

Provincial Department of Education, Northern Province



Pilot Exam – October 2021

Biology 1



Grade 13 (2021 Batch)

Time :- 2 Hours

Index No :

- **Answer all questions**
- **In each of the questions 1 – 50 pick one of the alternatives from (1), (2), (3), (4) and (5) which is correct in each of the questions or most appropriate and mark your response on the answer sheet with a cross (X) on the number of the correct option.**

1. The organisms have many characteristic features. Which of the following characteristic feature can't observe in a single organism?
 1. Irritability
 2. Growth
 3. Evolution
 4. Coordination
 5. Adaptation

2. A statement about protein is given.
“A single polypeptide chain forms hydrogen bond between oxygen atom attached with carbon and the hydrogen atom attached with nitrogen atom.”
Which of the following statement is correct regarding the above statement?
 1. Keratin, Silk fiber, Tropocollagen
 2. Insulin, Lysozyme, Trypsin
 3. Myoglobin, Albumin, Amylase
 4. Haemoglobin, Keratin, Pepsin
 5. Silk fiber, Albumin, Maltose

3. Which of the following statement regarding transmission electron microscope is **correct**?
 1. The beam of light is passed through vacuum
 2. The electron beam is passed through a thin material which is made up of special substance
 3. More electron beams are scattered on specimen
 4. It is used to study the internal structure of living specimen
 5. The specimen is coated with gold

4. Select the correct statement regarding the energy relationship about living being.
 1. Energy released from all metabolic reactions.
 2. Photophosphorylation and oxidative phosphorylation are occurred in cellular respiration.
 3. Pyruvate oxidation is occurring in substrate phosphorylation.
 4. During metabolic reaction ATP is oxidized as ADP.
 5. The energy stored in ATP is converted into electric energy.

5. The characteristic features of some cellular structures are given below:
 - A. Small sub-cellular organelle
 - B. Metabolism of carbohydrate
 - C. Having oxidizing enzymes
 - D. Maintain the water balance of cell

Which of the following indicates the **correct order** of the cell structure of the above characters?

1. Ribosome, Lysosome, Smooth Endoplasmic Reticulum, Chloroplast
 2. Rough Endoplasmic Reticulum, Lysosome, Nucleus, Peroxisome
 3. Ribosome, Smooth Endoplasmic Reticulum, Peroxisome, Central vacuole
 4. Nucleus, Central vacuole, Golgi apparatus, Lysosome
 5. Ribosome, Smooth Endoplasmic Reticulum, Lysosome, Central vacuole
-
6. Which of the following statement regarding eukaryotic cell cycle is **correct**?
 1. DNA gets condense by shortening and thickening and become chromosomes takes place in prophase.
 2. Microtubules attached to kinetochore get lengthen and cell become elongated takes place in anaphase.
 3. Movement of chromosomes take place due to non- kinetochore micro tubules occurs in pro metaphase
 4. Most of the cells in human body like nerve cells, muscle cells and liver cells are actually in the G1 phase
 5. Formation of cleavage furrow in animal cells takes place with the help of micro tubules

 7. Select the correct statement regarding enzymes?
 1. Enzymes change the equilibrium of reaction
 2. Enzymes activate the metabolic reaction only within living cells
 3. Substrate molecules are larger than enzymes
 4. Allosteric molecules bind to the enzyme with non-covalent interaction
 5. All amino acids which make enzymes are participated in biochemical reactions

8. Which of the following statement regarding evolution and diversity of the organisms is **correct**?

1. Colonization of the plant and animal on land appeared in Paleozoic Era
2. Concentration of CO₂ atmosphere increased in archaean eon
3. Origin of mammals appeared in Paleozoic Era
4. In Mesozoic Era origin of human ancestors will appeared
5. Origin of most present-day group insects appeared in Mesozoic Era

9. Liverworts,

1. Don't show heterosporous
2. They are large compare with mosses
3. Many gametophyte species of these are living with symbiotic fungi
4. Have upright stems with dichotomously branched
5. Large photosynthetic gametophytes

10. Some features of organisms are given below:

Cell organization	Peptidoglygon	RNA Polymerase	Reflection to streptomycin
A.Prokaryotic	P. Present	R.One-type	X.Inhibit the growth
B.Eukaryotic	Q. Absent	S. Many-type	Y.No growth inhibition

Select the response that indicate the correct combination of the above features for each of the organism given below.

