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Second Term Evaluation - 2025

Grade	12	Subject	Biology I	Time	02 hours
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- ★ Answer all the questions.
- ★ In each of the questions 1 - 50 pick one of the alternatives (1) , (2) , (3) , (4) , (5) which is correct or most appropriate and mark your response on the answer sheet with a cross (x) on the number of the correct option.
- ★ Use of calculators is not allowed

- (01) A living characteristic shown by non living
- (1) adaptation (2) growth (3) coordination and movement
(4) evolution (5) order and organization
- (02) **Not** a level of biological hierarchy.
- (1) Species (2) Population (3) Organism
(4) Community (5) Ecocystem
- (03) **False** statement regarding natural resources is ,
- (1) Natural resources are limited.
(2) Are natural sources of materials and energy , used in everyday life and economic development.
(3) Deserfication is an environmental problem arise due to over exploitation of natural resources.
(4) To overcome environmental problems , natural resources must be managed.
(5) The depletion of natural resources is not affected by the increasing growth rate of human population.
- (04) Out of the following elements, according to the mass ,which element is most abundant in the living
- (1) Hydrogen (2) Carbon (3) Oxygen (4) Sodium (5) Nitrogen
- (05) Which of the following is **incorrect** related to property of water and its function?
- | <u>Property of water</u> | <u>Function</u> |
|--|--|
| (1) Expansion upon freezing | Provide habitats for small insects in water. |
| (2) High specific heat capacity of water | Maintenance of constant body temperature during temperature fluctuations on earth. |
| (3) Ability to act a solvent. | Polar and ionic compounds dissolve in water. |
| (4) Cohesive behaviour. | Transport of material via vascular tissues. |
| (5) Ability to moderate temperature. | Maintenance of cool body surfaces. |
- (06) Out of the following polymers which one is found only in plants.
- (1) Inuline (2) Chitin (3) Ribonucleic acid
(4) Keratin (5) Glycogen

- (07) Storage polysaccharide of animals and fungi.
- (1) Starch (2) Glycogen (3) Chitin
(4) Inuline (5) Pectin
- (08) The compound **not** having pentose
- (1) m - RNA (2) ATP (3) Hemicellulose (4) RUBP (5) Pectin
- (09) Select the group of compounds which have the compound indicated in diagram as their unit molecule.
- (1) Collagen , Chitin , Pepsin , Lipase
(2) Actin , Ovalbumin , Immunoglobulins , Collagen
(3) Glycogen , Pepsin , Insulin , Inuline
(4) Casein , Ovalbumin , Insulin , Cellulose
(5) Cholesterol , Casein , Myosin , Pepsin.
- $$\begin{array}{c} \text{R} \quad \text{O} \\ | \quad || \\ \text{H}_2\text{N}-\text{C}-\text{C}-\text{OH} \\ | \\ \text{H} \end{array}$$
- (10) Out of the following , which one is **not** included in DNA molecule ?
- (1) Presence of paired Adenine and Guanine bases.
(2) Presence of two antiparallel polynucleotide chains.
(3) Presence of only four types of nucleotides.
(4) Nucleotides combined with phosphodiester bonds.
(5) Presence of number of pyrimidines equal to number of purines.
- (11) Which one is the characteristic specific to DNA - an organic compound of living matter ?
- (1) A polymer (2) Made up of unit molecules.
(3) Heat sensitive (4) Ability to self replicate
(5) Presence of C , H , O , N and P.
- (12) Which of the following **does not** represent peptide bonds ?
- (1) Insuline (2) Histone (3) Cholin
(4) Amylase (5) Tiubulin
- (13) The mismatched pair related to protein and function.
- (1) Ovalbumin - storage
(2) Immunoglobulin - defense
(3) Collagen - contractile
(4) Haemoglobin - transportation
(5) Keratin - prevent descciation
- (14) Which of the following is **incorrect** regarding living cells ?
- (1) Surrounded by plasma membrane as a selective barrier.
(2) All organisms are composed of cells.
(3) The basic functional unit of life is cell.
(4) All cells have a cytoskeleton.
(5) All hierachical levels of matter below the cell are considered as non living.
- (15) Which of the following characteristics is important to identify a cell as a prokaryotic cell ?
- (1) Microscopic (2) Mitosis is absent
(3) 70 s ribosomes (4) Presence of circular DNA.
(5) Peptidoglycan cell walls.

