyl group and N atom of amino group of same polypeptide chain
 - d) Pyrimidine N-base has a single ring
 - e) NAD acts as an oxidative agent in cellular respiration
1. a, b and d 2. a, c and d 3. a and d 4. a and c 5. c, d and e

- 5) Which of the following is **correct** about microscopes
1. Maximum magnification of compound light microscope is 1000 times the actual size of the specimen
 2. Resolution is limited due to the magnification in light microscope
 3. Electron microscope magnifies about 5×10^6
 4. Powerful magnets are used to focus the beam of light
 5. Robert Hooke examined bacterial cells using simple microscope
- 6) Which of the following is a **similarity** of prokaryotic and eukaryotic cells
1. They carry linear DNA as genetic materials
 2. Ribosomes are found in all cells
 3. Having proteins in the cell wall
 4. Nitrogen fixation
 5. Having membrane bound organelles
- 7) Select the **correct** statement about plasma membrane
1. Arrangement of amphoteric phospholipids create a hydrophobic interior
 2. Few integral proteins are transmembrane proteins with hydrophilic channels
 3. Peripheral proteins tightly bound to the surface of the membrane
 4. Proteins embedded in the plasma membrane identify the cells
 5. Some proteins in the membrane act as hormones
- 8) **Correct** about the sub cellular components
1. Synthesis of phospholipids is only done by rough ER
 2. Peroxisomes do the autolysis of cells
 3. Mitochondria and chloroplast have linear DNA
 4. Basal body of flagellum has 9+2 microtubule arrangement
 5. Central vacuole helps in digestion
- 9) **Identify** the following phase of cell division
1. Prophase of mitosis
 2. Prometaphase of mitosis
 3. Metaphase of meiosis I
 4. Prometaphase of plant cell
 5. Anaphase of meiosis II
- 
- 10) **Not** an importance of cell division
1. Meiosis is important to maintain genetic stability of organisms
 2. Mitosis is important for the asexual reproduction of organisms
 3. Meiosis creates new genetic variations
 4. Meiosis is important to maintain constant chromosome number through generations
 5. Meiosis leads to evolution
- 11) Which of the following active process is **not** found in human
1. Beating of cilia
 2. Muscle contraction
 3. Protein synthesis
 4. Transmission of nerve impulse
 5. Bioluminescence

12) **Correct** statement about the photosynthesis

1. CO_2 is reduced by the O of H_2O
2. Chlorophylls absorb violet, blue and red light
3. Carotenoids absorb red light
4. Final electron acceptor is NAD^+ in linear electron flow
5. No ATP production in cyclic electron flow

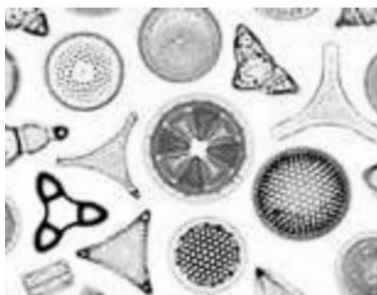
13) **Not** a factor that directly affects for photosynthesis

1. Temperature
2. Water
3. Pollutants and inhibitors
4. Humidity
5. CO_2 concentration

14) Which of the following is **unique** to Archaea

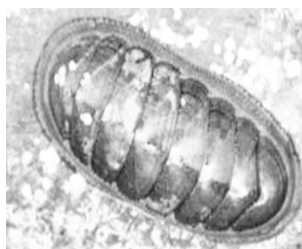
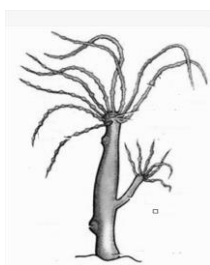
1. Having branched hydrocarbon chains in cell wall lipids
2. Not sensitive to antibiotics
3. Introns present in some genes
4. Initiator amino acid for photosynthesis is methionine
5. No histones associated with DNA

