



Third Term Test – 2025 September
G.C.E .(Adv.Level) Examination - 2025

Time - 2 Hour

Name : Class : Index No:

1. The correct statement regarding the issues and statement pertaining to biology is,
- 1) Life on earth formed around 3.6 billion years ago.
 - 2) It is assumed that there are about 1-10 million species in the world.
 - 3) Consumption of natural resources cause environmental problems.
 - 4) Sustainable food production is not based on knowledge in biology.
 - 5) Heart disease is a serious health problem in which causes are not fully understood yet.
2. Following are the steps to be followed when a specimen is observed under a compound light microscope. The response with the correct sequence is,
- A. Place the slide on the stage of the microscope facing the coverslip on top.
 - B. Cover the specimen holding the coverslip at the edge of the water drop
 - C. Place the thin epidermal peel in water in a petri dish
 - D. Transfer the specimen into the drop of water placed on the center of the glass slide using a fine paint brush
- 1) B A C D
 - 2) D C B A
 - 3) C D A B
 - 4) C D B A
 - 5) C B D A
3. Which of the following is correct regarding polysaccharides?
- 1) They are large molecules but not macromolecules.
 - 2) They all have linear structure
 - 3) Hemicellulose have a linear structure formed from the polymerization of hexoses
 - 4) Glycogen is a structural polysaccharide in fungi.
 - 5) Some polysaccharides possess N.

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4. The correct response regarding cytoskeleton,
- 1) Contributes to maintain the shape of plant cells.
 - 2) Microfilaments are composed of three intertwined strands of Actin.
 - 3) Microtubules are composed of 9 + 2 columns of tubulin.
 - 4) Intermediate filaments of all cells are made up of keratin.
 - 5) Provide strength to the cytoplasm.
5. The incorrect statement regarding the enzyme inhibitors,
- 1) Most of the competitive inhibitors are non-reversible inhibitors.
 - 2) Molecules or ions are enzyme inhibitors.
 - 3) Drugs used against microbes are reversible inhibitors.
 - 4) Competitive inhibitors compete with the substrate for the active site of enzymes.
 - 5) Non-competitive inhibitors change the shape of the active site.
6. The intermediate compound formed in Calvin cycle as well as the anaerobic respiration is,
- 1) Ethanol
 - 2) Acetaldehyde
 - 3) G3P
 - 4) Malate
 - 5) Pyruvate
7. Which of the following does not take place in citric acid cycle,
- 1) Carbon dioxide is released from decarboxylation
 - 2) Regeneration of citrate from oxaloacetate
 - 3) FADH_2 is generated from oxidation
 - 4) Substrate level phosphorylation takes place.
 - 5) Occur in the matrix of mitochondria.
8. The correct statement regarding the binomial nomenclature,
- 1) Two species of organism can have the same name.
 - 2) Name should be written in Latin scripts.
 - 3) The generic name should be written in English capital letters.
 - 4) A third word can be used to represent a subspecies.
 - 5) Name should be underlined when printed.

9. Which of the following is correct regarding *Argassum*?
- 1) Marine and few species are fresh water.
 - 2) Present chlorophyll a and c, no xanthophil.
 - 3) Stored food is chrysolaminarin.
 - 4) Greenish red in colour.
 - 5) Multicellular thallus is plant-like.
10. Characteristic features of animal phyla are mentioned below. Select the response which indicate an organism which exhibits each of those features correctly.
- | | | |
|--------------------|-------------|--------------|
| A. Radula | B. Papulae | C. Clitellum |
| D. Tracheal system | E. Papillae | |
- 1) Clam, starfish, earthworm, prawn, round worm
 - 2) Squid, sea lily, *Nereis*, beetle, round worm
 - 3) Snail, brittle star, earthworm, beetle, hook worm
 - 4) Chiton, sea urchin, earthworm, centipede, cobra
 - 5) Snail, starfish, earthworm, krill, hook worm
11. The correct statement regarding the kingdom Fungi is,
- 1) All Ascomycota are terrestrial.
 - 2) *Mucor* sexual spores are exogenous.
 - 3) Basidiomycota produce gametangia during sexual reproduction.
 - 4) *Aspergillus* produces 8 genetically identical ascospores during sexual reproduction.
 - 5) Chytridiomycota is coenocytic when it is multicellular.
12. Select the correct statement regarding meristematic tissue.
- 1) Primary growth occurs through the action of intercalary meristem in all plants
 - 2) Apical meristem causes the root and stem to increase in length and circumference.
 - 3) Secondary growth occurs through lateral meristem tissues arising from the outer layer of the pericycle of the monocotyledonous root.
 - 4) The vascular cambium produces primary xylem and primary phloem.
 - 5) Meristematic tissue can undergo a period of dormancy and continue to divide when

