G.C.E. (A.L.) Support Seminar - 2015

Biology I | ***Two hours***

Important :

* Answer **all** the questions.
* In questions from **1** to **40**, select **the correct or the most appropriate** answer out of the options (1), (2), (3), (4) given.

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1. Which of the following is made up of single nucleotide only ?

(1) NAD (2) ATP (3) FAD (4) m-RNA (5) DNA

2. Which of the following cannot be considered as an adaptation to changes in specific habitat of an organism ?

(1) Viviparity in some mangroves.
(2) Modification of leaves into tendrils in xerophytes.
(3) Presence of splayed-out foot of camels live in desserts.
(4) More sweating in warm climates.
(5) Camouflage, shown by insects.

3. If the amount of Cytosine in a DNA molecule is four times more, that of adenine, what is the number of Guanine bases in the DNA molecule with 12 000 nitrogenous bases ?

(1) 2 400 (2) 3 000 (3) 4 000 (4) 4 800 (5) 9 600

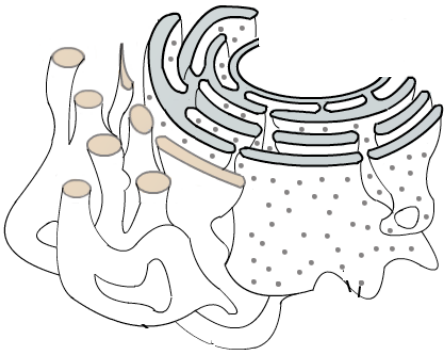
4. Both DNA and Proteins are,

(1) become denatured irreversibly at high temperatures
(2) unbranched linear polymers.
(3) act as genetic material in some viruses
(4) molecules able to self replicate
(5) contain in bacterial chromosome.

5. Which of the following statement is **incorrect** regarding microbodies ?

(1) These are membrane bound vesicles with oxidizing enzymes.
(2) Some of them detoxify peroxides.
(3) Peroxisomes are important in photosynthesis of plants.
(4) Peroxisomes are found in both plant and animal cells.
(5) These are produced by endoplasmic reticulum.

6. Functions of sub-cellular structures shown in diagram are,



(1) Synthesis of lipids, detoxification, production of transmission vesicles
(2) Production of transmission vesicles, stores Ca^{+2} ions, production of Lysomoses.
(3) Synthesis of phospholipids, Autolysis of cells, production of Lysosomes.
(4) Synthesis of steroides, digestion of worn out organelles, synthesis of glycoprotein.
(5) Electron transport chain, stores Ca^{+2} ions, production of Lysosomes.

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7. Common feature to both photorespiration and aerobic respiration is;

(1) Takes place only when light is present.
(2) Generating energy
(3) Occur in both C_3 and C_4 plants
(4) Release of CO_2
(5) Occurance with the involvement of peroxisomes.

8. Following are some events. takeplace in Meiosis.

(A) Pairing of homologous chromosomes
(B) Seperation of chromatids
(C) Alignment of chromosomes at the equator as pairs
(D) Formation of bivalents
(E) Disappearance of nuclear membrane

Which of the above events take place in prophase I

(1) A, B and D
(2) B, D and E
(3) A, B and C
(4) C, D and E
(5) A, D and E

9. Select the correct statement regarding skeletal tissues of man,

(1) Nerve fibers and blood vessels are present in cartilages
(2) Cartilages are not found in the skull of an adult human
(3) Blood sinuses are present in cavities of spongy bones.
(4) Collagen fibers are abundant in tendons.
(5) Elastic cartilages are present in symphysis pubis.