1. *Aspergillus* – B, Q, S, Y
2. *Anabaena* – A, P, S, X
3. *Paramecium* – B, P, S, X
4. *Fasciola* – B, Q, R, Y
5. *Methanococcus* – A, P, R, Y

11. Some structural features among animals are as follows:

- A. Exoskeleton of calcareous plates
- B. Tympanic membrane is found behind the eye
- C. Tentacles are found around the mouth

Organisms showing each of the above structures in **correct sequence** are

- 1. Turtle, Snake, *Obelia*
- 2. Brittle star, Toad, Sea anemone
- 3. Squid, Frog, Hydra
- 4. Feather star, *Ichthyophis*, Snail
- 5. Corals, Toad, Slug

12. Some statements regarding chordate are giving below

- A. Eggs without shell
- B. Aquatic or living in water
- C. Swim bladders
- D. Nerve cord

Which of the above features can be seen in the organism of class chondrichthyes, Amphibia and Mammalia?

- 1. A & B only
- 2. A & C only
- 3. B & D only
- 4. A, B & C only
- 5. A, B & D only

13. Some features seen in some plants are as follows:

- A. Homosporous
- B. Mobile gametes
- C. Dominant sporophyte
- D. Vessels in xylem tissue

Organisms showing each of the above features in **correct sequence**.

- 1. *Lycopodium*, *Cocus*, *Gnetum*, *Selaginella*
- 2. *Selaginella*, *Nephrolepis*, *Cocus*, *Gnetum*
- 3. *Nephrolepis*, *Cycas*, *Pogonatum*, *Cocus*
- 4. *Nephrolepis*, *Cycas*, *Lycopodium*, *Gnetum*
- 5. *Pogonatum*, *Lycopodium*, *Cycas*, *Nephrolepis*

14. Parenchyma cells differ from Collenchyma cells. because Parenchyma cells,

- 1. Give mechanical support for leaves and stems
- 2. Important in wound repair
- 3. Secondary cell walls are produced after cell elongation
- 4. Being alive even after functional maturity
- 5. Couldn't found below the ground

15. Which of the following statement regarding root apex is correct?

1. Produce new cells both inwards and outwards
2. Contribute to primary and secondary growth of root
3. Produce cells inwards are matured in zone of elongation
4. Increased the diameter and height of root
5. It consists of parenchyma cells

16. Chlorosis between veins found in young leaves may be caused due to deficiency of which of the following elements?

1. S and Mg
2. Cu and Mn
3. N and Mg
4. Mn and Fe
5. Fe and S

17. In Angiosperms,

1. The mature embryo sac consists of seven nucleci within seven cells
2. The pollen grain already germinated when it is placed on the stigma
3. During fruit development ovules get converted to the pericarp
4. Microspores develop into male gametophyte within the anther
5. Parthenogenesis is observed in several plants

18. Some plant's hormones are given below

- A. Auxin B. Cytokinins C. Ethylene
D. Abscisic acid E. Gibberellins

On the above hormones which of the following shows the opposite functions?

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

19. Bone deformities in children (rickets), cracks at corners of mouth and anemia may be caused due to the deficiency of which of the following vitamins respectively?

1. D, B, B₁₂
2. D, B₂, B₆
3. D, B₅, B₉
4. A, B₆, B₁₂
5. D, B₁₂, B₅

20. This question is based on the following?

A-hypertension – diabetes mellitus

B-Ventricular systole – stimulation of SA node

C-clotting of blood – formation of fibrin

D-transport of oxygen in blood – blood plasma

Which of the above pairs does the second contribute to the first?

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

21. Which of the following statement regarding disorders of the respiratory system is **correct**?

1. The cause of Asthma is a reaction of an immune response to stimuli like pollen grain, dust, spores, particular food, heat air, smoking gases
2. Tuberculosis is a common respiratory disease
3. In the asbestosis disease, destruction of tissues cause pulmonary hypertension and heart failure
4. HCN in cigarette smoke decrease the amount of the hemoglobin
5. Nicotine in tobacco smoke temporarily increase the rate of heart beat and relaxing of peripheral blood vessels

22. Which of the following is related to the active immunity?

1. Artificially prepared anti-bodies against hepatitis A virus
2. Readymade human anti-tetanus immuno globulin for acute conditions of tetanus found in hospitals
3. The fetus gets immunity from mother's blood across the placenta
4. Infants immunized by toxoid for tetanus
5. The serum prepared from horse that have been immunized

23. Which of the following statement regarding active and passive secretion in proximal convoluted tubule is **correct respectively**?

