

Index No :

Two Hours Only

- ❖ Answer all questions.
- ❖ Write your Index number in the space provided in the answer sheet.
- ❖ When you select the response which you consider to be the best answer to a question mark your response on the answer sheet according to the instructions given in it.

- Which does not a characteristic of a living thing.
 1. Prokaryotic
 2. Anaerobic
 3. Autotrophic
 4. Replicable
 5. Heterotrophs
- What are the properties of water allow it to act as a transport medium?
 1. Surface tension, adhesion.
 2. Cohesion, Adhesion
 3. Only cohesion
 4. Surface tension, cohesion
 5. Adhesion, Surface tension
- Which is not a nature of carbohydrate in followings?
 1. Hemicellulose, Glycogen are linear polysaccharides.
 2. Galactose, Glucose are Aldose type of monosaccharides.
 3. Hydrates of Carbon contain the ratio of H:O which equals to 2:1.
 4. General formula of monosaccharide is $(CH_2O)_n$.
 5. Solid form of fructose is in opened linear chain structure.
- Select the correct statement regarding proteins?
 1. Composed of one or more polypeptide chains.
 2. Secondary structure has three - dimensional shape.
 3. Secondary structure are formed by the formation of bonds between various polypeptide chain.
 4. Keratin is thick and tertiary structured.
 5. Aggregation of two or more polypeptide chains involve in the formation of one functional protein
- Select the incorrect statement from the followings?
 1. Purines are large molecules.
 2. Two hydrogen bonds are found in between adenine and thiamine pyrimidins in DNA
 3. Number of Oxygen atoms used in the formation of RNA ribose suger is one less than that of DNA
 4. In deoxyribose of DNA, one oxygen atom is less than in ribose of RNA.
 5. Phospio di- ester bond is formed in between the prosphat group of one nucleotide and the 3rd carbon next pentos suger of the following nucleotede

6. Select the suitable pair.

A

1. R group of Amino acids.
2. Giving the acidic nature for nucleic acid.
3. Complex irregular structured RNA.
4. Monomer of Chitin.
5. Hydrocarbon tails of phospho lipid.

B

- Act as the Back bone of Amino acids.
Phosphate group.
m-RNA
Galacturonic acid.
Hydrophilic

7. Select the incorrect statement regarding transmission electron microscope?

1. In this microscope, a beam of electrons is passed through a thin, especially prepared slice of material.
2. Specimens are stained with heavy metals.
3. A very thin specimen is used.
4. Image reflects the pattern of electrons passed through the specimen, displays on a screen.
5. Here, the specimen scatter more electrons and absorb others.

8. Those the correct stage of cell cycle where the sister chromatids are separated at the centromere and microtubules attached to kinetochore get shorten to pull sister chromatids towards the opposite poles?

1. Metaphase
2. Telophase
3. Anaphase
4. Prometaphase
5. Prophase

9. Which is the incorrect statements about Tumor cancer and galls?

1. Cancer cells do not respond normally to the body's control mechanism.
2. Cancer cells divide excessively and invade other tissues
3. They do not consider the normal signals that regulate the cell cycle.
4. Cell division is catalyzed by internal factors only.
5. Cell division is driven by chemical and physical factor

10. Choose the correct statement regarding ATP?

1. ATP consisting of Deoxyribose sugar.
2. ATP is produced during the photosynthesis only.
3. ATP is used in the Bioluminescence.
4. ATP is produced in photorespiration.
5. ATP is produced in the pyruvate oxidation of Aerobic respiration from a Glucose molecule.

11. Select the correct statement given below regarding the enzymes?

1. They are being used up during the reaction.
2. They are heat sensitive.
3. Their presence alter the nature or properties of the end products of any reaction.
4. Some enzymes need inorganic factors like NAD, FAD to catalyse the reaction.
5. Toxins are reversible enzymatic inhibitors.