- (16) Most suitable microscope to observe three dimensional view of surface of red blood is,
 (1) Simple microscope (2) Compound light microscope
 (3) Transmission electron microscope (4) Scanning electron microscope
 (5) Simple dissection microscope
- (17) In compound light microscope
 (1) Resolution power is inversely proportionate to wave length.
 (2) Lenses refract the light to enhance the image of the specimen.
 (3) Image created by eye piece is magnified by the objective piece.
 (4) Generally maximum magnification is x 600 of actual size.
 (5) Resolution power is 0.2 mm.
- (18) Which of the following is **correct** regarding the subcellular components of an eukaryotic cell ?
 (1) DNA and ribosomes are present in thylakoids.
 (2) Inner membrane of chloroplast is convoluted to form cristae.
 (3) Glyoxysomes contain enzymes to convert fatty acids into glycolipids.
 (4) Golgi apparatus produce cellulose.
 (5) Chromatin embedded in nuclear lamina which is made up of protein.
- (19) The function common to both RER and SER.
 (1) Production of transport vesicles. (2) Carbohydrate metabolism
 (3) Protein transportation (4) Synthesis of glycolipids
 (5) Detoxification.
- (20) Which of the following is **correct** regarding the cell cycle.
 (1) Cytokinesis occur at G_0 phase.
 (2) Nuclear membrane reforms at anaphase.
 (3) DNA replicate prior to centrosome duplication.
 (4) Chromosome get condensed during S phase.
 (5) Spindle forms at G_2 phase.
- (21) Out of the following pairs related to meiosis and mitosis , the **false** pair,

<u>Meiosis</u>	<u>Mitosis</u>
(1) Occurs only in diploid cells.	Occurs in haploid , diploid cells.
(2) Genetically different daughter cells are formed.	Genetically identical daughter cells are formed.
(3) Four daughter cells.	Two daughter cells.
(4) Homologous chromosomes randomly separate.	Half of the homologous chromosomes get separate.
(5) Two nuclear divisions.	One nuclear division.
- (22) A characteristic of enzymes.
 (1) Co- factors are important for catalysis of all enzymatic reactions.
 (2) Do not change the endproducts.
 (3) Any part of the enzyme can catalyze a reaction.
 (4) Small amount of enzymes are consumed during the reaction.
 (5) Increase the activation energy of an enzyme.

- (23) Which of the following is **correct** regarding the chlorophyll ?
- (1) There is a complementary connection between absorption spectrum and action spectrum of chlorophylls.
 - (2) Chlorophyll absorb only violet and red light.
 - (3) Chlorophyll - *a* are more efficient on capturing green light.
 - (4) chlorophyll - *b* participate in absorption and dissipation of excessive light energy.
 - (5) chlorophyll - *a* absorb 680 nm of wavelength of light at photosystem I.
- (24) Select the **correct** statement regarding the citric acid cycle.
- (1) ATP is produced by oxidative phosphorylation.
 - (2) Four CO₂ molecules are released per one glucose molecule.
 - (3) 32 ATP molecules are produced per one glucose molecule.
 - (4) Three FADH₂ molecules are produced per one glucose molecule.
 - (5) Pyruvate undergoes series of enzyme catalyzed reactions to regenerate citric acid.
- (25) **Not** a compound produced during ethyl alcohol fermentation and aerobic respiration.
- (1) NADH
 - (2) CO₂
 - (3) Pyruvate
 - (4) ATP
 - (5) Acetaldehyde
- (26) Which of the following **does not** occur during light reaction of photosynthesis ?
- (1) Hydrolysis of water
 - (2) Cyclic electron flow
 - (3) Photorespiration
 - (4) NADP⁺ reduction
 - (5) Release of electrons from photostems I and II.
- (27) **Correct** statement regarding chloroplasts.
- (1) At each chloroplast production of NADPH and carboxylation occur.
 - (2) Inner membrane has electron carrier system.
 - (3) Transformation of light energy into chemical energy occurs at stroma of chloroplast.
 - (4) Final electron acceptor of linear electron flow is P₇₀₀ chlorophyll *a* molecule.
 - (5) In C₄ plants CO₂ fixation occurs both at chloroplasts and outside of them.
- (28) Following indicate facts related to classification of organisms.
- (a) Grouping of organisms is based on predetermined combined characteristics.
 - (b) Type of classification used after the study of evolution.
 - (c) Used before 18th century.
 - (d) Characteristics used may be anatomical , morphological characteristics.
 - (e) Easy to use , can expand by adding more groups.

Which of the following can be characteristic/characteristics of a natural classification ?