- | | | |
|------------------------------------|-----------------------------------|--|
| 1. HCO_3^- , K^+ | 2. K^+ , H^+ | 3. H_2O , K^+ |
| 4. NH_4^+ , H^+ | 5. H^+ , NH_4^+ | |

24. Select the correct response that indicates the part of human brain and its function?

1. Helps in learning and remembering motor skill – cerebrum
2. Coordinate various body movements such as running and climbing – medulla oblongata
3. Play a role in sexual behaviors – thalamus
4. Initiation and control of voluntary muscle contraction – cerebellum
5. Coordinate the auditory and visual reflexes – cerebrum

25. Which of the following statement regarding human ear is **correct**?

1. Utricle and saccular of semi-circular cannels with respect to the linear movement
2. The floor of the cochlear duct is called the vesilar membrane which bears the spiral organ
3. After the sound perception the fluid wave is finally dissipated the middle ear
4. Within the membrane labyrinth a network of fluid filled membrane is called body labyrinth
5. Numerous modified wax glands secrete ear wax

26. Which of the following statement regarding human skin is **correct**?

1. Sweat glands are present in epidermis
2. Skin serves as a major excretory organ
3. Skin contains large number of sensory receptors in dermis
4. Epidermis gets nutrients and oxygen from blood
5. Levels of bile pigments and carotenes are responsible for skin color

27. Select the correct response about hormones and its functions?

1. Aldosterone – stimulate the excretion of K^+ ions
2. Inhibin – stimulate the secretion of FSH
3. GHRH – stimulate the secretion of GH, TSH from anterior pituitary
4. Prolactin – stimulate the releasing of milk
5. Tymsosin – regulate the innate immunity

28. Which of the following relationship regarding some endocrine disorder in human is **correct**?

1. Hyperthyroidism – insufficient secretion of thyroid hormone
2. Diabetes type 1 – not associated with insulin
3. Diabetes type 2 – periodic insulin injections
4. Blood osmolarity increased – affect the efficiency of hypothalamus
5. Kidney failure – production of RBC will increase

29. Which of the following statement regarding spermatogenesis is **correct**?

1. The stem cells form spermatids by mitotic division
2. The formation of spermatogonigum is done by meiotic division
3. Time taken to produce mature sperm cells from spermatogonia is about 49 days
4. Spermatogenesis occurs in epidymis and seminiferous tubules
5. In male spermatogenesis start from birth and occurs throughout the life

30. In the sliding filament theory, which of the following is stated?

1. During muscle contraction the muscle filaments contract
2. The myosin head is released from the cross bridge, the bound ATP is hydrolyzed and no need of ATP to bind with new actin molecule
3. The myosin moves towards the center of the sarcomere
4. The myosin filaments have actin binding region
5. Myosin is the motor protein that composed of tail region and head

31. In a plant species brown seeds(B) dominant for yellow seeds(b), lateral flowers(A) dominant for apical flowers(a), The dominant alleles for position of flowers situated in a chromosome and the other alleles responsible for recessive character for position is situated in other homologous chromosome. Which is the percentage of the phenotypes after test cross?

	BbAa	Bbaa	bbAa	baaa
1.	50%	00	50%	00
2.	50%	00	00	50%
3.	100%	00	00	00
4.	25%	25%	25%	25%
5.	00	50%	50%	00

32. Which of the following phenotype can be the genotype that we know as soon as it is seen?

1. Widow's peak
2. Attached earlob
3. Dimples on cheek
4. Rolling tongue
5. Straight thumb

33. Some genetic disorders associated with mutation are given below.

- A. Down syndrome
- B. Klinefelter syndrome
- C. Sickled cell anemia
- D. Color blindness
- E. Turner syndrome
- F. Hemophilia

Which of the above disorders can't be seen in females?

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

34. Which of the following statement regarding the roll of Ti -plasmid of Agrobacterioum in the recombinant DNA technology is possible?
1. Gene transmission occurs due to the mutualism between plant and bacterial cell
 2. They carry sequence of centromeres
 3. 'Ori' is present in it
 4. It has T-DNA, which is used to the transformation of genome of interest to plant genome
 5. They carry the genes that has nucleotide sequence which are responsible for inducing galls

35. Some characteristic features of certain eco system in Sri Lanka are as follows:
- i. Periodic fires
 - ii. Sparse canopy
 - iii. Twisted trunks

Which of the above characteristic features can be seen in?