15) **correct** about following organisms in Protista



1. Only found in marine environments
2. Cell wall contains alginic acids
3. Stored food is floridian starch
4. Having chlorophyll a and c as photosynthetic pigments
5. Having gas filled bulbs

16) Select the answer with the characteristic features of phyla of following organisms given **correctly in order**

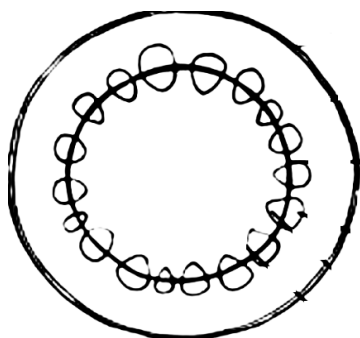


1. Having gastrovascular cavity, use sensory papillae, gas exchange via gills, no heart
2. Respire via body surface, use cilia for locomotion, use nephridia for excretion, triploblastic
3. Eyespots present, no developed excretory structures, separated sexes, coelomic
4. No anus, segmented cylindrical body, visceral mass present, tube feet present
5. Body wall has longitudinal muscles, clear cephalization, mantle present, endoskeleton present

17) **correct** statement about plant cells

1. Epidermal cells are covered by suberin
2. Collenchyma are nonliving at functional maturity
3. Sclereids have very thick lignified secondary cell wall
4. Tracheids have thinner wall than vessel elements
5. Companion cells connect with sieve cells by numerous plasmodesmata

18) Select the **correct** statement about following structure



1. It is a dicot stem which can undergoes secondary growth
2. Each vascular bundle is surrounded by sclerenchyma
3. Inner to vascular bundles pith made up of collenchyma can be found
4. Primary structure of dicot root
5. Having cork cambium between xylem and phloem

19) Select the tissue, that **replace** the epidermis

1. Pericycle
2. Cork
3. Bark
4. Wood
5. Periderm

20) Select the **incorrect** statements

- a) Smallest leaves are found in plants inhabiting wet and very cold environments
- b) Cellulose microfibrils are radially arranged around guard cells to form elastic hoops
- c) Even diffusion can be happened via membrane bulk flow does not occur through the membranes
- d) At the sink, due to unloading of sugar, consequent loss of water from phloem to the xylem happens
- e) Endodermis prevents water that have accumulated in the xylem from leaking back to the soil solution

1. a, b and d 2. c and d 3. a, d and e 4. a, b and e 5. a and b

21) Select the **correct** statement about spore formation in plants

1. Produce in both generations in the life cycle
2. All plants having heteromorphic alternation of generations are heterosporous
3. Reduced generation of vascular plants is homosporous
4. Produced in gametophyte by mitosis
5. Produced in diploid generation by meiosis

22) Select the **correct** relationship/s

- A. Indusium -prevent desiccation of megaspores and microspores
- B. Nucellus- provide nourishment
- C. Protonema – produces buds that grow into gametophytes

1. Only A 2. Only B 3. Only C 4. Only B and C 5. A, B and C

23) Self infertility,

1. Is found in most angiosperms as typical adaptation
2. A special adaptation found in most plant species
3. An adaptation for cross pollination
4. Allow for gene shuffling within the organism
5. Prevents the formation of new genetic combinations

24) Select the answer with the steps of statolith hypothesis in **correct** order

- a) Ca^{2+} and auxin get accumulated
- b) Lateral transport of auxin
- c) Re-distribution of Ca^{2+}
- d) Auxin high concentration in lower side of elongation zone

1. d, b, c, a
2. d, c, b, a
3. c, b, a, d
4. b, c, a, d
5. a, d, b, c

25) **Plant growth substance** that stimulates the growth of pollen tube

1. Auxin
2. Gibberellins
3. Cytokinin
4. Absciscic acid
5. Ethylene

26) **Animal tissue types**, found in places subjected to abrasion and where diffusion happens respectively

1. Simple cuboidal epithelium and dense connective tissue
2. Loose connective tissue and dense connective tissue
3. Simple cuboidal epithelium and pseudostratified epithelium
4. Stratified squamous epithelium and Simple squamous epithelium
5. Simple columnar epithelium and Simple cuboidal epithelium