- (1) Only a , c
 - (2) Only b , c and d
 - (3) Only b , d
 - (4) Only c , d
 - (5) Only b , d and e
- (29) **Not** a characteristic feature of organisms of Domain bacteria.
- (1) Most members have cell walls composed of peptidoglycan.
 - (2) Some have the ability to fix nitrogen.
 - (3) Some bacteria contain chlorophyll pigments.
 - (4) Only one type of RNA polymerase.
 - (5) Growth inhibited by formyl methionine.

- (30) Which pair is **false** regarding the scientist and the nature of classification ?
- (1) Linnaeus - Introdution of artificial classification based of characteristics of flowers.
 - (2) Theophrastus - Classification according to seed habit and life span.
 - (3) Haeckel - Introduction of taxons phylum and kingdom
 - (4) Carl Woese - Classification of 3 domains.
 - (5) Whittakker - Introduction of 5 kingdom classification based on cellular characteristics and mode of nutrition.
- (31) Out of the following which is least useful in forming a dichotomous key at practical class to seperate leech , milipede , cookroach , round worm and chiton.
- (1) Exoskeleton
 - (2) Suckers
 - (3) Symmetry
 - (4) Wings
 - (5) Legs
- (32) Which of the following statement **cannot** be agreed related to the theories of biological evolution ?
- (1) According to Darwin and Wallace, during evolution , natural selection occur due to selection of favourable traits.
 - (2) Darwin and Wallace introduced the theory of natural selection.
 - (3) An observation in natural selection process is over production.
 - (4) To describe biological evolution , neo Darwinism used genetics and population genetics.
 - (5) Hypothesis of Lamark contain principle of use and disuse and inheritance of aquired characteristics.
- (33) Characteristics of several organisms are marked as A , B , C and D.
- A. - Cylindrical body with tapering ends.
 - B. - Presence of suckers
 - C. - Presence of radula in mouth.
 - D. - Gills are not covered by an operculum.
- A , B , C and D are,
- (1) Round worm , *Fasciola* , starfish , seerfish
 - (2) Hook worm , leech , snail , squid
 - (3) Tape worm , leech , snail , shark
 - (4) Hook worm , leech , snail , shark
 - (5) Round worm , *Fasciola* , snail , Tuna
- (34) Which of the following **does not** occur during the opening of the stomata ?
- (1) Endosmosis of guard cells.
 - (2) Guard cells move apart from each other.
 - (3) Guard cells expand uniformly in every direction.
 - (4) Turgidity of guard cells increases.
 - (5) Bending of inner cell wall of guard cells.
- (35) **True** regarding the ground tissue system of a plant.
- (1) Three main types of cells are present and all are living cells.
 - (2) Act as the outer protective cover of plant bodies.
 - (3) Cells that are found in it differentiate to perform functions storage , photosynthesis and long distance transportation.
 - (4) Mainly locate outer and inner to vascular tissue.
 - (5) All cells have primary cell walls as well as secondary cell walls.

- (36) A flaccid cell having solute potential of - 1.3 MPa is placed in pure water. At the equilibrium stage ,
- (1) water potential decreases to reach solute potential.
 - (2) water potential of cell equals to solute potential of cell.
 - (3) pressure potential increases to 1.3 MPa.
 - (4) $\Psi_p < \Psi_s$
 - (5) Ψ_p , decreases to - 1.3 MPa.
- (37) Steps that should be followed to set up the apparatus potometer to measure the rate of transpiration are.
- A. - Completely fill the potometer with water.
 - B. - A branch separated from a plant earlier is fit into the cork of potometer.
 - C. - After setting the apparatus open and end is slightly raised above the water level and air bubble is entered.
 - D. - Tap of the potometer is opened.
 - E. - Measure the distance travelled by air bubble within the capillary tube.
- (1) A , B and C
 - (2) B , C and D
 - (3) C, D and E
 - (4) A , C and E
 - (5) B , C and E
- (38) **Not** a characteristic of members of phylum lycophyta.
- (1) Sporophyte is dominant.
 - (2) Presence of strobillus.
 - (3) Do not bear eggs and photosynthetic organisms having vascular tissues.
 - (4) Only heterosporous species are found.
 - (5) Upright stems and ground hugging stems are present.
- (39) **Incorrect** regarding phloem tissue.
- (1) Sieve tube elements with porous plates.
 - (2) Seedless vascular plant and gymnosperms do not have sieve tube elements and companion cells.
 - (3) Phloem tissue is present in all plants having dominant sporophytic generation.
 - (4) Always a companion cell is present with a sieve tube element.
 - (5) Companion cells do not contribute for transportation.
- (40) Which of the following statement is correct regarding the responses of plants towards light ?
- (1) Most important colour of light to regulate photomorphogenesis are green and red.
 - (2) During seed germination , when a seedling breaks ground stimulation of hypocotyl elongation occurs due to the effect of red light photoreceptors.
 - (3) Blue light photoreceptors regulate seed germination.
 - (4) Photoperiod affect the control of flowering in many plants.
 - (5) Positive phototropism occur due to rapid cell elongation of cells located in the side which is most illuminated.

