

Final Term Test – 2021 A/L

Grade 13

Biology I

Time: 2 hours

◆ Instructions:

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

1. Incorrect about polysaccharide

- 1) Pectin is formed by galacturonic acids
- 2) Chitin is a nitrogen containing polysaccharide
- 3) Amylopectin is a branched polysaccharide
- 4) Glucosamine is the monomer unit of hemicellulose
- 5) Inulin stores fructose as an energy source

2. Correct about cell junctions

- 1) Connects the cytoplasm of adjacent cells
- 2) Tight junctions are found between muscle cells
- 3) Gap junctions consists of special membrane proteins that surround the pore
- 4) Desmosomes connect the plasma membranes of adjacent cells tightly bound by specific proteins
- 5) Anchor junctions mechanically attach the cytoskeletons of adjoining cells by microtubules

3. Select the phase of cell division in *Tradescantia* pollen sac with following features

- Chromosomes are attached with microtubules via centromeres
 - Chromosomes are arranged on the metaphase plate
 - Nucleus and nuclear envelope not appeared
- 1) Metaphase of mitosis
 - 2) Metaphase I of meiosis
 - 3) Anaphase of mitosis
 - 4) Metaphase II of meiosis
 - 5) Anaphase II of meiosis

4. Cancer cell differ from a normal cell

- 1) It continuously dividing
- 2) It needs growth factors to continue the cell cycle
- 3) Cancer cells have signals that regulate the cell cycle
- 4) It has no ability to DNA replication
- 5) It has an abnormal cell cycle control system

5. Incorrect about light reaction of Anthophyta

- 1) Splitting of water happens near the PS II
- 2) NADP⁺ oxidation happens near PS II catalyzing with NADP⁺ reductase
- 3) Electrons flow via electron carrier series
- 4) Some carotenoids do photoprotection
- 5) chlorophylls absorb violet, blue and red light

6. Incorrect about ethyl alcohol fermentation

- 1) One glucose produces 2 ethanol molecules and 2 ATP
- 2) Acetaldehyde reduced into ethanol using NADH
- 3) Final hydrogen acceptor is acetaldehyde
- 4) Most bacteria do this
- 5) 1 CO₂ molecule is released when one pyruvate is converted into one acetaldehyde

7. Incorrect about enzymatic reaction

- 1) Enzyme binds with substrate and form a complex
- 2) Shape of the enzyme determines its specificity
- 3) enzymes are not rigid structures, the interactions between substrate and active site may slightly change the shape of the active site
- 4) The tight fit not only brings the substrate molecules and the active site close to each other, but also ensures the correct orientation of the molecules
- 5) Catalytic action of the enzyme takes place when enzyme collide with substrate

8. Which has no relationship

- 1) Earth worm-parapodia-nutrition
- 2) Squid -muscular foot-locomotion
- 3) Shrimp - gills- respiration
- 4) Sand dollar-tube feet-locomotion
- 5) *Planaria*- cilia-locomotion

9. Select the correct answer with following characters respectively

- a) Conidia form at the end of conidiophore
 - b) Endogenous asexual spores
 - c) Flagellated zoospores
 - d) Mycelium coenocytic and aseptate
- 1) *Aspergillus, Rhizopus, Chytridium, Agaricus*
 - 2) *Penicillium, Mucor, Allomyces, Aspergillus*
 - 3) *Mucor, Aspergillus, Chytridium, Rhizopus*
 - 4) *Aspergillus, Allomyces, Chytridium, Rhizopus*
 - 5) *Penicillium, Rhizopus, Allomyces, Mucor*

10. Incorrect about Protista

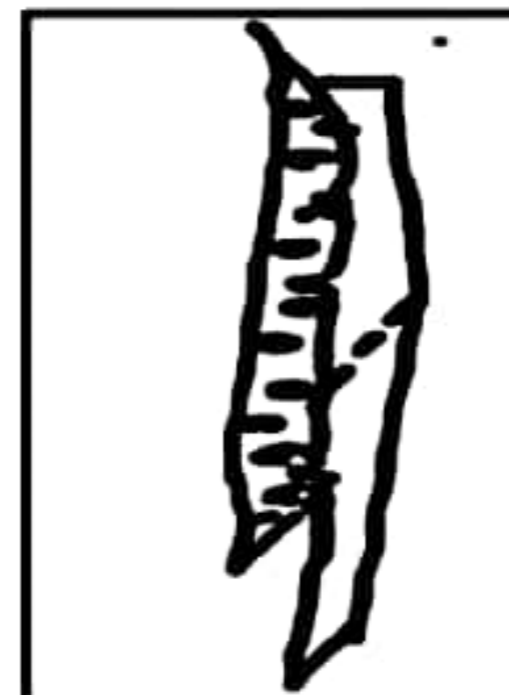
- 1) *Euglena, Paramecium and Amoeba* have pellicle
- 2) *Ulva* marine form
- 3) *Sargassum and Gelidium* have holdfast
- 4) Diatom has silica in cell wall
- 5) Mixotrophs present

11. Not a character of seedless vascular plants

- 1) Variations in spores
- 2) Evolution of leaves and roots
- 3) Transportation by xylem and phloem
- 4) Gametophyte totally present inside the sporophyte
- 5) Xylem with tracheids, fibers and parenchyma

12. Incorrect about following plant cell type

- 1) Found in all vascular plants
- 2) Water transport from cell to cell via pits
- 3) Lignified
- 4) Thin wall present
- 5) Tapering ends present