1. Savanna, Tropical moist evergreen forest, Montane Forest
 2. Savanna, Tropical dry mixed evergreen forest, Tropical montane forest
 3. Patana, Tropical thorn scrub, Tropical dry mixed evergreen forest
 4. Savanna, Montane Forest, Tropical dry mixed evergreen forest
 5. Patana, Tropical dry mixed evergreen forest, Mangroves
36. Some global agreements and the subject they are associated with, are given below:
- a. Montreal protocol – ozone depletion
 - b. Marpol convention – transboundary movement of hazardous wastes
 - c. Kyoto protocol – emission of greenhouse gases
 - d. Ramsar convention – conversation of threatened habitats

Which of the above combination are **correct**?

1. a, b only
 2. a, c only
 3. a, d only
 4. a , b & c only
 5. a, c & d only
37. Select the correct response with threatened organisms?
1. Sri Lankan Elephant, Dodo, Blue Magpie
 2. Elephant marbled rock frog, Bengal Tiger
 3. Mahamadu, Jungle Squirrel, Giant African Land snail
 4. Marbled rock frog, Wesak orchid, Giant African Land snail
 5. Giant African Land snail, Giant Panda, Indian fly catcher

38. Some statements about immunization are given below:

- a. Immunization can be carried out against rabbits and polio
- b. Tetanus vaccine consists of non-living micro-organisms
- c. Vaccines are used against various viral diseases
- d. Generally bacterial toxins are used as sub-unit vaccines

Which of the following is **correct**?

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

39. Which of the following microbial species is **not related** to the mineralization in composting?

- 1. *Nitrobacter*
- 2. *Nitrosomonas*
- 3. *Nostoc*
- 4. *Pseudomonas*
- 5. *Azotobacter*

40. Stages of lytic cycle of a bacteriophage are given below;

- a. Penetration
- b. Maturation
- c. Biosynthesis
- d. Release
- e. Attachment

Which of the following arrangement is correct?

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

For each of the following questions 41-50 one or more of the responses is/are correct. Describe which responses is/are correct and then select the correct number.

Direction summary				
1	2	3	4	5
A, B, D are correct	A, C, D are correct	A, B are correct	C, D are correct	Any other response or combination of response are correct

41. Dissolving of solute in pure water

- A. Increase the water potential and decrease solute potential
- B. Decreases water potential and solute potential
- C. Increases solute potential and value becomes negative
- D. Water potential decreases from 0
- E. Movement of water potential will increase with the addition of solute

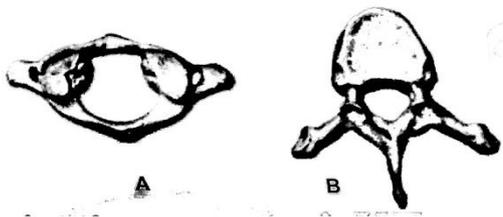
42. Which of the following statement regarding secondary growth is/are **correct**?

- A. Epidermis replaced by cork during secondary growth
- B. All tissues out of the vascular cambium are called bark
- C. In woody plants primary growth and secondary growth occurs simultaneously at the same region
- D. Some initials are elongated found in vascular cambium produce secondary phloem and secondary xylem
- E. Vascular cambium, cork cambium and apical meristem produce new cells and tissues during secondary growth

43. Sympathetic nerves of human autonomic nervous system is/are?

- A. Promotes the relives of urine from bladder
- B. Promotes excretion of gonitallia
- C. Promotes vaginal contraction
- D. Stimulate glucose release from liver
- E. Promotes return of cell maintenance functions

44. The structure of two types of vertebrae are given below



Which of the following statement about A, B is / are **correct**?