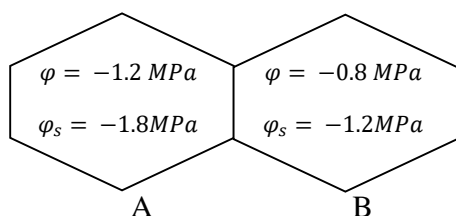
12. Choose the incorrect statement given below regarding the C₄ pathway of photosynthesis?

1. CO₂ acceptor is PEP.
2. OAA is converted to malate and diffuse in mesophyll.
3. CO₂ is converted into bicarbonate by carbonic anhydrous enzyme in mesophylls.
4. CO₂ released to bundle sheath cells increases the efficiency of photosynthesis by increasins the Rubisco concentration.
5. In C₄ Pathway the efficiency of photosynthesis in increased by increas CO₂ conuntration of buntle sheath cells

13. Select the process from followings which is occurred in exterior to the grana of chloroplast
1. Photophosphorylation.
 2. Splitting of water
 3. releasing of ATP
 4. NADPH formation
 5. Formation PGAQ
14. Select the substance which does not related in C₄ photosynthetic pathway?
1. Malate
 2. Phosphoglycerate
 3. Physpno enol pyruvate
 4. Oxalo acetate
 5. Pyruvate
15. Select the incorrect statement regarding Glycolysis?
1. It occur in Aerobic and anaerobic conditions.
 2. NADH will be produced.
 3. It occur in cytosol.
 4. ATP is used.
 5. CO₂ is released.
16. The scientist who suggested that the early oceans were a solution of organic molecules 'Primitive soup' in which life arose is,
1. Stanely miller.
 2. Horald urey
 3. Haldane
 4. A.I.Oparin
 5. Hadian
17. Which one is incorrect in given statement.
1. Oldest fossils of eukaryotic cells appeared in proterozoic eon.
 2. Analysis of DNA showsthat sea sponges were eveolved 700 million years ago in Proterozoic eon
 3. Many present day animal phyla appeared in the early Cambrian of mesozic era.
 4. The oldest fossils of protists similar to red Algae.
 5. Concentration of atmospheric oxygen begins to increase in archaean eon.
18. Animal group which has closed relationship with chordates and with domain included chordates.
1. Mollusca , Archaea
 2. Arthropoda, Bacteria
 3. Echinodormata, Archaea
 4. Arthropoda, archaea
 5. Echinodormata , Bacteria
19. Which is not a common character of Euglena Paramecium of protista.
1. Unicellular
 2. Pellicle present
 3. Contractile vacuole present
 4. Lack cell wall
 5. Oral groove present
20. Protista differ from Bacteria.
1. presence of unbranched membrane lipids
 2. Have one type of polymerase.
 3. Have autotrophs and hetero trophs.
 4. Form colonies.
 5. Protein synthesis initiated from methionine.
21. Which is the correct statement regarding characterstic features of Kingdom Fungi.
1. Cell walls are made up of chitin, a strong rigid polysaccharide.
 2. Live as decomposers, parasites, mutualists of autotrophs.
 3. Produce spores only a sexual reproduction.
 4. Hyphae with septa are known as coenocytic hyphae.
 5. Branched hypae produce mycella which adapted for absorption of nutrition.
22. Example for the following features.
- A. heterospores
 - B. Comparatively small
 - C. grow parallel to the ground
1. *Lycopodium*
 2. *Pogonatum*
 3. *Anthoceros*
 4. *Selaginella*
 5. *Nephrolepis*