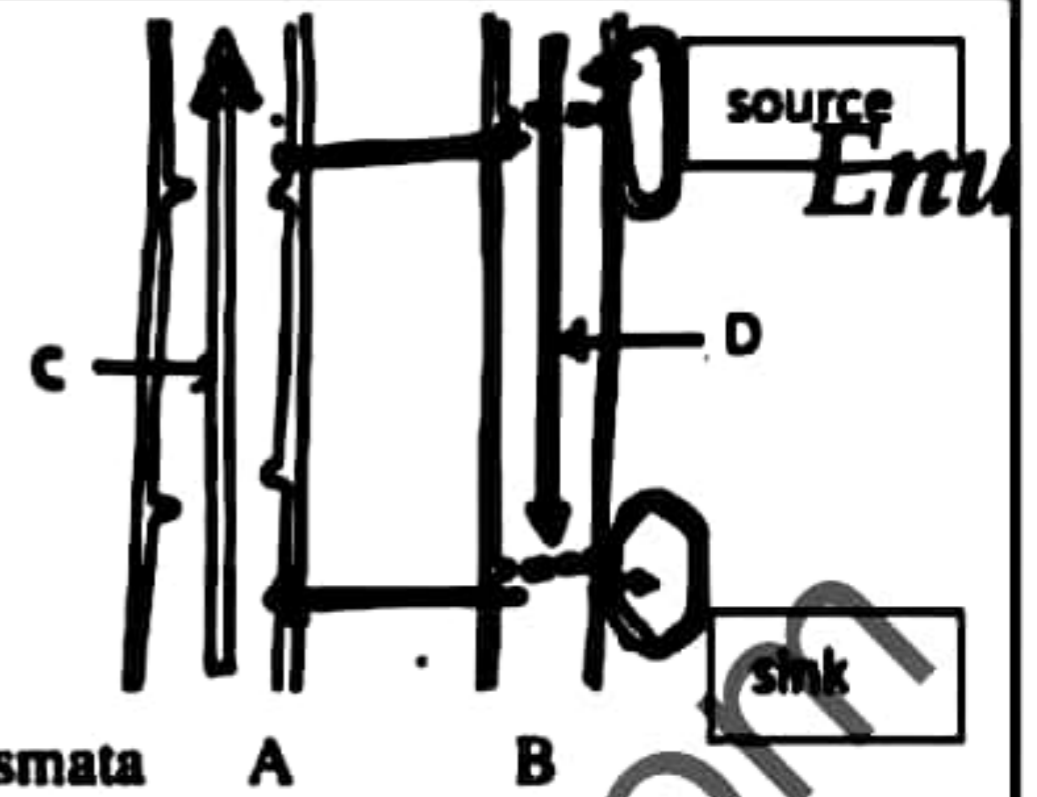


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- 1) Bark consists of secondary phloem and periderm
- 2) A cell layer inside the pericycle forms the cork cambium in dicot root
- 3) Short initials of vascular cambium form the vascular rays
- 4) Heart wood is darker than sap wood
- 5) All Gymnosperms have secondary growth

14. Correct about following transportation mechanism in plants

- 1) Water potential is increased in B near the source
- 2) C is happened due to positive pressure and D is carried due to negative pressure
- 3) Always sugar concentration in sink is lower than the sugar concentration in B
- 4) In some species, sucrose moves from mesophyll cells to companion cells via symplast, passing through plasmodesmata
- 5) Water move from A to B by osmosis at the sink



15. *Cycas* is differed from *Selaginella* due to

- 1) Having heterospory
- 2) Producing large amount of microspores in microsporangia
- 3) Having archegonia in female gametophyte
- 4) Having motile sperms
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16. Incorrect about plant photoreceptors

- 1) Blue light photoreceptors- light induced opening of stomata
- 2) Phytochrome-seed germination
- 3) Blue light photoreceptors- light induced slowing of radicle elongation that occurs when a seedling breaks ground
- 4) Phytochrome -Shade Avoidance
- 5) Phototropism- blue light photoreceptor

17. Correct statement

- 1) At night low root pressure is occurred due to high humidity
- 2) During day time transpiration and guttation are happened
- 3) At low concentration of auxin, cell elongation is inhibited in roots
- 4) *Mimosa pudica* shows thigmonasty
- 5) Abscisic acid and cytokinin have same effect on leaf senescence

18. Correct about excretion

- 1) salt glands are present in marine birds
- 2) NH_3 is converted into uric acid in kidney
- 3) Blind ended tubules are opened to the alimentary canal in Mollusca
- 4) Only in some classes of chordata NH_3 is the first nitrogen containing excretory product
- 5) Nematode has excretory system with complex tubules

19. Select the correct order of parents having A, B, AB and O children respectively

P couple – A and B

Q couple – O and O

R couple- AB and O

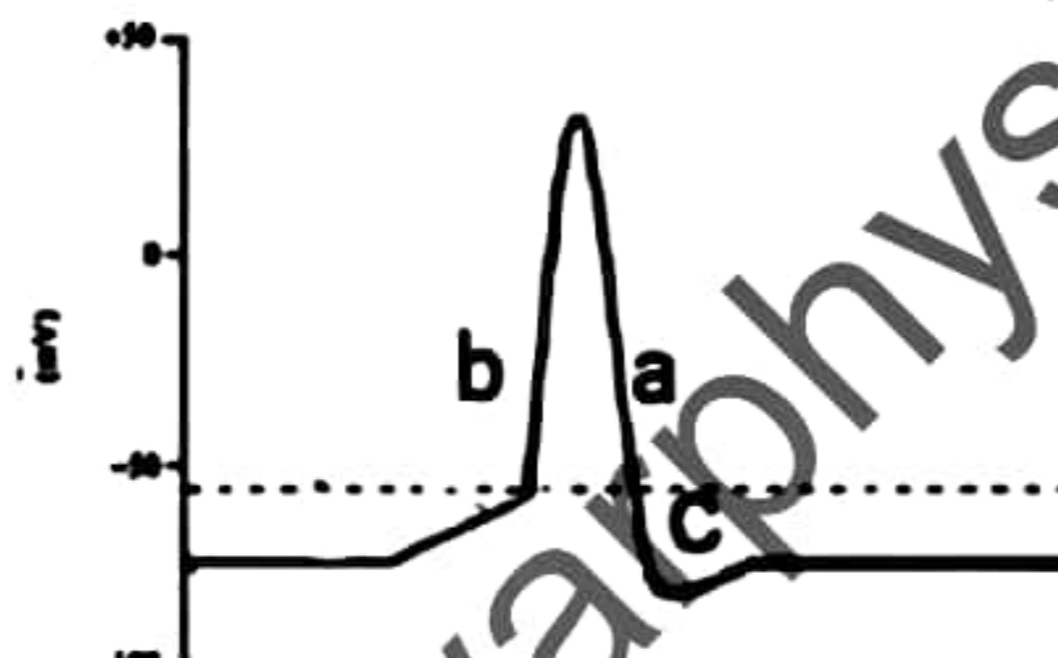
S couple- B and B

- 1) P, Q, R, S
- 2) P, Q, S, R
- 3) R, P, S, P
- 4) R, S, Q, P
- 5) R, S, P, Q

20. Incorrect about vibration receptors

- 1) Sound vibrations are detected by organ of corti in inner ear
- 2) Intensity of sound is detected by semicircular canals
- 3) Meissners corpuscles and paccinian corpuscles are vibration receptors
- 4) Vestibule of inner ear contribute to maintain balance
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21. Correct about the graph of action potential