- A. A - Cervical vertebra and B - Lumbar vertebra
- B. A has vertebral foranens but B doesn't
- C. B has facets for articulation with the ribs, but A hasn't
- D. B has long transverse process, but A hasn't
- E. Transverse process has articulation in both A and B

45. The function/functions of human saliva is / are,

- A. Helps to mix the food with mucas
- B. Neutralizing acid
- C. Helps to bush bolus into the posterior part of the oral cavity
- D. Protects against bacteria by anti-bacterial substances
- E. Induce peristalsis

46. Which of the following statement regarding non-mendelian inheritance is/are **correct**?

- A. A particular gene has more than two alleles called gene inheritance
- B. Two or more genes are involved in determining a particular phenotype called epistasis
- C. A particular gene affects the production of multiple phenotypes called pleiotropy
- D. Phenotypes that don't appear in mendelian ratio
- E. In male there are equal distribution of genes in their sex chromosomes

47. DNA finger prints of sample from the crime scenes area and given below:

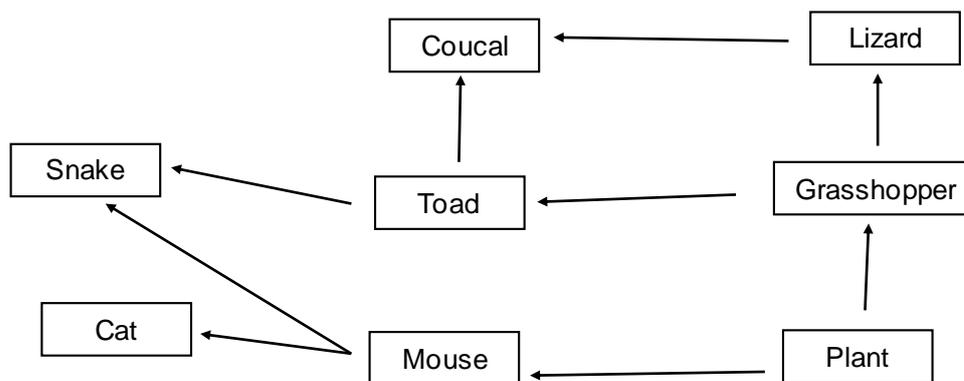
- V – The finger print from victim
- S₁, S₂ – The finger print from suspects
- C₁, C₂ – Finger print obtains from crime scene

V	S ₁	S ₂	C ₁	C ₂
— —	— —	— —	— —	— —
— —	— —	— —	— —	— —
— —	— —	— —	— —	— —
— —	— —	— —	— —	— —
— —	— —	— —	— —	— —

Which of the following statement / statements regarding above finger print diagram is/are **correct**?

- A. The sample of victim is spreaded in the suspected area
- B. Suspect S₁ matches with that crime scene
- C. It is confirmed that the crime is S₂
- D. Two persons are present in the suspected area
- E. DNA finger printing is used in paternity testing and DNA cloning

48. A food web seen in a home garden is given below:



In the above food web, the animals that can be considered in the same trophic level are,

- A. Toad and Snake
- B. Lizard and Cat
- C. Grasshopper and Snake
- D. Snake and Coucal
- E. Cat and Coucal

49. Which of the following statement regarding drinking water treatment process is/are **correct**?

- A. Alum is added to remove suspended matter and microorganism
- B. Ozone is used to kill microorganism
- C. During filtration stage microorganisms are removed by absorption into sand particles
- D. Trickling filter method is used to filter microorganisms
- E. During primary treatment about 90% of organic matter is removed

50. Which of the following statement is/are **correct** regarding food spoilage?

- A. Saccharolytic microorganisms are responsible for rancidity of food
- B. Putrefaction occurs mainly due to breakdown of protein
- C. Lipolytic microorganisms are responsible for fermentation of food
- D. Acids are formed during fermentation
- E. Rancidity occurs due to generation of amines



Provincial Department of Education, Northern Province

Pilot Exam – October 2021

Biology – II



Grade 13 (2021 Batch)

Time :- 3 Hours

Index No :-

Additional Reading Time - 10 Minutes

Use Additional reading time to go through the question paper, select the questions and decide on the questions that you give priority in answering

- This question paper comprises part A and part B. The time allotted for both parts is three hours.
- **Part A (Structured Essay)**
 - Answer all questions in this paper.
 - Answer each question in the given space. Please note that the space provided is sufficient for answer and that extensive answers are not expected.
- **Part B (Essay)**
 - Answer four questions only. Use the papers supplied for this purpose.
 - At the end of the time allotted for this paper, tie the answers to the parts A and B together so that part A is on top and hand them to the supervisor.
 - You are permitted to remove only parts B of the exam paper from the examination hall.