- ★ For each of questions 41 - 50 one or more of the response is / are correct. Decide which of the response / responses is / are correct & then select the correct number.

If A, B , D responses are correct	_____	1
If A, C , D responses are correct	_____	2
If A and B responses are correct	_____	3
If C and D responses are correct	_____	4
If any other response / responses is / are correct	_____	5

Directions summarised				
(1)	(2)	(3)	(4)	(5)
A , B , D correct	A , C , D correct	A , B correct	C , D correct	Any other response or combination of responses correct

- (41) Out of the following which is/are not considered as polymers.
 (A) Methionine (B) ATP (C) Chitin
 (D) RuBP (E) Myosin
- (42) During metabolism which of the following process/processes requires ATP as energy.
 (A) Glycolysis
 (B) Light reaction of photosynthesis
 (C) Reactions of Krebs cycle
 (D) Calvin cycle reactions photosynthesis.
 (E) Electron transport chain of aerobic respiration.
- (43) Select the response/ responses giving examples for 5 adjacent higherachical level of biological organization.
 (A) Cellulose , tracheid , xylem , root , plant
 (B) DNA , nucleus , neuron , brain , nervous system
 (C) Nervous system , deer , herd of deers , wild animals , dry mixed ever green forests.
 (D) ATP , mitochondria , eosinophil , blood , heart
 (E) RuBP , chloroplast , mesophyl cell , leaf , plant
- (44) Characteristic/ characteristics found only among organisms of Domain bacteria
 (A) Protein synthesis is initiated by formyl methionine.
 (B) Cell membrane lipids are not branched.
 (C) Sensitive to sterptomycin and chloramphenicol.
 (D) Cell wall component is peptidoglycan.
 (E) Presence of several types of RNA polymerase.
- (45) **Correct** regarding the gametophytes of following plant phyla.
 (A) Phylum Lycophyta Partially independent
 (B) Phylum Pterophyta Bisexual monecious
 (C) Phylum Cycadophyta Totally parasitic gametophyte
 (D) Phylum Anthophyta Multicellular male gametophyte
 (E) Phylum Corniferophyta Dominant gametophyte

- (46) Select the **correct** statement/statements regarding nutrition.
- (A) Nitrogen deficiency results in chlorosis in young leaves.
 - (B) K , P deficiency results in weak and thinned stems.
 - (C) Fe , Mn deficiency results in chlorosis between veins in young leaves.
 - (D) Mo and Ni contribute to nitrogen metabolism and deficiency results in chlorosis in matured leaves.
 - (E) Cl deficiency results in wrinkled leaves and reduced internode length.
- (47) Similar characteristics of plant life cycles of *Pogonatum* and *Nephrolepis*.
- (A) Independent gametophytes.
 - (B) Autotrophic gametophytes.
 - (C) Produce protonema.
 - (D) Show heteromorphic alternation of generations.
 - (E) Dominant sporophyte.
- (48) **True** regarding parthenogenesis.
- (A) Development of seeds without fertilization.
 - (B) Development of ovary into a fruit without fertilization.
 - (C) Diploid ovum is produced by mitosis.
 - (D) Haploid ovum fuses with polar nuclei.
 - (E) Present in banana and some grasses.
- (49) Which of the following statement/statements **correct** regarding the factors affecting stomatal activity ?
- (A) In the absence of light K^+ ions are removed from guard cells.
 - (B) ABA produced during water scarcity remove K^+ from guard cells.
 - (C) Stomata open in the presence of environmental stresses such as high temperature.
 - (D) Stomata are opened as a result of low CO_2 concentration at substomatal cavity.
 - (E) Daily rhythm of closure of stomata are carried out by internal clock of epidermal cells.
- (50) **False** statement/statements regarding growth rings.
- (A) During wet warm growth periods thickness of secondary xylem and lumen size of xylem vessels are increased.
 - (B) Secondary xylem formed during spring of temperate region is known as springwood.
 - (C) Xylem vessels of spring wood have large lumens and thick cell walls.
 - (D) Xylem vessels of summer wood have small lumens and thin walls.
 - (E) Age of a tree growing in temperate regions can be estimated by counting the annual rings.