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- 2) During b phase Na^+ outflow is prevented due to opening of Na channels
- 3) During c phase further closing of Na channels
- 4) K^+ influx happens due to opening of K channels in b phase
- 5) As a result of c more negative charge is occurred inside the membrane

22. Correct about spermatogenesis

- 1) GnRH reduces the speed of spermatogenesis
- 2) Sertoli cells secrete inhibin when spermatogenesis slows down
- 3) FSH stimulates the leydig cells to secrete testosterone
- 4) Testosterone promotes spermatogenesis
- 5) High testosterone stimulates the GnRH secretion

23. Incorrect relationship

- 1) hip joint can be extended, flexed, abducted, adducted, rotated and circumducted
- 2) elbow joint- extension, flexion, adduction, abduction
- 3) shoulder joint- flexion, extension, adduction, abduction, rotation and circumduction
- 4) wrist joint- pronation and supination
- 5) Fingers may be flexed extended, adducted, abducted

24. Correct order of steps in inspiration

- a) Reduce the pressure in lungs
 - b) Parietal and visceral pleura slide pass each other
 - c) Increases the volume of thoracic cavity
 - d) Contraction of intercostal and diaphragm muscles
 - e) Air flows into the lungs
- 1) a, b, d, e, c
 - 2) d, c, a, b, e
 - 3) d, b, c, a, e
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 - 5) b, d, c, e, a

25. Incorrect about lymphatic system

- 1) Composition of lymph is same with the interstitial fluid
- 2) Valves are present in lymph vessels
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26. A circumstances that Mendelian second law can be applied according to current knowledge

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- 3) Genes on one chromosome far from each other
- 4) For the plants without contrasting characters
- 5) For the polyallelism condition

27. Number of plants with RRbbtt genotype among 160 plants from a cross between

RRBBTt x Rrbbtt.

Dominant allele for red – R

Recessive allele for white-r

Dominant allele for brown seeds -B

Recessive allele for black seeds -b

Dominant allele for tall plant -T

Recessive allele for short plant -t

- 1) 16
- 2) 20
- 3) 40
- 4) 80
- 5) 120

28. Incorrect about test cross

- 1) Used to find out the unknown genotype
- 2) Is a random breeding process
- 3) Test with an organism who is belongs to same species of the organism with unknown genotype
- 4) Should cross with an organism with recessive trait for same character
- 5) In dihybrid test cross, find the genotype of the organism who has 2 dominant traits

29. Incorrect about non Mendelian crosses

- 1) Polyallelism refers to the presence of multiple alleles for a single genetic locus
- 2) Dominant epistasis F_2 ratio is 13 :3
- 3) a cumulative expression of two or more genes is called polygenic inheritance.
- 4) Under Pleiotropy, Cystic fibrosis and schizophrenia can be taken
- 5) In gene linkage recombinant progeny is formed in low frequency

30. Not a character of polyploidy

- 1) "gigas" effect can be seen
- 2) polyploids can be used as a bridge for gene transferring between
- 3) It promotes a "buffering" effect in which the deleterious alleles are masked by the extra copies of wild-type alleles
- 4) the genome doubling in a newly formed sterile hybrid allows the restoration of its fertility
- 5) reduced genetic fitness in a given population as a result of inbreeding depression

31. Incorrect about translation process of protein synthesis

- 1) The first step in initiation is binding of small subunit of ribosome to mRNA
- 2) small subunit of ribosome, mRNA and initiator tRNA, is together forms the translation initiation complex
- 3) The mRNA moves until the AUG start codon, aligns with the P site of the large subunit.
- 4) The anticodon of the initiator tRNA forms hydrogen bonds with AUG start codon
- 5) GTP is needed to initiate the translation

32. Incorrect about selective degradation of protein

- 1) selective degradation of proteins is an essential mechanism in regulation of cellular activities
- 2) Certain proteins are degraded in response to specific signals
- 3) Regulatory proteins, may remain for a longer period.
- 4) The structural proteins may remain for a longer period
- 5) Faulty or damaged proteins are recognized and rapidly degraded

33. Correct about human genetic disorders

- 1) Colour blindness and downs syndrome – polyploidy
- 2) Sickle cell anemia and haemophilia – sex linked characters
- 3) Schizophrenia and depression – epigenetics
- 4) Sickle cell anemia and cystic fibrosis-Pleiotropy
- 5) Alzheimer's disease and turner syndrome-chromosomal mutations

34. An essential feature of eukaryotic recombinant vector

- 1) Ori site
- 2) yeast artificial chromosomes
- 3) multiple cloning site
- 4) antibiotic resistant genes
- 5) probe

35. Incorrect about ecological niche

- 1) The role of organism in the ecosystem
- 2) how the organism passes that energy through the ecosystem
- 3) its role in recycling nutrients.
- 4) the physical area where a species lives
- 5) tolerance to environment conditions such as temperature, soil moisture.

36. Correct order of biomes with given characters respectively

Fire resistant roots, Presence of spines and toxins in leaves, scattered trees in a tall grass cover, Abundant epiphytes, The dominant trees are mostly deciduous

- 1) Northern coniferous forest, Chaparral, Savanna, Tundra, grassland
- 2) Desert, Chaparral, Savanna, tundra, Tropical rain forest
- 3) Northern coniferous forest, Chaparral, Desert, Savanna, Tundra
- 4) Chaparral, Desert, temperate grassland, rain forest, coniferous forest
- 5) Chaparral, Desert, Savanna, Tropical rain forest, temperate broad leaf forest

37. Correct relationship

- 1) Tropical rain forest- *Callophyllum walker*, *Vateria copallifera*
- 2) Dry monsoon forests- *Drypetes sepiaraia*, *Diospyros ebenum*
- 3) Savanna- *Terminalia chebula*, *Dichrostachys cineria*
- 4) Patana- *Chrysopogon*, *Manilkara hexandra*
- 5) Salt marshes- *Halodule* , *Rhizophora*

38. Correct statements

- 1) Ramsar Convention- ensure that international trade of specimens
- 2) Kyoto Protocol- Prevention of Pollution from Ships
- 3) Basel Convention- Control of trans boundary movements of hazardous wastes
- 4) CITES- Protocol on Substances that Deplete the Ozone Layer
- 5) MARPOL-wetland conservation

39. Incorrect about immunization vaccines

- 1) Subunit vaccines contain the antigenic fragments
- 2) Often, booster immunization is not required for live attenuated vaccines
- 3) Inactivated and subunit vaccines need booster doses
- 4) Diphtheria and tetanus are inactivated vaccines
- 5) Subunit vaccines are formed by genetic engineering also

40. Not a product that is formed using *Aspergillus*

- 1) Organic acids
- 2) Cellulose
- 3) Protease
- 4) Invertase
- 5) Amylase

❖ The responses for questions 41 to 50 should be chosen as follows. One or more responses could be correct.