13. Which of the following statements regarding secondary growth in plant stems is correct?

- 1) Secondary growth occurs after the primary growth is completed in woody plant.
- 2) As the cork cells mature, lignin is deposited on their walls, making them non-living cells.
- 3) Shorter initials are oriented with their long axis parallel to the axis of stem or root and produce cells in xylem tissue.
- 4) Loosely packed cork cells which are produced by cork cambium, form lenticels as horizontal slits in the periderm.
- 5) When secondary growth occurs over many years a new vascular cambium is formed.

14. The unacceptable response in the following comparison between bulk flow and diffusion is,

Bulk flow

- 1) There is no effect of solute concentration.
- 2) Occurs through pressure gradients.
- 3) Does not occur through membranes.
- 4) A method of long-distance transportation.
- 5) Occur faster.

Diffusion

- There is an effect of solute concentration.
Occurs through a concentration gradient.
Occur through any membrane.
A short-distance transportation method.
The speed is relatively slow.

15. Which of the following is incorrect regarding the female gametophyte of *Selaginella* ?

- 1) This is a structure bear rhizoids.
- 2) It has the ability to photosynthesize.
- 3) Covered by a thick wall of macrospore.
- 4) In the superficial region of this one archegonium is form and inside it is an egg cell.
- 5) A multicellular structure.

16. The ions that contribute to nitrogen metabolism are,

- | | | |
|---|---|---|
| 1) MoO_4^{2-} , Fe^{2+} | 2) Fe^{2+} , Cu^{2+} | 3) H_2BO_3 , Zn^{2+} |
| 4) Mn^{2+} , Ni^{2+} | 5) MoO_4^{2-} , Ni^{2+} | |

17. Which of the following statements regarding the cells present in nervous tissue is correct?

- 1) The structural and functional unit of nervous tissue is the neuron.
- 2) Nerve cells are nourished and insulated by connective tissue.
- 3) The axon receives impulses from other neurons
- 4) A neuron has a continuous covering made of fat called the myelin sheath.
- 5) The synaptic terminals of a neuron always present at the end of an axon.

18. The acceptable statement regarding heterotrophic nutrition is,

- 1) Animals, some fungi and most bacteria are heterotrophs.
- 2) Cow and crane show mutualism relationship.
- 3) ~~Oysters feed on small pieces of food~~ passes over their gills.
- 4) Bulk feeders burrow in to animal dead bodies.
- 5) In parasitism, the parasite always lives within the host and obtains nourishment from the host.

19. Which of the following statements regarding the human pancreas is correct?

- 1) Nucleases in pancreatic juice break down DNA into nitrogenous bases, sugars, and phosphates.
- 2) The endocrine parts of the pancreas secrete enzymes that contribute to glucose homeostasis.
- 3) The islets of Langerhans in the exocrine part of the pancreas secrete bicarbonate and digestive enzymes.
- 4) Pancreatic lipase breaks down fat into triglycerides and monoglycerides.
- 5) The common pancreatic duct, formed by the join of the pancreatic duct with the bile duct, opens into the midpoint of the duodenum.

20. The correct statement regarding circulatory systems is,

- 1) The presence of a circulatory system is a characteristic of all animals.
- 2) In open circulatory systems, there are no vessels for circulation.
- 3) Like vertebrates, some invertebrates also have closed circulatory systems.
- 4) Open circulatory systems are present in arthropods and all mollusc groups.
- 5) Closed circulatory systems always pump blood through a single heart.