10. A feature, common for two Domains of organisms,

(1) Presence of peptidoglycan in cell wall
(2) Beginning of protein synthesis with formyl methionine
(3) Presence of branched and chained lipids in cell membrane
(4) Presence of several kinds of RNA polymerase enzymes
(5) Cellular organization is eukaryotic

11. Which of the following statement is correct ?

(1) All viruses are parasitic
(2) All bacteria are heterotrophic
(3) All fungi produce non-motile reproductive structures
(4) All cyanobacteria are truly multi cellular
(5) All protists are micro organisms

12. What is the unique feature found only in seed bearing plants of kingdom plantae ?

(1) No need of external water for fertilization of gametes.
(2) Presence of heterospory
(3) Presence of small microscopic gametophytes
(4) Presence of heteromorphic alternation of generation
(5) Presence of vascular tissues in plant body

13. Correct statement regarding organisms of kingdom Protista

(1) All organisms are multi cellular
(2) All possess chlorophyll a
(3) Laminarin is present in the cell walls of Phaeophytes
(4) Rhodopytes do not produce motile reproductive cells
(5) *Paramecium* is an organism having a flexible cell wall

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14. Which of the following group of components are readily absorbed to the blood without being digested further more in small intestine.

(1) Glucose, Vitamin, Fat, Lactose
(2) Vitamins, Fatty acids, Amino acids, Minerals
(3) Proteins, Fat, Starch, Minerals
(4) Sucrose, Proteins, Glycerol, Vitamins
(5) Glucose, Starch, Minerals, Fat

15. Select the **incorrect** statement regarding Haemoglobin

(1) It consists of four iron containing "Heam" groups
(2) One molecule of heamoglobin transports four molecules of O_2
(3) Combine with CO_2 and form Carboxyhaemoglobin
(4) It is present in blood plasma in some invertebrates
(5) Breaking down of haemoglobin takes place in the liver of human

16. Select the **incorrect** statement of following.

(1) Vertebrates having single circulation always possess two chambered heart
(2) There are no blood vessels in an open circulatory system
(3) Vertebrates possess closed blood circulatory systems.
(4) Heart of fish pumps deoxygenated blood
(5) All homeotherms possess complete double circulation.

17. A plant cell having solute potential - 1.2 MPa and pressure potential 0.2 MPa is allowed to become equilibrium in a sugar solution with solute potential - 0.8 MPa. Select the correct statement regarding the cell ?

(1) Cell is in flaccid state at the beginning
(2) Cell becomes fully turgid at equilibrium
(3) Cell volume increases by entering of water into the cell
(4) Pressure potential of the cell gradually decreases
(5) $\Psi_S = \Psi_P$ at equilibrium

18. What is the blood group of donar from whom blood can be transfused to a person having only antigen A in red blood cells ?

(1) AB^+ (2) O^+ (3) A^- (4) AB^- (5) A^+

19. What is the longest nerve fiber among below mentioned fibers in autonomic nervous system ?

(1) Parasymapathetic pre-gangleonic fiber passes to the large intestine
(2) Sympathetic post ganglionic fiber passes to the stomach
(3) Parasympathetic post gangleonic fiber passes to the urinary bladder
(4) Sympathetic post gangleonic fiber passes to the large intestine
(5) Sympathetic pre-gangleonic fiber passes to the heart

20. Select the correct statement of following regarding excretory structures of animals

(1) Human kidney mostly contains juxta-medullary nephrones
(2) All reptiles excrete uric acid
(3) All excretory structures expell excretory products via an excretory pore
(4) All aquatic arthropodes possess green glands
(5) Urea is produced in human kidneys

21. What is the facial bone of human skull in which sinuses can be seen ?

(1) Frontal bone (2) Sphenoid bone (3) Maxillary bone
(4) Ethmoid bone (5) Mandibular bone

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22. Following are few steps of skeletal muscle contraction

(A) Attachment of myosin heads to the binding sites of actin

(B) Exposure of binding sites by combining Ca^{+2} with proteins

(C) Obtaining ATP to detach myosin heads from binding sites

(D) Sliding of actin filaments over myosin filaments by tilting of myosin heads

(E) Release of Ca^{+2} from sarcoplasmic reticulum after generation of action popential.