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

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

41. Which are the properties of water important to become water surface as a habitat for the water skates

- A. High surface tension
- B. Cohesion and adhesion of water molecules
- C. Polarity
- D. High heat capacity
- E. Expansion upon freezing

42. Correct statements are

- A. Drugs that are used for abortion block the progesterone receptors in the uterus
- B. Most oral contraceptives contain high concentration of synthetic estrogen and progesterone
- C. In IVF, embryo is implanted in the laboratory
- D. Genital herpes- pus releases from genito-urinary tract
- E. High progesterone levels in the mother's blood after birth, stimulates the prolactin synthesis

43. Incorrect relationships

- A. Thymosin- development and maturation of lymphocytes
- B. Melatonin- inhibition of growth and development of sex organs before puberty.
- C. Aldosterone- reabsorption of K ions by the kidney tubules
- D. Parathyroid hormone- bone destroying cells and promotes release of calcium from the bones into the blood
- E. Cortisol- promote glucose synthesis from non-carbohydrate sources

44. Characters which are common to 2 domains

- A. Methionine is the first amino acid in protein synthesis
- B. Branched hydrocarbon chains in membrane lipids
- C. Several RNA polymerase present
- D. Circular DNA as genetic material
- E. Cell wall contain peptidoglycan

45. Correct relationships, of element, absorptive mode and deficiency symptom

- A. P - H_2PO_4^- - thin stems
- B. K - K^+ - thin stems,
- C. Zn - Zn^{2+} - reduced internode length
- D. Cu - Cu^{2+} - roots stunted and excessively branched
- E. S - SO_4^{2-} - chlorosis in older leaves

46. Correct about PCR

- A. primer extension will take place, with the presence of the DNA polymerase
- B. as raw materials deoxyribonucleotide triphosphate (dNTPs), which are the four deoxyribonucleotides (dATP, dGTP, dTTP and dCTP) are needed
- C. a primer is a specific sequence of RNA
- D. The primer will bind to the complementary sequence of the denatured template DNA at a lower temperature and this step is called annealing
- E. Mg^{2+} is not needed

47. Indigenous species, migratory species, relict species and flagship species respectively given in

- A. Tilapia, Snake head, Indian fly catcher, giant panda of China
- B. Rubber, Indian pitta, Kitul, *Lingula*
- C. Snake head, Indian fly catcher, *Tuatara*, giant panda of China
- D. Kitul, Indian fly catcher, *Ichthyophis*, Blue magpie
- E. *Puntius*, Tilapia, *Tuatara*, *Lingula*

48. Select the materials which are sterilized using Moist heat, filtration, UV radiation and dry heat respectively

- A. Culture media, vitamins, theater, petri dishes
- B. Syringes, enzymes, nurseries, scalpels
- C. Milk, water, antibiotics, surgery equipment
- D. Needles, some culture media, theaters, inoculating needles
- E. Bottles with lid, vitamins, needles, antibiotics

49. Food intoxication and food borne infections respectively caused by

- A. *Staphylococcus aureus* and *Shigella*
- B. *Salmonella typhi* and *Aspergillus flavus*
- C. *Vibrio cholerae* and *Salmonella typhi*
- D. *Thiobacillus ferrooxidans* and *Lactobacillus*
- E. *Clostridium botulinum* and *Shigella*

50. Components of plant tissue culture media

- A. Inorganic minerals
- B. Sucrose
- C. Cytokinin
- D. Agar
- E. vitamins

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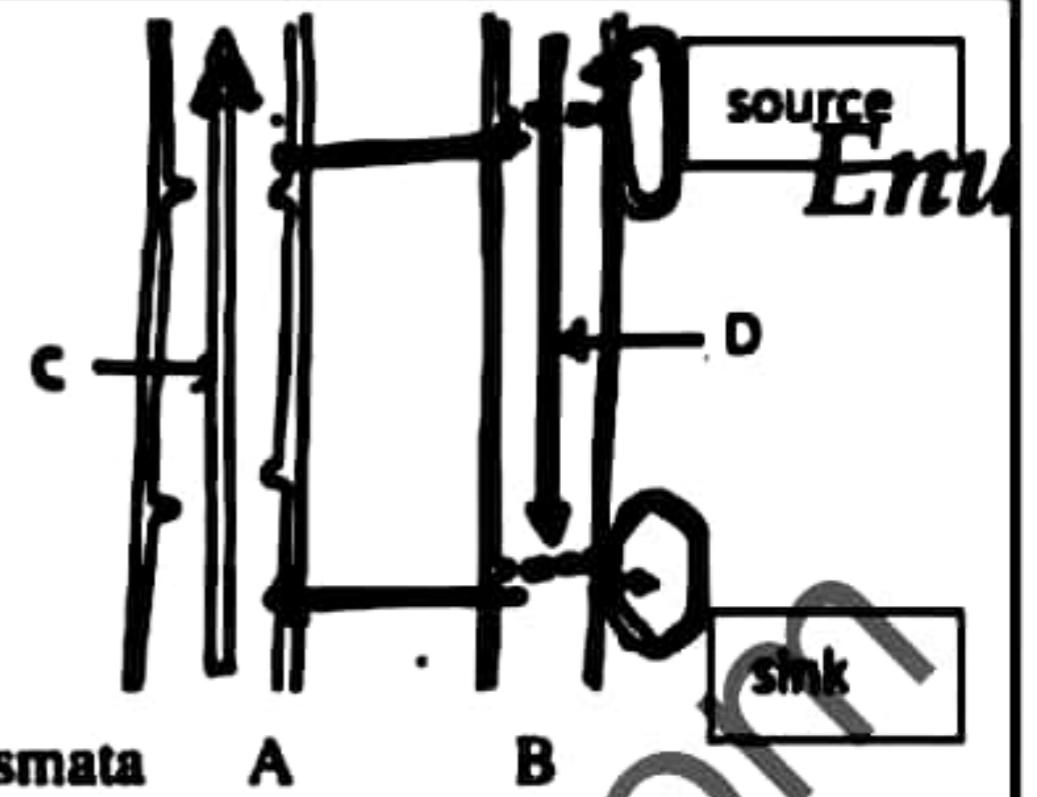