21. Select the correct statement regarding human blood circulation.

- 1) The coronary sinus is formed by the first pair of arteries arising from the aorta.
- 2) Oxygen poor blood from the head, neck, and forelimbs is carried to the heart by the superior vena cava.
- 3) All oxygen poor blood from cardiac muscles is directed to the right atrium through the coronary sinus.
- 4) When pairs of ventricle contract simultaneously, oxygen rich blood enters the arteries.
- 5) Stroke occurs when one or more of the coronary arteries become completely blocked.

22. An event not associated with the blood clotting process,

- 1) Exposure of blood vessel walls to connective tissue.
- 2) Formation of a platelet plug.
- 3) Conversion of prothrombin into thrombin.
- 4) Heparin acts as a coagulant.
- 5) Fibrinogen converts into fibrin.

23. Which of the following is incorrect regarding ventilation of the lungs?

- 1) The surface tension of the fluid between the two membranes surrounding the lungs contributes to the increase in volume within the lungs.
- 2) Inhalation is an active process, while exhalation is a complete passive process.
- 3) The skeletal muscles are contributed to the formation of the diaphragm.
- 4) Each alveolus is surrounded by a network of blood capillaries.
- 5) During inhalation air is pulled and flow in to the lungs.

24. The functional residual capacity of the human lungs is calculated by,

- 1) Tidal volume + Inspiratory reserve volume
- 2) Tidal volume + Inspiratory reserve volume + Expiratory reserve volume
- 3) Tidal volume + Expiratory reserve volume
- 4) Residual volume + Expiratory reserve volume
- 5) Tidal volume + Residual volume + Inspiratory reserve volume

25. Which statement is correct regarding natural killer cells?

- 1) Prevent spreading of viruses further.
- 2) In adaptive immunity, antigen recognize and destroy them.
- 3) Abnormal body cells are destroyed by ingestion.
- 4) Signals emitted by the infected tissue cause to travel to that tissue through blood capillaries.
- 5) Differentiate into memory cells after infection.

26. Which of the following is incorrect regarding human urine formation,

- 1) Secretion occurs in proximal and distal convoluted tubule.
- 2) The distal convoluted tubule contributes to the pH balance through H^+ secretion and HCO_3^- reabsorption.
- 3) Under the influence of ADH, water reabsorption takes place passively.
- 4) Aldosterone increases Na^+ and water reabsorption.
- 5) H^+ and NH_3 secrete passively in the proximal convoluted tubule

27. Movement of an organisms occurs as a result of irritability and coordination. Systems directly involved in this is

- 1) Muscular, Nervous, Blood circulatory, Skeletal
- 2) Nervous, Muscular, Skeletal, Endocrine
- 3) Skeletal, Muscular, Digestive, Blood circulatory
- 4) Skeletal, Respiratory, Nervous, Digestive
- 5) Respiratory, Skeletal, Blood circulatory, Digestive

33.



Which is correct regarding the above vertebra?

- 1) The odontoid process articulates with the vertebra below
- 2) The head can be turned up and down by rotating the skull on the odontoid process.
- 3) This belongs to the cervical vertebra and does not have a specific vertebral body.
- 4) Vertebral foramen is relatively large to provide the passage of the large upper part of the spinal cord.
- 5) Spinous process not bifid due to not many muscles attachment

34. Shown below is multifactorial cross that considering the seed colour , flower colour and height of a plant.

White flowers, green seed and tall plant X White flowers, brown seed and dwarf plant

$WwYyTt$

X

$Wwyytt$

Which of the following is the probability of obtaining the following genotypes in order as a result of above cross?

$WW\bar{Y}\bar{y}Tt$, $WwYyTt$, $wwyytt$

1) $1/8$, $1/16$, $1/16$

2) $1/16$, $1/8$, $1/16$

3) $1/8$, $1/16$, $1/8$

4) $1/2$, $1/4$, $1/2$

5) $1/8$, 0 , $1/8$

35. The correct statement regarding polymerase chain reaction (PCR) is

- 1) Copy sequences of DNA in vivo, mimicking the DNA replication.
- 2) DNA polymerase initiates replication.
- 3) Annealing temperature depends on the length of the primer.
- 4) The thermal cycle includes denaturation, annealing and primer binding.
- 5) Denaturation is done by heating the PCR mixture to 100°C .