The correct sequence of above steps is,

(1) A, B, C, D, E (2) E, D, C, B, A (3) E, B, A, D and C

(4) C, D, B, A, E (5) E, B, C, D, A

23. Select the correct statement regarding human pelvis.

(1) The depth of female pelvis is lesser than male pelvis

(2) The pubic arch is lesser than 90° in female pelvis

(3) Acetabulum is made of two bones, ilium and ischium

(4) The pelvis inlet of male pelvis is ovoid

(5) Pelvis is made of left and right innominate bones (pelvic bones) and coccyx

24. Select the correct statement regarding plant movements.

(1) In all tropic movements response is shown towards the stimulus

(2) Cilia and flagella involve in some nastic movements

(3) The direction of response in tactic movements is determined by the stimulus

(4) Some tropic movements are reversible

(5) Coiling of a tendril around a support is a type of nastic movement

25. The correct response regarding human ovum is,

(1) the cellular activities are regulated by a nucleus consists of 23 autosomes.

(2) the corona radiata, which is made of haploid cells, is the outermost layer.

(3) perivitelline space is located outer to the zona pelucida.

(4) a matured ovum is released from the ovary.

(5) receptors on zona pelucida are destroyed by the acrosomal enzymes of sperm.

26. Select the correct statement regarding the hormones relevant to pregnancy of a women.

(1) Myometrial contractions are inhibited by oestrogen

(2) Formation of oxytocin receptors in the myometrium is stimulated by progesterone

(3) Growth of uterine smooth muscles is stimulated by hCG

(4) Growth of ducts of milk gands is stimulated by progesterone

(5) Secretion of prolactin is inhibited by progesterone

27. Select the correct statement regarding plant growth substances

(1) Ethylene inhibits the apical dominance

(2) Gibberellin promotes the elongation of planstem

(3) Ethylene is used to extend freshness of cut flowers

(4) The seed germination is stimulated by Abcisic Acid

(5) Cell division is induced by the coaction of ethylene with cytokinin

28. Sometimes food intoxication may happen due to consumption of canned food. Which of the following organisms may cause food intoxication ?

(1) *Pseudomonas denitrificans* (2) *Acetobacter aceti* (3) *Vibrio cholerae*

(4) *Clostridium botulinum* (5) *Salmonella paratyphi*

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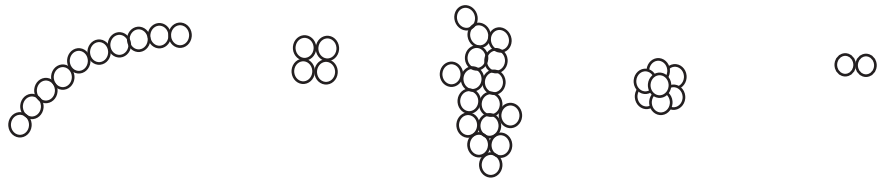
29. Different forms of arrangements of coccus bacteria are shown here.



Select the correct sequence of arrangements.

(1) Diplococcus, Staphylococcus, Streptococcus, Sarcinae, Tetrad
(2) Streptococcus, Tetrad, Staphylococcus, Sarcinae, Diplococcus
(3) Staphylococcus, Sarcinae, Streptococcus, Tetrad, Diplococcus
(4) Sarcinae, Tetrad, Staphylococcus, Diplococcus, Streptococcus
(5) Streptococcus, Tetrad, Diplococcus, Sarcinae, Staphylococcus

30. Which of the following might be spoiled, when kept on a rack without being opened ?

(1) A tin of condensed milk (2) A bottle of bee honey (3) A bottle of fruit cordial
(4) A bottle of jam (5) A bottle of pasturized milk

31. Which of the following is correct regarding microorganisms ?

(1) Single or few flagella may present in all bacteria
(2) Prions consists of only one type of nucleic acid
(3) Some cyanobacteria perinate by heterocysts
(4) Enzymes of host cells are used for the protein synthesis within viruses
(5) *Mucor*, forms sexually undifferentiated gametangia

32. Which of the following statement is **incorrect** regarding *Escherichia coli* ?

(1) It is a rod shaped, gram negative bacteria
(2) It is a bacteria that lives symbiotically in human colon
(3) It is an aerobic or facultative anaerobic bacteria
(4) It produces a gas by fermenting sucrose within 48 hours
(5) It is widely used in experiments in gene technology

33. Brown eye colour of man is dominant over blue colour. If 64% of a population possess brown eyes, what is the percentage of hetrozygotes in this population ?