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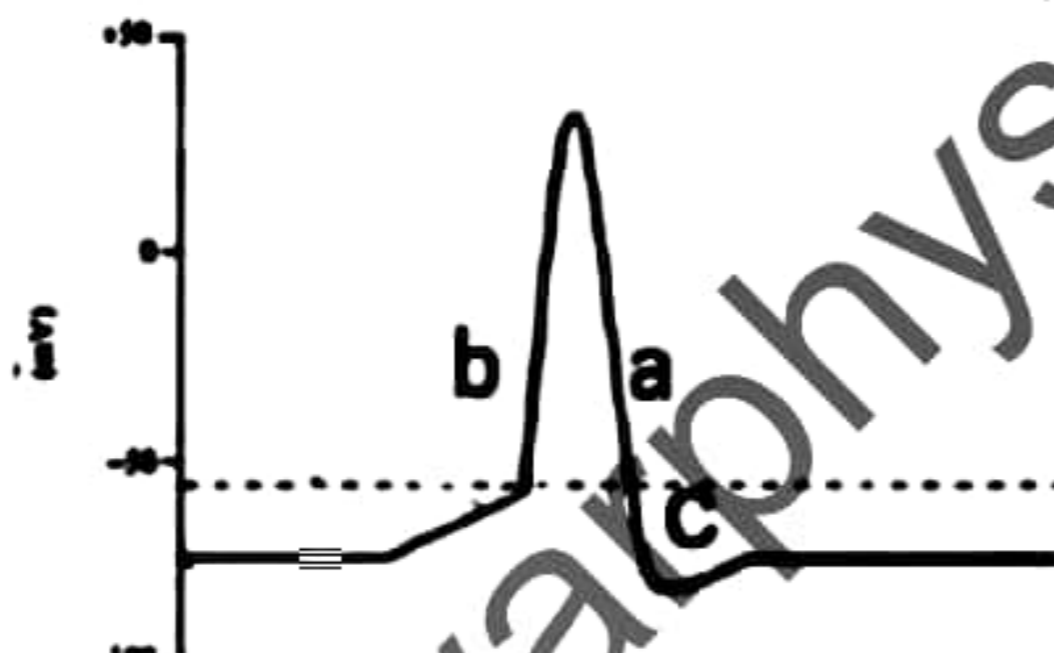
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- 1) 16
- 2) 20
- 3) 40
- 4) 80
- 5) 120

28. Incorrect about test cross

- 1) Used to find out the unknown genotype
- 2) Is a random breeding process
- 3) Test with an organism who is belongs to same species of the organism with unknown genotype
- 4) Should cross with an organism with recessive trait for same character
- 5) In dihybrid test cross, find the genotype of the organism who has 2 dominant traits

29. Incorrect about non Mendelian crosses

- 1) Polyallelism refers to the presence of multiple alleles for a single genetic locus
- 2) Dominant epistasis F_2 ratio is 13 :3
- 3) a cumulative expression of two or more genes is called polygenic inheritance.
- 4) Under Pleiotropy, Cystic fibrosis and schizophrenia can be taken
- 5) In gene linkage recombinant progeny is formed in low frequency

30. Not a character of polyploidy

- 1) "gigas" effect can be seen
- 2) polyploids can be used as a bridge for gene transferring between
- 3) It promotes a "buffering" effect in which the deleterious alleles are masked by the extra copies of wild-type alleles
- 4) the genome doubling in a newly formed sterile hybrid allows the restoration of its fertility
- 5) reduced genetic fitness in a given population as a result of inbreeding depression

31. Incorrect about translation process of protein synthesis

- 1) The first step in initiation is binding of small subunit of ribosome to mRNA
- 2) small subunit of ribosome, mRNA and initiator tRNA, is together forms the translation initiation complex
- 3) The mRNA moves until the AUG start codon, aligns with the P site of the large subunit.
- 4) The anticodon of the initiator tRNA forms hydrogen bonds with AUG start codon
- 5) GTP is needed to initiate the translation

32. Incorrect about selective degradation of protein

- 1) selective degradation of proteins is an essential mechanism in regulation of cellular activities
- 2) Certain proteins are degraded in response to specific signals
- 3) Regulatory proteins, may remain for a longer period.
- 4) The structural proteins may remain for a longer period
- 5) Faulty or damaged proteins are recognized and rapidly degraded

33. Correct about human genetic disorders

- 1) Colour blindness and downs syndrome – polyploidy
- 2) Sickle cell anemia and haemophilia – sex linked characters
- 3) Schizophrenia and depression – epigenetics
- 4) Sickle cell anemia and cystic fibrosis-Pleiotropy
- 5) Alzheimer's disease and turner syndrome-chromosomal mutations

34. An essential feature of eukaryotic recombinant vector

- 1) Ori site
- 2) yeast artificial chromosomes
- 3) multiple cloning site
- 4) antibiotic resistant genes
- 5) probe

35. Incorrect about ecological niche

- 1) The role of organism in the ecosystem
- 2) how the organism passes that energy through the ecosystem
- 3) its role in recycling nutrients.
- 4) the physical area where a species lives
- 5) tolerance to environment conditions such as temperature, soil moisture.

36. Correct order of biomes with given characters respectively

Fire resistant roots, Presence of spines and toxins in leaves, scattered trees in a tall grass cover, Abundant epiphytes, The dominant trees are mostly deciduous

- 1) Northern coniferous forest, Chaparral, Savanna, Tundra, grassland
- 2) Desert, Chaparral, Savanna, tundra, Tropical rain forest
- 3) Northern coniferous forest, Chaparral, Desert, Savanna, Tundra
- 4) Chaparral, Desert, temperate grassland, rain forest, coniferous forest
- 5) Chaparral, Desert, Savanna, Tropical rain forest, temperate broad leaf forest

37. Correct relationship

- 1) Tropical rain forest- *Calophyllum walker*, *Vateria copallifera*
- 2) Dry monsoon forests- *Drypetes sepiaraia*, *Diospyros ebenum*
- 3) Savanna- *Terminalia chebula*, *Dichrostachys cineria*
- 4) Patana- *Chrysopogon*, *Manilkara hexandra*
- 5) Salt marshes- *Halodule* , *Rhizophora*