For examiner's use only

Part II	Ques. No	Marks
A	1	
	2	
	3	
	4	
B	5	
	6	
	7	
	8	
	9	
	10	
Total		

Total Marks

Part I	
Part II	
Total (In number)	
Total (In letters)	

Part A (Structured Essay)
Answer all questions in this paper.

1. A.

i. One of the characteristic features of the living organism is growth and development. What is the meaning of growth and development?

ii. What is the property of water that helps as 'water will function as a thermal buffer in living system'?

iii. Give equation for the formation of triglycerol molecule?

iv. Name two proteins which help to the transportation of substances?

Protein

Substance

.....
.....

v. Name the major type of protein molecules found in plasma membrane and state the substance / substances passes through it?

Protein type

Substance

.....
.....

B. i. State two significants of mitosis?

ii. How the enzymatic function is affected by non-competitive inhibitors?

iii. Name an enzyme that involve in the light reaction of photosynthesis?

iv. State 3 environmental conditions that favor to the photorespiration?

v. Name two type of enzymes found in the mesophyll cells of C₄ plants and state two products formed by the activation of this enzymes?

Enzymes	Products formed
.....
.....

C.

i. How many years ago the origin of human species took place in the earth?

ii. Major events took place during the evolution of organisms are given below:

- A. Origin of reptiles
- B. Major radiation of pollinating insects
- C. Dinosaurs become extinct

Using the suitable letters, order the periods, where the above events occurred?

iii. Name the Chordata class which has keratinized structures?

iv. State two significant of the development of fruit in Anthophyta?

v. Complete the following dichotomous key to distinguish the following organisms?

Obelia*, Hookworm, Chiton, Turtles, Centepede, *Ichthyophis

- 1. Exoskeleton present:
- Exoskeleton absent
- 2. Segmented body present
- Segmented body absent
- 3. Antina present
- Antina absent
- 4. Digestive system complete
- Digestive system incomplete
- 5. Tough cuticle present
- Tough cuticle absent

2.

A.

i. Name two cell types specialized from plant epidermis and give the functions of each?

Cell type	Function
.....
.....

ii. Name two types of cells found in ground tissue of the primary structure of dicot stem?

.....

.....

iii. State 2 characteristic features of spring wood and give the beneficiary effects of them for plants?

.....

.....

iv. State the significant of seed dormancy?

.....

.....

v. Write the correct sequence of seed germination process?

.....

.....

B.

i. State the type of cells found in bone tissue and give one function for each of them?

Cell type	function
.....
.....

ii. State the substance of saliva that are involved in following functions?

- a. Aid in taste reception
- b. Prevent tooth decay

iii. State the cell types found in gastric glands of stomach?

.....

.....

iv. Name the parts of brain that are related to the homeostatic control of breathing?

.....

.....

v. State the effect of cigarette smoke in respiratory system?

C.

i. What is blood pressure?

ii. State the respiratory pigment, which is found in hemolymph?

iii. State the events which help to move the lymph?

iv. State the important signaling molecule of the inflammatory response and its function?

Signaling molecule _____

Function _____

v.a) State the reason for autoimmune diseases?

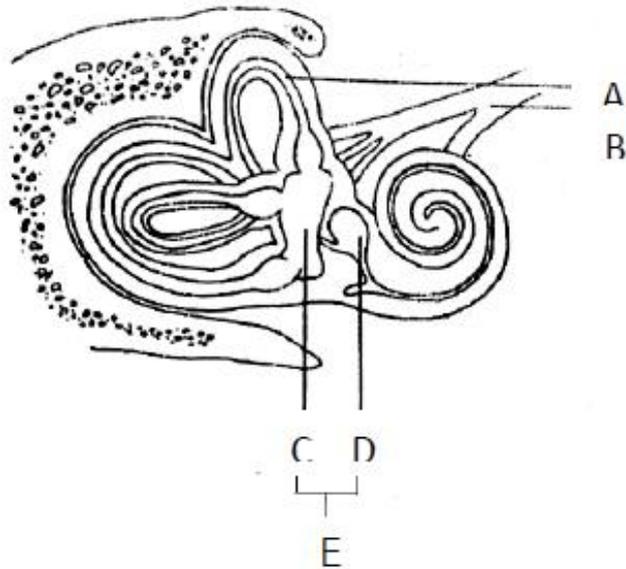
b) Give two autoimmune diseases?

.....