27) Select the **correct** statement/s about human **esophagus**

- A. A long tube found in the thoracic cavity
- B. Uppermost part has smooth muscles
- C. Skeletal muscles are involved in peristalsis

1. Only A
2. Only B
3. Only C
4. Only A and B
5. Only B and C

28) **Chylomicrons**

1. Water insoluble globules
2. Form inside the lumen of intestine
3. Having monoglycerides
4. Enter the lacteals via blood capillaries
5. Enter the blood vessels through lymph

29) Select the **correct** statement about glands associated with alimentary canal

1. Sinusoids containing mixture of blood from hepatic artery and hepatic vein
2. Secretion of saliva only happens when food enter the oral cavity
3. Bile transport via bile canaliculi towards the corners of lobules while blood in sinusoids move in opposite direction
4. Hepatic duct joins with pancreatic duct
5. Wall of small acini has several layers of secretory cells

30) Select the **correct** statement about single circulation

1. Found a ventricle anterior to the atrium
2. Found in some Chordata and all invertebrates
3. Transport of blood under relatively high pressure
4. Blood is pumped to the body capillaries by contraction of atrium
5. CO₂ enters the blood during the gas exchange happens in respiratory surface

31) Select the **correct** answer about the heart wall from inside to outside

- A. Cardiac muscles
- B. Fibrous pericardium
- C. Smooth membrane with flattened cells
- D. Serous pericardium

1. B, A, C, D 2. D, B, A, C 3. D, A, B, C 4. C, A, D, B 5. C, D, A, B

32.) Select the **person/s** having only 2 types of antigens on the plasma membrane of RBC which should be considered during blood grouping and blood transfusion

X- A ⁺	Y- AB ⁺	Z-AB ⁻
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1. Only X 2. Only Z 3. Only X and Y 4. Only Y and Z 5. Only X and Z

33) **Correct** relationship between structure, location and function

1. Alveoli-end of bronchi-gas exchange
2. Epiglottis-upper to pharynx- close the opening of trachea
3. SA node-myocardium of left atrium-initiate heart beat
4. Diaphragm-floor of thoracic cavity-expand the thoracic cavity by its contraction
5. Pulmonary valve-inside the pulmonary artery-prevents the back flow of blood to left ventricle

34) Select the **factor** important to maintain steep diffusion gradient across respiratory surface

1. Wetness
2. Permeability
3. Thinness
4. Large surface area
5. Good blood supply

35) Select the **most correct** answer with the structures important for the homeostatic regulation of respiration

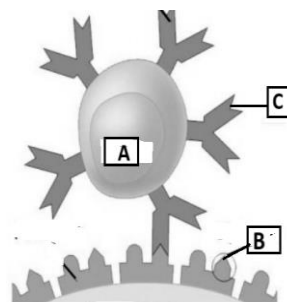
1. Oxygen receptors, receptors in aorta, receptors that detect pH changes
2. Oxygen receptors, receptors that detect low pH, stretch receptors in lungs
3. Receptors in carotid artery, receptors that detect pH changes, stretch receptors in lungs
4. Chemoreceptors in medulla oblongata, Receptors in carotid artery, receptors that detect high pH
5. Receptors in aorta, Receptors in carotid artery, Oxygen receptors

36) Select the **antimicrobial protein** under internal defense of innate immunity

1. Lysozyme 2. Histamine 3. Cytokines 4. Interferon 5. Heparin

37) Select the **correct** statement

1. Cell A is matured in thymus
2. "C" is formed by polysaccharides
3. B is a part of antigen receptor
4. No need of antigen presenting cell for the activity of cell A
5. Happens under cell mediated immune response



38) Autoimmune disease caused by activity of B cells and antibodies

1. Diabetes type I
2. Diabetes type II
3. AIDS
4. Rheumatoid arthritis
5. Multiple sclerosis

39) Select the **correct** statement about nephron and blood capillaries associated with human nephron

1. The afferent arteriole form 2 capillary networks
2. Nephron is a single long tubule lined with simple epithelium
3. Nephron tubule consists of 5 main regions
4. Peritubular capillary network surrounds the convoluted tubules and collecting duct
5. Vasa recta is important for the ultrafiltration

40) Which of the following detect the increment of blood osmotic pressure

1. Renal artery
2. Arterioles
3. Adrenal gland
4. Hypothalamus
5. Liver

❖ The responses for questions **41** to **50** should be chosen as follows.