38. Correct statements

- 1) Ramsar Convention- ensure that international trade of specimens
- 2) Kyoto Protocol- Prevention of Pollution from Ships
- 3) Basel Convention- Control of trans boundary movements of hazardous wastes
- 4) CITES- Protocol on Substances that Deplete the Ozone Layer
- 5) MARPOL-wetland conservation

39. Incorrect about immunization vaccines

- 1) Subunit vaccines contain the antigenic fragments
- 2) Often, booster immunization is not required for live attenuated vaccines
- 3) Inactivated and subunit vaccines need booster doses
- 4) Diphtheria and tetanus are inactivated vaccines
- 5) Subunit vaccines are formed by genetic engineering also

40. Not a product that is formed using *Aspergillus*

- 1) Organic acids
- 2) Cellulose
- 3) Protease
- 4) Invertase
- 5) Amylase

◆ The responses for questions 41 to 50 should be chosen as follows. One or more responses could be correct.

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

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

41. Which are the properties of water important to become water surface as a habitat for the water skates

- A. High surface tension
- B. Cohesion and adhesion of water molecules
- C. Polarity
- D. High heat capacity
- E. Expansion upon freezing

42. Correct statements are

- A. Drugs that are used for abortion block the progesterone receptors in the uterus
- B. Most oral contraceptives contain high concentration of synthetic estrogen and progesterone
- C. In IVF, embryo is implanted in the laboratory
- D. Genital herpes- pus releases from genito-urinary tract
- E. High progesterone levels in the mother's blood after birth, stimulates the prolactin synthesis

43. Incorrect relationships

- A. Thymosin- development and maturation of lymphocytes
- B. Melatonin- inhibition of growth and development of sex organs before puberty.
- C. Aldosterone- reabsorption of K ions by the kidney tubules
- D. Parathyroid hormone- bone destroying cells and promotes release of calcium from the bones into the blood
- E. Cortisol- promote glucose synthesis from non-carbohydrate sources

44. Characters which are common to 2 domains

- A. Methionine is the first amino acid in protein synthesis
- B. Branched hydrocarbon chains in membrane lipids
- C. Several RNA polymerase present
- D. Circular DNA as genetic material
- E. Cell wall contain peptidoglycan

45. Correct relationships, of element, absorptive mode and deficiency symptom

- A. P - $H_2PO_4^-$ - thin stems
- B. K - K^+ - thin stems,
- C. Zn - Zn^{2+} - reduced internode length
- D. Cu - Cu^{2+} - roots stunted and excessively branched
- E. S - SO_4^{2-} - chlorosis in older leaves

46. Correct about PCR

- A. primer extension will take place, with the presence of the DNA polymerase
- B. as raw materials deoxyribonucleotide triphosphate (dNTPs), which are the four deoxyribonucleotides (dATP, dGTP, dTTP and dCTP) are needed
- ★ C. a primer is a specific sequence of RNA
- D. The primer will bind to the complementary sequence of the denatured template DNA at a lower temperature and this step is called annealing
- E. Mg^{2+} is not needed

47. Indigenous species, migratory species, relict species and flagship species respectively given in

- A. Tilapia, Snake head, Indian fly catcher, giant panda of China
- B. Rubber, Indian pitta, Kitul, *Lingula*
- ★ C. Snake head, Indian fly catcher, *Tuatara*, giant panda of China
- D. Kitul, Indian fly catcher, *Ichthyophis*, Blue magpie
- E. *Puntius*, Tilapia, *Tuatara*, *Lingula*

48. Select the materials which are sterilized using Moist heat, filtration, UV radiation and dry heat respectively

- A. Culture media, vitamins, theater, petri dishes
- B. Syringes, enzymes, nurseries, scalpels
- ★ C. Milk, water, antibiotics, surgery equipment
- D. Needles, some culture media, theaters, inoculating needles
- E. Bottles with lid, vitamins, needles, antibiotics


49. Food intoxication and food borne infections respectively caused by

- A. *Staphylococcus aureus* and *Shigella*
- B. *Salmonella typhi* and *Aspergillus flavus*
- ★ C. *Vibrio cholerae* and *Salmonella typhi*
- D. *Thiobacillus ferrooxidans* and *Lactobacillus*
- E. *Clostridium botulinum* and *Shigella*

50. Components of plant tissue culture media

- A. Inorganic minerals
- B. Sucrose
- ★ C. Cytokinin
- D. Agar
- E. vitamins

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	09 E II
Final Term Test – 2021 A/L	
Grade 13	
Biology II	
Time: 3 hours	

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Name : Index Number: Class:

Important :

- ◆ *This question paper consists of 13 pages*
- ◆ *This question paper comprises Part A and Part B. The time allotted for both parts is 3 hours*

Part A – Structured Essay: (12 pages)

Answer all the questions on this paper itself. Write your answers in the space provided for each question. Please not that the space provided is sufficient for your answers and that extensive answers are not expected

Part B – Essay: (page 13)

This part contains 6 questions of which 4 are to be answered. Use your papers for this purpose. At the end of the time allotted for this paper, tie the two parts together so that Part A is on top of Part B before handing them over to the supervisor.

For Examiner's use only

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

Final Marks

I	II	Final marks

Marking
Examiner

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Part A - Structured Essay

(Answer all questions on this paper itself)

(1) A.

I. Mention the characteristic feature of organisms in addition to reproduction, which is important for the continuous survival of a species

.....

II. Mention the importance of expansion upon freezing for aquatic organisms in winter season

.....

.....

.....

.....

.....

III. Mention a unbranched stored polysaccharide

.....

b. mention its monomer unit-.....

IV. Mention 2 transportive proteins with their function

.....

.....

V. Mention 2 agents of protein denaturation

.....

.....

VI. Mention the structure of DNA according to Watson and Crick model

.....

.....

.....

.....

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B)

I. mention the most abundant glycoprotein in the extra cellular matrix of animal cell

.....

II. mention 2 functions of ECM

.....
.....