(1) 24% (2) 32% (3) 36% (4) 48% (5) 64%

34. Following are few statements regarding gene technology

(A) Gel electrophoresis is used to separate DNA fragments according to the size.
(B) Plasmids are used to introduce a foreign gene to a bacteria cell
(C) *Agrobacterium* is used to produce golden rice
(D) Problems may arise in using antibiotics due to use of marker genes

Which of the above statements is / are correct,

(1) A, B and D (2) A, C and D (3) A and D
(4) B and C (5) A, B, C and D

35. Which one is **not** a RAMZAR wetland in Sri Lanka ?

(1) Madu Ganga sancturary (2) Bundala National Park
(3) Kumana Wetland cluster (4) Annanwilundawa tanks sanctuary
(5) Muthurajawela wetland

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36. Select the group of IUCN categories according to the ascending order of risk of extinction.

(1) EN CR, EW (2) VU, CR, EN (3) VU, NT, CR
(4) CR, VU, EN (5) CR, EW, EN

37. Due to which of the following air pollutant photochemical smog is formed,

(1) Carbon monoxide (2) Sulphur dioxide (3) Hydrocarbon
(4) Chloro-fluorocarbon (5) Ozone

38. Select the correct statement regarding biomes.

(1) Taiga biome possesses deciduous trees
(2) Deserts are absent in the temperate region
(3) Chaparral biome possesses evergreen plants
(4) Short perinneal plants are present in Tundra biome
(5) Tropical rain forests are the most abundant biome in the world

39. Following are few organisms

(A) *Mimosa pigra* (B) *Caryota urens* (C) Indian pitta (D) *Oreochromis mossambicus*

Select the correct response in which indigenous, exotic, invasive and migratory species are mentioned in order.

(1) B, A, D, C (2) B, C , D, A (3) C, B, D, A (4) D, C, B, A (5) B, D, A, C

40. Which of the following statement is correct ?

(1) Epigynous flowers possess a superior ovary
(2) Natural parthenocarpy occurs in orange
(3) Five carpels are present in the ovary of all pentamerous flowers
(4) Paddy plant produces seeds by self polination
(5) A diploid endosperm is present in the *Cycas* seeds

- **For each of the question 41 to 50 are more of the responses is/are correct. Decide which response/ responses is/are correct and then select the correct number.**

If only **A, B** and **D** are 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

Directions Summarised

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

41. Which disease/diseases is/are can be identified by examining blood smears of human,

(A) Diabetes mellitus (B) Chickungunya (C) Filaria
(D) Malaria (E) AIDS

42. What is the **incorrect** statement regarding the upperlimb of man ?

(A) Ulna rotates on radius in pronation
(B) Head, located at the distal end of the humerus joins with the shaft by a distinct neck
(C) Precision grip is due to the opposability of the thumb
(D) The proximal end of the ulna articulates with the distal end of the humerus at elbow joint
(E) Proximal carpal bones articulate only with the radius at wrist joint

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43. Vitamin/s synthesized by human intestianal bacteria is / are

(A) Phyloquinone (B) Folic acid (C) Retinol
(D) Biotin (E) Thiamin

44. When a plant cell is at incipient plasmolysis,

(A) the water potential is zero
(B) the solute potential is zero
(C) the pressure potential is zero
(D) solute potential is equal to the water potential
(E) the solute potential is lesser than water potential

45. The binocular vision of human is important,

(A) to judge the speed of a train coming
(B) to judge the depth of a well
(C) to apply paints on a wall
(D) for the 3D assessment of an object
(E) to play cricket

46. Animals use different organs in nitrogenous exeretion. In which combinations, the animal and excretory organ are correctly paired ?