28. Select the incorrect statement regarding the human eye.

- 1) The sclera is opaque and its thickness is highest in the posterior region of the eye.
- 2) The epithelial cells of the ciliary body secrete aqueous humour.
- 3) Within the outer segment of photoreceptor cells is a stack of membranous disks in which visual pigments are embedded.
- 4) The smooth muscles of the iris are organized into two layers.
- 5) Vitreous humour maintains intra ocular pressure to support the retina against choroid.

29. Which of the following diseases is caused by disorder affects neural pathways that use dopamine ?

- | | | |
|-----------------------------|-----------------------------|----------------------|
| 1) Depression, Parkinson | 2) Alzheimer, Schizophrenia | 3) Stroke, Parkinson |
| 4) Parkinson, Schizophrenia | 5) Alzheimer, Depression | |

30. Which of the following is incorrect regarding the structure of a mature human sperm?

- 1) Each sperm has a head, a body and a tail.
- 2) The nucleus in the sperm head contains 23 chromosomes.
- 3) The acrosome is a special vesicle containing trypsin and hyaluronidase.
- 4) The body part contains numerous mitochondria.
- 5) The tail of the sperm contains 9 + 0 arrangement of microtubules which is produced by the centrioles at the base of the nucleus.

31. The correct statement regarding human placenta and fetus is,

- 1) Maternal blood vessels are directly connected to fetal blood vessels.
- 2) Placenta produces the hormones hCG and progesterone, which are important for maintaining pregnancy.
- 3) The umbilical arteries supply oxygen to the fetus.
- 4) The endometrium itself provides direct protection to the embryo.
- 5) The placenta acts as a barrier to all types of antibodies and harmful substances.

32. Which of the following not belongs to human axial skeleton

- | | | |
|------------------|-------------|-----------|
| 1) Cranial bones | 2) Ribs | 3) Sacrum |
| 4) Femur | 5) Mandible | |

36. The correct statement regarding the flow of energy and ecological pyramids in an ecosystem is,

- 1) Always number of primary producers higher than number of primary consumers.
- 2) The first trophic level includes only plants, which are primary producers.
- 3) If the energy content of primary producers is 10000 kJ, the energy content of secondary consumers is about 100 kJ.
- 4) Pyramids of energy and pyramids of biomass are always upward.
- 5) The flow of energy and nutrients in an ecosystem is unidirectional.

37. Incorrect statement regarding major terrestrial biomes

- 1) The average annual rainfall in tropical dry forests is about 1500-2000 mm.
- 2) Savannas are characterized by a landscape of scattered trees in a tall grass cover.
- 3) Stratification can be seen only in tropical forests.
- 4) The Chaparral biome is typically composed of dwarf forests and shrub.
- 5) The largest biome on earth is the northern coniferous forest.

38. Microaerophilic bacteria is

- | | | |
|----------------------------|-----------------------------|---------------------------|
| 1) <i>Acetobacter</i> sp. | 2) <i>Lactobacillus</i> sp. | 3) <i>Clostridium</i> sp. |
| 4) <i>Escherichia coli</i> | 5) <i>Nitrobacter</i> | |

39. Following are some microorganisms used in industrial field.

- | | | |
|----------------------------|--------------------------|------------------------------|
| (A) <i>Rhizopus</i> sp. | (B) <i>Chlorella</i> sp. | (C) <i>Aspergillus niger</i> |
| (D) <i>Acetobacter</i> sp. | (E) <i>Penicillium</i> | |

Which of following answer correctly shows the relevant industries they are used in order

- 1) Production of single cell protein, Production of lipase, Production of citric acid, Production of vitamin C, Production of cheese
- 2) Production of lipase, Production of single cell protein, Production of citric acid, Production of vitamin C, Production of cheese.
- 3) Production of citric acid, Production of lipase, Production of single cell protein, Production of vitamin C, Production of cheese.
- 4) Production of vitamin C, Production of lipase, Production of citric acid, Production of single cell protein,
- 5) Production of lipase, Production of vitamin C, Production of citric acid, Production of single cell protein, Production of cheese.