23. Seed plants are dominant producers in the terrestrial environment, which is the main adaptation for this.
1. Posses two types of vascular tissues xylem and phloem.
 2. Have a waxy, water impermeable cuticle to avoid water loss.
 3. Have parts as roots, stem and leaves.
 4. Formation of seeds.
 5. The wall of the pollengrain is made up of a polysaccharide a sporopollenin.
24. In plants with fibrous root system.
1. Perianth present in flowers with distinct calyx and corella.
 2. Flowers are trimerous or tetramerous.
 3. Cucurbita family is included.
 4. Have Cambia.
 5. Vascular bundle in the stem is scattered.
25. Which one of the following feature is found in Animals with a cylindrical body. Covered with a tough cuticle, ungoes ecdysis, and sensory papillae are found on the anterior end of the body.
1. Pseudo Coelom.
 2. Blunt ends.
 3. Clear cephalization.
 4. Segmented body.
 5. Have a circulatory system.
26. Which of the following is the correct statement about the class belong to sharks.
1. Swin bladder is formed.
 2. Body is covered with plawid Scales.
 3. Mullets also belong to this group.
 4. Gills are covered by Operculum.
 5. Possess cartilaginous operculum.
27. Which one of the following statement is false regarding collencym cells.
1. Living cells.
 2. Retain the ability to divide.
 3. Walls are unevenly thickened.
 4. Give mechanical strength.
 5. Do not found intercellular space
28. Which one of the following cells do not found in the primary roots of plants.
1. Meristematic cells.
 2. Collenchyma Cells.
 3. Storage Paranchyma cells.
 4. Subaritized cells walls.
 5. Lignitied cells walls.
29. Select the correct statement.
1. Epidermis protects the internal structures only
 2. Endodermis contains inter cellular spaces.
 3. Pericycle contain a single layer.
 4. In coconut root, pericyclic cells have meristematic function.
 5. Epidermis is a permanant tissue.
30. Which oft he following factors do not stimulate closing of stomata.
1. High temperature
 2. Low atmospheric humidity
 3. Light
 4. Absciscic Acid (ABA)
 5. High CO₂ concentration in sub stomatal cavity.
31. Select the false statement.
1. Less number of stomata are found in upper epidermis than the lower epidermis in all plants.
 2. Stomata can be observed in stems too.
 3. Gaurd cells have small vacuoles.
 4. Cellulose micro fibrils are found around guard cells.
 5. Outer cellulose walls of gaurd cells are very thin.

32. A and B are two adjacent cells. Their φ , φ_s values are shown in the figure. Which one of the following statement is false about the cells A and B.



1. Water flows from B to A.
 2. Water moves until water potential of both plants become equal.
 3. At equilibrium pressure potential of cell A is 0.8 Mpa.
 4. At equilibrium pressure potential of cell B is 0.4Mpa.
 5. Water potential values and solute potential values of plants are always expressed as negative values
33. Which one of the following statement is false regarding the plants which are adapted to absorb maximum sunlight.
1. Secondary growth of woody plants help to capture maximum sunlight.
 2. Phyllotaxy helps plants to capture maximum light
 3. Largest leaves are found in plants growing in rain forest.
 4. Pin shaped leaves are found in plant species dry or very cold environments.
 5. Some plants have horizontally oriented leaves.
34. Select the correct statement regarding responses of plants to different stimuli.
1. Photochromic photoreceptors stimulate the opening of stomata.
 2. At high concentration of Auxin, as result of stimulation of root cell elongation, roots display positive geotropism.
 3. Some of the thigmonastic responses are reversible.
 4. Exposure to direct sunlight stimulates horizontal growth in plants.
 5. Responses by plants due to mechanical stimuli is called photo morphogenesis.
35. Select the correct statement regarding anatomy of cross sections of typical monocot and dicot leaves.
1. In both leaves sclerenchyma are present on top and bottom of veins.
 2. Both leaves have different types of mesophyll tissues.
 3. In dicot leaves cambium is present between xylem and phloem.
 4. In monocot leaves stomata are mainly found in the upper epidermis.
 5. A bundle sheath layer is present around the vascular bundles only in dicot leaves.
36. Which one of the following do not grow from the zygote of angiosperm.
1. Endosperms
 2. Seedling
 3. radical
 4. Seed leaf
 5. Plumule
37. Which of the following is a contrast between modes of nutrition in plants and example.
1. Semi parasitic - *Loranthus* and host plant.
 2. Commensalism - Epiphytic orchids
 3. Autotrophic nutrition - *Drosera*
 4. Mutualism - Legume root nodules with nitrogen fixing bacteria.
 5. Carnivorous plant - *Cuscuta*
38. Some special features of vascular plants given below.