3. A. i. what is ultra-filtration in urine formation?

ii. State the specialization of the capillaries for ultra-filtration?

iii. This question is based on the following diagram?



a. Identify the diagram and name the parts labeled as A, B, C, E, D, E?

A B.....
 C D.....
 E

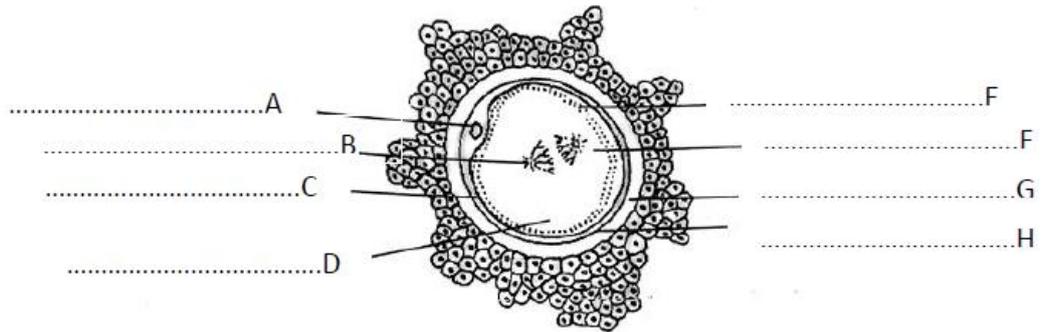
b. Which of the above parts are related to equilibrium and give the type of movement related to them?

Part	Movement
.....
.....

iv. State the part of the brain which is related to the voluntary muscular movement?

v. State the difference between the types of synapses?

B. i. Identify the following diagram and name the parts labeled as A, B, C, D, E, F, G and H ?



ii. State the meiosis stage of the above structure?

.....

iii. What is uterine?

.....

iv. State two functions of chorion membrane which is appeared during fetal development?

.....

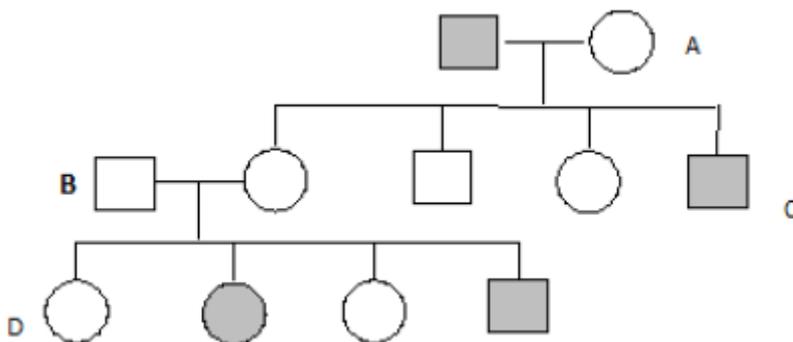
v. State the temporary birth control methods that prevents implantation?

.....

C. i. What is the purpose of carrying out test cross?

.....

ii. The pedigree chart of a human family where some family members show a genetic disorder is given below?



a. State whether the following statement regarding the above inheritance is correct or incorrect?

“The above character is inherited by autosomal dominant manner” ()

b. Using ‘A’ for dominant allele and ‘a’ for the recessive allele, state the possible genotype of each individual labeled as A, B, C and D?

A. _____

B. _____

C. _____

D. _____

iii. In *Drosophila* grey color body (G) dominant to black color body (g), broad abdomen (B) dominant to narrow abdomen (b). These characters are independently assorted during meiosis. When the gray color body, broad abdomen *Drosophila* crossed with grey body, narrow abdomen *Drosophila*. The following results are observed.

Gray body broad abdomen – 28

Black body broad abdomen – 09

Gray body narrow abdomen – 32

Black body narrow abdomen – 11

a. State the genotype of parents?

b. State the percentage of genotype that are similar to parental genotype?

iv. Due to the genetic disorder the excess chlorine secretion is occurred by the affected chlorine channel of plasma membrane.

a. State the name of this disorder?

b. State the reason for this disorder?

v. State the dominant mendelian characteristic feature found in human?