40. Which of the following statements regarding the parasite of filaria is incorrect?

- 1) The female *Culex* mosquito acts as the vector.
- 2) Microfilariae live in lungs during day time and travel to peripheral blood during night.
- 3) Adult worm lives in lymphatic system for about 5-6 years.
- 4) When a female mosquito bites a human, it directly injects the filaria parasite into the human's bloodstream.
- 5) When adults worms block lymphatic vessels they get distorted and lymph flow does not occur smoothly.

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

- If only A, B and D are correct1
 If only A, C and D are correct2
 If only A and B are correct3
 If only C and D are correct4
 If only other response or combination of responses is correct5

1	2	3	4	5
A, B, D correct.	A, C, D correct.	A, B correct.	C, D correct.	Any other response or combinations of responses correct.

41. Which is / are not a compound or compounds produced in mesophyll cells in the C_4 pathway of photosynthesis.

- (A) Phosphoenol pyruvate (B) Oxaloacetate (C) Pyruvate
 (D) 3-phosphoglycerate (E) Malate

42. Which is / are correct statement / statements regarding the origin of eukaryotes and their diversification

- A) Arthropoda and Chordata phyla are evolved at the same time period.
- B) Colonization of land by fungi began about 500 million years ago.
- C) The fossils of first eukaryotic organisms were estimated about 1.2 billion years old.
- D) Tetrapods formed about 360 million years ago from lobed- finned fish.
- E) The human lineage began about 195,000 years ago.

43. Which is/are correct statement/s regarding parthenogenesis.

- (A) development of seeds without fertilization
- (B) seeds formed are sterile.
- (C) a diploid egg is produced by mitosis
- (D) haploid ovum fuses with a polar nucleus.
- (E) Due to the genetic content is duplicated and the egg becomes a diploid.

44. Which is/ are the correct statement/ statements regarding the 'diffusion shell'

- (A) There is a diffusion shell around each stomata.
- (B) The diffusion shells of neighboring stomata overlap in still air
- (C) A diffusion cell is known as a diffusion
- (D) The thickness of a diffusion cell is increased in a moving air.
- (E) These are formed between the thin layer of air which is close to the leaf blade and mesophyll cells.

45. Select the correct match

- | | | |
|--------------------------|---|-----------------------------------|
| (A) Diabetes I | - | Autoimmune disease. |
| (B) Rheumatoid Arthritis | - | Immunodeficiency disease. |
| (C) Hepatitis A | - | Ready made human serum antibodies |
| (D) Mast cell activation | - | Secretion of Histamine. |
| (E) Tetracycline | - | A common allergen. |

46. Which of the following statement/s is/are correct regarding inheritance patterns that deviate from Mendelian inheritance?

- (A) Pleiotropy is the ability of a single gene to produce multiple phenotypes.
- (B) The phenotypic ratio of 13: 3 in the F₂ generation is due to dominant epistasis.
- (C) In codominance, the F₁ generation shows a different characteristic than both parents.
- (D) The occurrence of AB blood type is explained by polyallelism.
- (E) The offspring resulting from genetic linkage carries only the phenotype of the parent.

47. Which is correct regarding sickle cell anemia?

- A) Occur due to genetic mutation.
- B) Occurs due substitution valine with glutamic acid
- C) Sickled red blood cells breakdown prematurely.
- D) Heterozygous individuals will survive malaria attacks.
- E) A genetic mutation in the α globin subunit of hemoglobin.

48. Which are the gases which have indirect forcing effect on global warming

- A) N_2O
- B) CO_2
- C) NO_2
- D) CO
- E) SF_6

49. Which of the following statement/s is/are correct regarding food spoilage

- A) Even at low temperature microbial spoilage occurs by psychrophilic bacteria.
- B) Both aerobic as well as anaerobic microbes causing food spoilage.
- C) Low moisture containing food stored in high relative humidity environment.
- D) Very low moisture containing food are not easily spoiled by bacteria and molds.
- E) Bacteria can grow over a wide range (pH 2-10) of pH.

50. The warning signs of dengue hemorrhagic fever is/are,

- A) Restlessness.
- B) Severe abdominal pain
- C) Skin rash.
- D) Persistent vomiting.
- E) Pain behind the eyes

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