- A - Two types of spores.
 B - Sporophytes are dioecious
 C - Pollen tubes release the sperms towards external environment.
 Which of the above feature / features can be seen in cycas and not in *Selaginella*.

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

39. Select the correct statement / statements regarding *Nephrolepis*.
 1. Spore mother cell undergoes meiosis to form microspores and megaspores.
 2. Gametophyte is unisexual.
 3. Fusing of gametes occurs in external water.
 4. Sporophyte is differentiated into roots, stem and leaves.
 5. Sporophyte is monoecious.

40. Which of the following characteristic can be seen only in seed plants?
 1. Heterospores 2. Internal fertilization 3. Pollen grains
 4. Vascular tissues 5. Gametophytes are dioecious.

- Use the following instructions to answer the questions 41 through 50.

Only A,B,D correct	1
Only ACD correct	2
Only AB correct	3
Only CD correct	4
Any other answer/combination of answers correct	5

41. Select the correct statement or statements.
 A. Respiratory quotient (RQ) of lipid is 0.7.
 B. Final hydrogen acceptor in ethyl alcohol fermentation is acetaldehyde.
 C. Yeast is the most common organism which carries out Lactic acid fermentation.
 D. Pyruvate molecules cannot be further broken down in the absence of molecular oxygen.
 E. Glucose molecule is broken down into two pyruvate molecules in the process of glycolysis which occurs in the matrix of mitochondria.
42. Select the correct statement / statements of following.
 A. Only non living objects can be observed through electron microscope.
 B. Resolution power of light microscope is 0.2 mm.
 C. Image is directly detected by naked eye through electron microscope.
 D. Specimens stained with heavy metals in light microscope.
 E. Actual colour cannot be observed by electron microscope.
43. The direct impact or impacts which occur due to cohesive behaviour of water.
 A. Act as a transport medium.
 B. Act as a habitat of small insects like water skaters.
 C. Occurs transpiration.
 D. Prevents from temperature.
 E. Act as a good solvent.
44. Which is / are given to positive results for 'Benedict Experiment'
 A. Lactose B. Glucose C. Sucrose D. Maltose E. Ribose
- 45) Which of the following contrasts / are incorrect regarding *Anabaena* & *Methanococcus*.

- A. Both have prokaryotic cellular organization.
 - B. Both consist circular DNA.
 - C. The cell wall component of both is peptidoglycan.
 - D. Methionine is the initial starter of protein synthesis.
 - E. Both consist RNA polymerase.
- 46) Select the correct statement / statements regarding kingdom Animalia.
- A. Unicellular organisms which are belong to kingdom Animalia are heterotrophs.
 - B. Do not take part in sexual reproduction.
 - C. They are Eukaryotic hetetrophes.
 - D. Cells converted into tissues.
 - E. Mostly they are radial symmetry.
47. Which is / are incorrect statements about structure of Monocot stem.
- A. Cortex and pith are well differentiated.
 - B. Vascular bundles are arranged in several rings.
 - C. No cambium in vascular, bundle.
 - D. Pits are formed by destroying the primary xylem in vascular bundle.
 - E. Each vascular bundle is cells surrounded by sclerenchyma.
48. Select the correct statement / statements about phloem transport.
- A. Pholem translocation is unidirectional.
 - B. Pholem sap always the from sugar source to sugar sink.
 - C. Main organic substane that translocated through the pholem is starch.
 - D. In many plants pholem loading occurs against to the concentration gradient.
 - E. Inorganic ions are not translocated through pholem.
49. Cell / cells in pholem tissue.
- A. Sieve - tube element
 - B. Pholem parenchyma
 - C. Tracheids
 - D. Companion cell
 - E. Sieve Cell
50. Molybdenum deficiency symptoms
- A. Death of leaf tips.
 - B. Poorly developed roots, excessively and branched
 - C. Death of root tips.
 - D. Chlorosis in older leaves.
 - E. Death of Meristems.