- | | | |
|--|---|---|
| If only A, B and D are correct | - | 1 |
| If only A, C and D are correct | - | 2 |
| If only A and B are correct | - | 3 |
| If only C and D are correct | - | 4 |
| If any other response or combination of responses is correct | - | 5 |

1	2	3	4	5
A, B and D are correct	A, C and D are correct	A and B are correct	C and D are correct	any other response or combination of responses is correct

41) Select the **correct** statement/s about enzymes

- A. Enzyme has regulatory site where enzymatic reaction happens
- B. All enzymes are globular proteins
- C. Optimum pH for trypsin is 8
- D. Drugs used against microbes are under reversible inhibitors
- E. ADP stimulates the ATP production in anabolism

42) **Compounds** found in the bundle sheath cells of C₄ plants

- A. PEP
- B. OAA
- C. Malate
- D. Pyruvate
- E. P₆₈₀

43) Select the **correct** statement/s about Chordata

- A. 3 classes do respiration using gills
- B. Most examples of Osteichthyes are oviparous
- C. There are 3 endothermic classes
- D. Mammalia and amphibia have skin with glands
- E. 3 classes do both external and internal fertilization

- 44) Select the **correct** statement/s about water loss from plants
- A. Rate of transpiration increases with the high wind and high humidity
 - B. Rate of transpiration increases when the turgidity of guard cells is increasing
 - C. Transpiration is important for the ascent of xylem sap
 - D. Pulling of xylem sap due to root pressure is important for guttation
 - E. 95% of water is removed by stomatal transpiration
- 45) Select the **correct** statement/s about plant nutrition
- A. Plants show stunted growth due to less intake of NH_4^+ from soil solution
 - B. Due to deficiency of Mg^{2+} chlorosis between veins found in older leaves
 - C. Stubby roots are resulted due to deficient intake of SO_4^{2-}
 - D. Discoloured leaves are resulted due to less intake of HBO_3^-
 - E. Less Cu^+ causes the death of root tip
- 46) Select the **correct** statement/s about female gametophyte of *Selaginella*
- A. Multicellular structure having rhizoids
 - B. Photosynthetic, but depends on stored food
 - C. Covered by wall of microspore
 - D. One egg is found in an archegonium
 - E. Archegonia are fully embedded in the gametophytic tissue
- 47) Which of the following/s is/are **correct**
- A. Tannins - defense against biotic stress
 - B. Ethylene -promote lateral expansion of seedlings
 - C. Phytochrome -contribute to the shade avoidance
 - D. Chondroitin sulfate - component of the matrix of cartilage
 - E. Mucin - defense against bacteria
- 48) Which of the followings is/ are **correctly** shown
- A. Blood osmolarity - 300 Osm/L
 - B. Vital capacity - 6 L
 - C. Normal heart beat rate - 60-80 beats per minute
 - D. BMR of healthy female - 1,300-1,500 kcal
 - E. BMI value of a person with obesity - 30.0 or less
- 49) What happen when blood return the heart via vena cava
- A. Pressure increases in both atria
 - B. Open the mitral valve
 - C. Pass the oxygen rich blood to left ventricle
 - D. Stimulates the SA node
 - E. Close atrio-ventricular valves
- 50) Which of the following/s is/are **correct** about localized inflammation
- A. Redness and pain occur in that place
 - B. Metabolism increases
 - C. Fever occur
 - D. Prevents the leaking of tissue fluid
 - E. Mast cells secrete cytokines