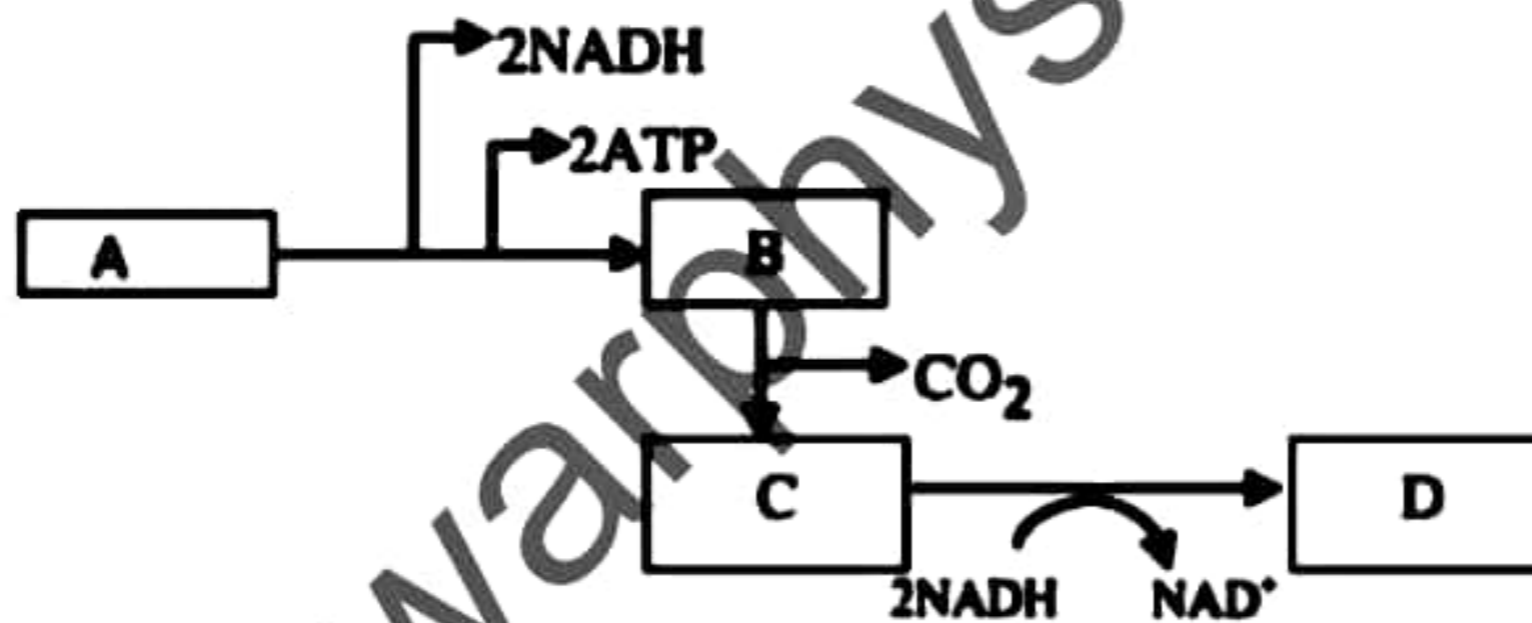
III. Define crossing over

.....
.....

IV. Mention a difference between Anaphase I and II

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

V. following flow chart shows a reaction happens in some cells without oxygen



a. Label A to D

A-..... B-.....
C-..... D-.....

b. Mention an eukaryotic organism who express this reaction -

VI Define photoprotection

.....
.....

Mention the photosynthetic pigment that used for above process-

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C)

I. mention the today's name of Fossils of the first photosynthetic organisms

.....

II. Mention the criteria of modern classification system, which are based on genetic materials

.....
.....

III. Mention the invertebrate animal phylum with following characters

- a. First true coelom -.....
- b. Asexual reproduction by fragmentation and regeneration -.....
- c. Primitive dorsal brain -.....
- d. Endoskeleton with plates -.....
- e. Incomplete alimentary canal without anus -.....

IV. Mention a gymnosperm with xylem vessel elements

.....

V. Mention 3 differences of flowers in monocot and dicot plants

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

(2)

A)

I. mention the function of intercalary meristems

.....
.....

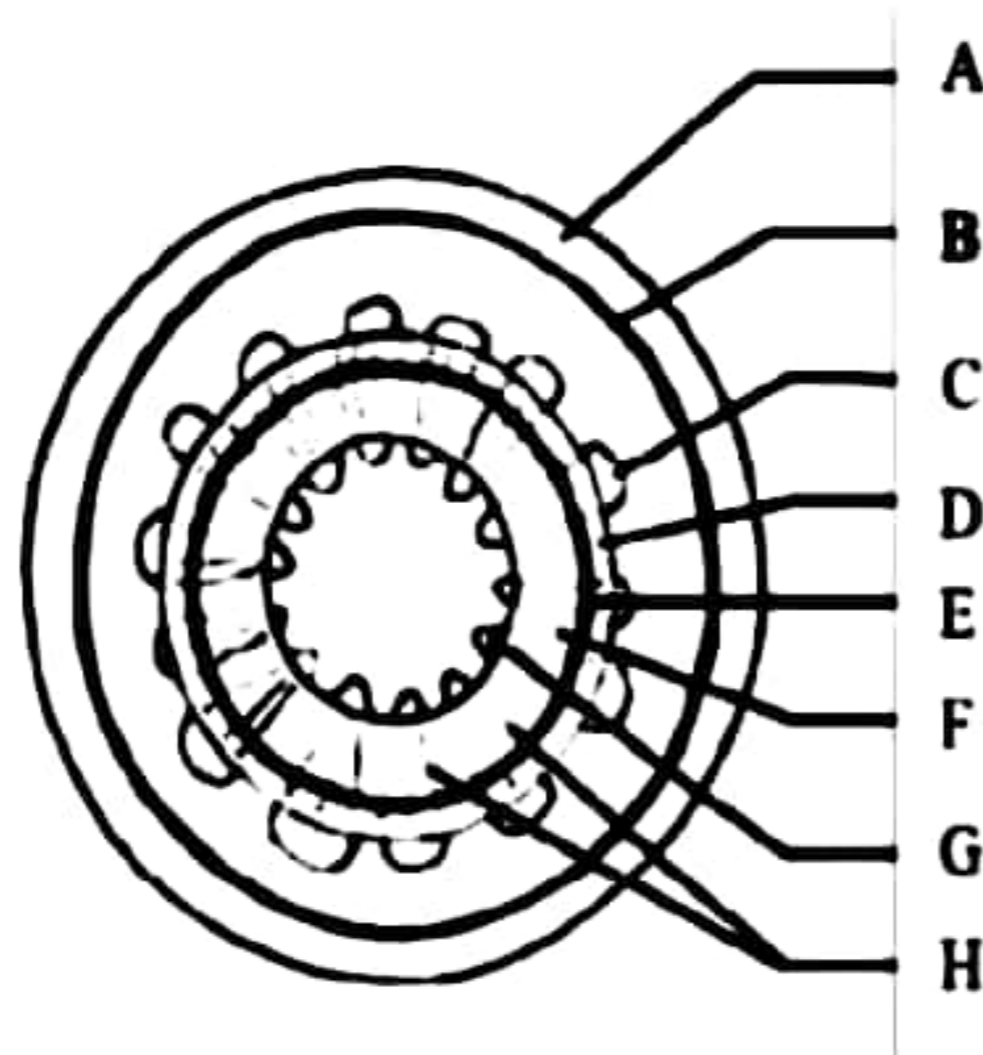
II. Mention the features of a slide of T.S. of primary monocot root, which can be observed from light microscope