Index No :

Two Hours Only

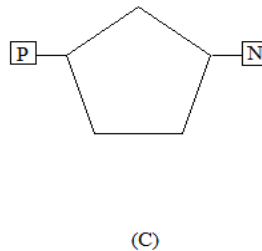
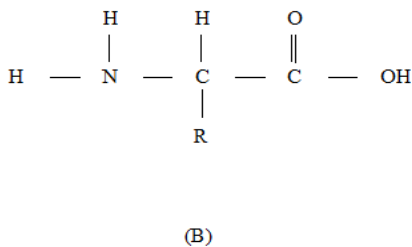
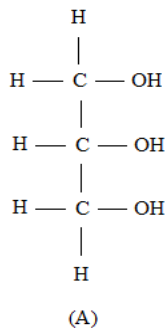
Part A - Structured Essay. Answer all questions on the paper itself.

Part B - Essay, Answer Two questions only. Give clearly labeled diagrams where necessary.

01. A) i). a - What is catabolism ?

b - Give an example for catabolism?

ii) What is mean by growth?



Give main organic compounds of above mentioned A, B, C structures.

A.

B.

C.

iv) State the bonds in above Organic Compounds?

A.

B.

C.

v) Which is not considered as a macromolecule in above biomolecules.

vi) Briefly explain an experiment in laboratory to identify the biomolecule that you stated in A.

.....
.....
.....

B) i) What is cell junction?

.....
.....

ii) State the cell junctions in animal cells.

.....
.....

iii) Give a function of each above cellular junctions.

.....
.....
.....

iv) Write three types of cellular components in the cytoskeleton and state a function of each

.....
.....
.....

C) i) a) What is meant by enzyme?

.....
.....

b) Write two factors that affect the rate of enzymatic reaction.

.....
.....

ii) State the enzymes and their functionary cells that catalyze the carbon fixation in C_4 plants.

Enzyme

Types

.....
.....

iii) When increase the concentration of O_2 in leaf mesophyll. cell, how it affects the rate of photosynthesis of C_3 Plants.

.....
.....
.....

iv) PEP carboxylase enzyme is much more efficient than the enzyme of RUBP carboxylase enzyme give two reasons for that

.....
.....
.....

- 2) A) i) Write 05 incidence that favoured the synthesis of organic molecules essential for the origin of life with the earth's reducing atmosphere.

.....

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- ii) Some biological phenomenon are given below, write their ages in billion years ago.

Phenomenon	Age - Billion years ago
Earth and other planets of the solar system were formed.
Life on early earth.
Origin of the first photosynthetic organism
Age of fossils of the oldest Protista

- iii) State the eon and era of the first seed plant appeared.

.....

- iv) The first colonized animal phylum on land.

.....

- v) What is protocell.

.....

- B) i) Though the kingdom plantae evolve from chlorophyte lack key traits of land plants. State those traits.

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- ii) Write two major groups of vascular plant.

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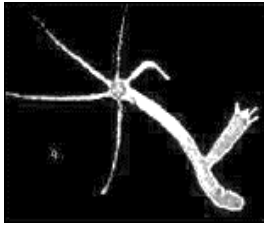
- iii) Some in organisms are given below. Write the correct letter of suitable organism against the given characteristics.