4. A. i. State the main steps to make a recombinant DNA molecule?

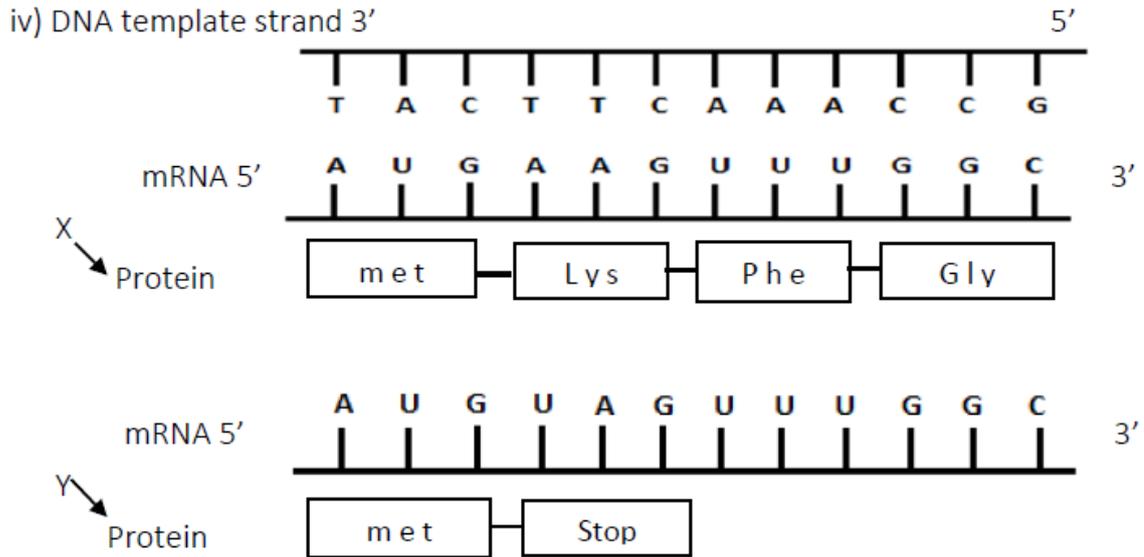
ii. State two methods that are used to insert foreign DNA within the cell?

iii. Briefly describe the terms that are related to polypeptide synthesis?

a. Genetic code

b. Transcription

c. Translation



a. State the type of mutation occurred here?

b. State two features of the polypeptide formed due to the above mutation?

v. State two characteristic features of plasmid that act as a vector in DNA technology?

B. i. What is mean by biome?

ii. a. Write the name of wet zone forest found in Sri Lanka?

b. Name the forest which is found in highest elevation stated in ii. (a) above?

c. Write the name of an endemic animal found in higher annual rainfall forest stated in ii. (a) above?

iii. Name the plant species which is threatened due to over exploitation?

iv. Name 2 plants in Sri Lanka which are declared under Rumsar convention?

v. Name the biodiversity group which includes the following species?

a. Snake head _____

b. Tuntara _____

c. Wesak Orchid _____

C. i. Name a species of microorganism used for the production of each of the following substance?

Yoghurt _____

Citric acid _____

Penicillin _____

ii. Name the disease and mode of transmission which is caused by prions in human?

Disease _____

Mode of transmission _____

iii. Write the name of exotoxins which are produced by pathogenic microorganisms and name the microbial species which are responsible for it?

Exotoxins

Microbial species

iv. a) COVID 19 Corona virus has many spikes on its envelop. Name the component of the spikes present in such virus?

b) Name of vaccines which are used to the viral infection stated in iv. (a) above?

v. Write the suitable sterilization method for sterilizing culture media?

vi. Name the culture media which is used to grow bacteria?



Provincial Department of Education, Northern Province

Pilot Exam – October 2021

Biology



Grade 13 (2021 Batch)

Time :- 3 Hours

Part – B (Essay Questions)

Answer any four questions

5. a. Describe the characteristic features of enzymes?
b. Explain the allosteric regulation of enzyme?

6. a. Describe the radial transport process in plants?
b. Briefly describe the primary structure of dicot root?

7. a. Explain how minerals and water are homostatically regulated in man?
b. Briefly describe the basic characteristic of hydrostatic skeleton of animals?

8. a. Briefly describe the mechanism of external defense in innate immunity?
b. Briefly describe the seminal vesicles of male reproductive system?

9. a. Briefly describe the main steps of isolation of DNA from the cell?
b. Explain the role of microorganism in the main 4 steps of nitrogen cycle with examples?

10. Write short notes on the following?
 - a. Tropical wet low land rain forest
 - b. Prophase 1 of meiosis 1
 - c. International code of binominal nomenclature