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

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III. Mention the letter of following parts shown by the diagram



a) Vascular tissue - b) Bark -

IV. Mention the cell type found in H -

V. Mention the factors, affecting the water potential

.....
.....

VI Define plasmolysis of a cell

.....
.....

VII. Define radial water transport

.....
.....

VIII. Mention the 3 pathways of that transport

.....
.....

IX. Mention the method of transportation n ascent of sap

.....
.....

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B)

I. Mention the triple response of a seedling

.....
.....

II. What happens to the transpiration rate with wind

.....
.....

III. Mention a deficiency symptom in plant and human for iron

.....
.....

IV. Mention the places, that are passed from the lipid digestion to till absorption to blood

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

V. Mention the duct that transport both bile and pancreatic juice

.....

VI. Mention the function of central vein in the liver lobule

.....
.....

C)

I. What is the blood group of a person with 2 antibodies in the blood plasma and Rh factor on RBC

.....

II. Mention the positive feedback mechanism happens in blood coagulation

.....
.....

III. Mention the structures that are involved for the main cleaning process of respiratory track

.....

IV. Mention the function of surfactant

.....
.....

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V. Mention the types of effector cells in acquired immunity

.....
.....

VI Mention the way how artificially acquired active immunity is differed from naturally acquired active immunity

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

VII. Mention the steps of urine formation, which are restricted only to nephron part

.....

VIII. Mention the contribution of Na-K pump to maintain resting potential

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

IX Mention how semicircular canals of inner ear contribute to maintain body balance

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

X Mention the 2 hormones which are involved in Ca level regulation in blood

.....

XI Mention the cell types in testis, which have endocrine function

.....

XII Mention the processes of temporal bone

.....
.....

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(3)

A)

I. Mention the law of Mendal, which is formulated to explain the F₂ progeny in monohybrid cross

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

II. Yellow color round seed containing plant- Female

Green color wrinkled seed plant (yyrr) –male

There is a cross between them

a) What can be this cross -

.....

b) What is the aim of this cross

.....
.....

c) If the progeny of this cross, gets 4 types of phenotypes in 1:1:1:1 ratio, what are the gametes of female plant

.....

III. There are 3 children to a couple who are having widows peak in both mother and father. Only elder son has that character. Others are girls. And the youngest child is married with a person who is homozygous for that character. Express these information in a pedigree chart

b) What can be the genotypes of children , in the marriage given in the second generation

.....
.....

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IV. Mention the reason to get low amount of recombinant progeny in the cross to show the Inheritance of body colour and wing size in the fruit fly *Drosophila*

.....
.....

V. Define "gigas effect"

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

B)

I. Mention the second level of DNA packaging in eukaryotes

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

II. Mention the responsible enzyme for following step of DNA replication

- a) working ahead of the direction of DNA synthesis -.....
- b) forming DNA-RNA hybrid -.....

III. Define transcription

.....
.....

IV. Mention a functional similarity and a difference between DNA replication and transcription

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

V. Mention the function of signal peptide

.....

VI. Mention the type of gene mutation, that has no changing the number of nucleotide

.....

VII. Mention how nonsense mutation can be happened in above type

.....
.....

I. Define trisomy

.....
.....

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II. Mention how n+1 gametes can be formed in a diploid organism

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

III. what is the purpose of using probes

.....
.....

IV. Mention the labeling of probes

.....
.....

V. Define transformation

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

VI. What are the commonly used marker genes

.....

VII. Mention the 2 types of DNA libraries

.....
.....

VIII. what is the source of Taq DNA polymerase

.....

IX Mention the 3 steps of thermal cycle in PCR

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

(4)

A)

I. Define the food chain in an ecosystem

.....
.....

II. Mention 2 types of ecological pyramids which can be inverted and upright

.....
.....

III. Mention 2 special adaptations in animals of deserts

.....
.....

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IV. Mention 3 types of grasslands in dry zone of Sri Lanka

.....
.....

V. Mention a plant found in sea shore ecosystem in Sri Lanka

.....

B)

I. Mention the 2 types of conservations

.....

II. Define desertification

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

III. Mention the main gas that is responsible for the global warming

.....

IV. Mention the 4 steps of N cycle

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

VI. Mention the 3 steps of drinking water treatment plant respectively

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

C)

I. Mention the 3 ways of solid waste management

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

II. Mention the 5 steps of bacteriophage life cycle respectively

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

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III. Mention 2 gases used in chemical sterilization

.....
.....

IV. a) Mention 3 enzymes, used in invasiveness

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

b Mention 3 microbial diseases of respiratory system

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


V. a) Mention the main difference between antiseptics and disinfectants

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

b Mention 2 examples for antiseptics

.....
.....

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	09	E	II
Final Term Test – 2021 A/L		Grade 13	
Biology II			

Part B - Essay

◆ Answer 4 questions only

- (5) a) Describe the type of nuclear division in epithelial cell of human skin
 b) Describe the adaptations of sugar cane plant to prevent photorespiration
- (6) a) Describe the responses of plants for abiotic stress conditions
 b) Describe the structure and function of the tissue found between pericycle and cortex in root
- (7) a) Describe the homeostatically regulation of blood glucose level
 b) Describe the disorders of urinary system, due to not drinking of sufficient amount of water
- (8) a) Describe the involvement of T lymphocytes for acquired immunity
 b) Describe the contribution of duodenum for the regulation of food digestion
- (9) a) Describe the life cycle of Bacteriophage
 b) Describe the environmental issues due to oxides of N
- (10) Write short notes on,
 a) The steps in the process making a genetically modified plant or an animal
 b) Environmental niche
 c) Cranium