A. Rose	B. <i>Agaricus</i>	C. Sand dollar
D. <i>Ulva</i>	E. <i>Nephrolepis</i>	F. <i>Pogonatum</i>
G. Grass	H. <i>Aspergillus</i>	I. Rag worm
J. <i>Gnetum</i>	K. <i>Sargassum</i>	L. <i>Planeria</i>

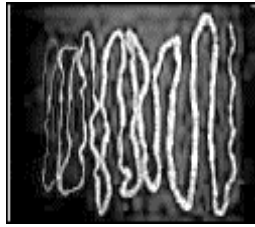
- a) Macroscopic, Green colour, Multicellular thallus differentiated in to leaf like blades and root like hold fast.
- b) In kingdom plantae, gametophyte is dominant stage of the life cycle
- c) Bisexual gametophyte
- d) Gymnosperm, which has xylem vessels.

- e) Pollen grains with three opening
- f) Vascular bundles in the stem without cambium.
- g) Dikaryotic mycelium is the dominant stage of life cycle.
- h) Ascospores are produced within asci.
- i) Organism which belong to phylum, which have no terrestrial animal.
- j) First appearance of the little complex nervous and sensory system.
- k) Coelom is present for the first time and first animals to show cephalization.
- l) Multicellular, thallus is supported by gas filled bulb shape floats.

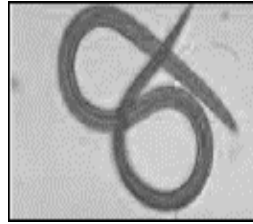
C) Question i-iii is based on following diagrams.



A



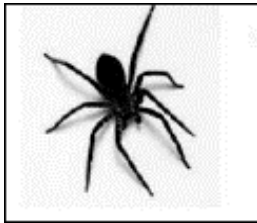
B



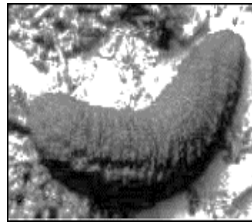
C



D



E



F

i) Identify the organisms in A- F and write their phylum.

	Name	phylum
a.
b.
c.
d.
e.
f.

ii) Write three characteristics features of the kingdom, above organism are included.

.....

.....

.....

iii) Write the letter of suitable animal from the diagram for given features.

- a - Body is divided in to three parts, Muscular foot, visceral mass and mantle.
- b - Book lungs as respiratory structures.
- c - Have a simple gastrovascular cavity with a single with single opening.

iv) a. What is water vascular system?

.....

.....

b. Give an use of water vascular system.

.....
.....

03) A) i). What is meristem.

.....
.....

ii) State two functional charatertics of meristem.

.....
.....

iii) Write two difference between shoot apex and root apex.

.....
.....

iv) a. Write two types of specialized cells found in epidermis.

.....
.....

b. Give a function of each cell that you mentioned in (iv) a.

.....
.....

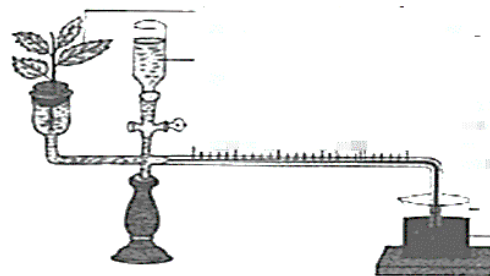
v) Write three characteristic of sclerenchyma.

.....
.....

vi) Give the function of collenchyma.

.....
.....

B) Following diagram shows an instrument use in the laboratory to determine the rate of transpiration.



i) Name the above instrument.

.....
.....

ii) How do you set the above instrument to determine the rate of transpiration.

.....
.....
.....
.....
.....

iii) Write three important steps you should consider when you handling this apparatus

.....
.....

.....

iv) What is the assumption used when determining the rate of transpiration.

.....

v) Show stafe the way that you follow to show the following occasions by using the above instruments.

1) Affect of wind speed in rate of transpiration.

2) Affect of humidity in rate of transpiration.

.....

.....

.....

C) i) State two structural characteristic features of sieve - tube element for phloem transport.

.....

ii) How Vascular bundle of dicotyledonous plant stem differ from vascular bundle of monocotyledonous.

.....

iii) Give two characteristic features of mesophyll in dicot leaves.

.....

iv) Draw labelled diagram of T.S of primary structure dicototyledonouns plant stem.

.....

v) What is meant by bark

.....

4. A) i) Write the rates transport mechanism in plant.

.....

ii) Write the factors that affect water potential.

.....

iii) What is the measuring unit of the radial transport of plant.

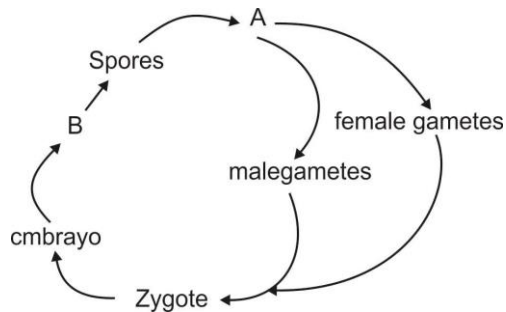
iv) Name three routes used in the radial transport of plant.

.....

v) Give a difference between epidermis and endodermis of root.

.....

B) A common life cycle of terrestrial plant is given.



i) a) Name A and B.

A B

b) Name a plant where A is independent and dominant.

.....

c) Name a plant where A is monoecious and dependent.

.....

ii) Indicate the stage of meiosis with letter 'X' in above life cycle.

iii) a. *Pogonatum* b. *Nephrolepis* c. *Selaginella* d. *Cycas* e. *Cocos*

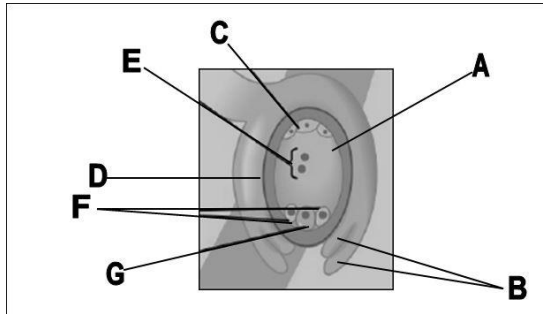
A list of important characteristic of above plant are given below. Select the plant / plants that show / shows the character tic.

- a. Mega spores released to the external environment.
- b. Presence of fiddle head.
- c. Seed surrounded by fruit.
- d. Xylem tissue without vessel.
- e. Spores produced inside the capsule.

iv) Give two features those found in *selaginella* not in *Nephrolepis*.

.....

C)



i) Identify the above diagram.

ii) Name the following parts (a-H) of the above diagram.

- a)
- b)
- c)
- d)
- e)
- f)
- g)

iii) Write 3 differences between the above structure and the similar structure in *cycas*.

.....

iv) Name the structure of following parts after fertilization .

- B
- E
- F

Second Term Test – 2020
Biology – Grade 12 Part II
Part B (Essay)

❖ **Answer Four questions only.**

- 05).
 - a. Explain the basic characteristic and structure of proteins.
 - b. Explain the functions of proteins with examples.
- 06). Describe the important characteristic features of seedless vascular plants.
- 07).
 - a. Briefly explain the primary structure of dicot root.
 - b. Describe the radial transportation of water and minerals in plants.
- 08).
 - a. What is stomata.
 - b. Explain the stomatal structure in dicot leaf.
 - c. Explain the stomatal opening and closing mechanism.
- 09).
 - a. Briefly explain the two methods pollination of Anththophyta.
 - b. Explain the fertilization process of Anththophyta.
 - c. Explain the differences between parthenogenesis and parthenocarpy with suitable examples.
- 10). Short notes on the following.
 - a. Allosteric regulations of enzymes.
 - b. Characteristic features of kingdom fungi.
 - c. Adaptations of plant leaves in capturing sunlight.



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