(A) Prawn - Green glands
(B) Cockroach - Malphigian tubule
(C) Earthworm - Body covering
(D) Marine reptiles - Salt glands
(E) Man - Sebaceaous glands

47. Unwanted pregnancies are prevented by birth controlling method / methods. In which method / methods, ovulation of women is / are prevented ?

(A) Vasectomy Surgery (B) Use of IUD (Loop) (C) Use of Oral Contraceptives
(D) Use of Depoprovera (E) Tubal ligations

48. Common feature of both *Pogonatum* and *Nephrolepis* is / are

(A) gametoplytes being photosynthesis
(B) Fixing of gametophytes to the substrate by rhizoides
(C) Presence of dioecious gametophytes
(D) Domination of diploid stage in the life cycle
(E) Sporophytes bear vascular tissues

49. Which statement/s is/are correct regarding the acquired immunity in man ?

(A) Artificial passive immunity is gained by the vaccine administered to a person who is bitten by a dog having rabies
(B) Natural active immunity is gained when a person gets chicken pox once
(C) Artificial acquired passive immunity is gained by the tetanus vaccine administered to a pregnant women
(D) An infant is gained with natural passive immunity by breast milk
(E) An artificial passive immunity is gained by an infant by the triple vaccine.

50. Which is/are correct regarding the earth's atmosphere ?

(A) Thermosphere - Temperature rises when ascending through it
(B) mesosphere - Temperature rises when ascending through it
(C) Straphosphere - Ozone layer present at higher levels
(D) Trophosphere - The region containing green house gases
(E) Stratosphere - A region which affects climatic changes

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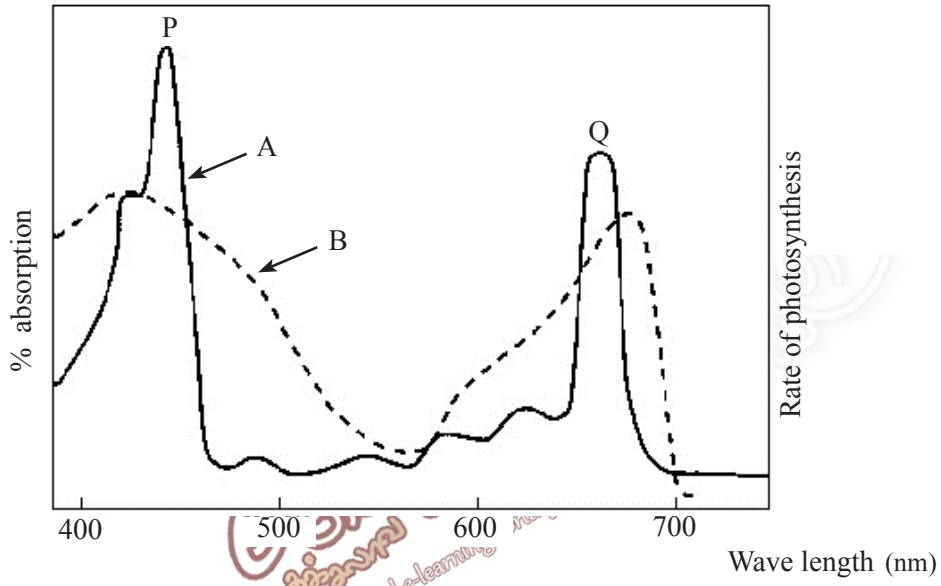
G.C.E. (A.L.) Support Seminar - 2015

Biology II | ***Three hours***

Part A - Structured Essay

* Answer **All** question on this paper itself.
* Each question carries **10** marks.

1. **(A)** Following two graphs are related to the process of photosynthesis.



(i) Name graphs denoted by A and B

A - ..... B - .....

(ii) What are the colours of visual spectrum which are compatible to peaks P and Q of graph A ?

P - ..... Q - .....

(iii) What are the important conclusions can be obtained regarding the process of photosynthesis by above graphs ?

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(iv) Name the primary electron donar and final electron acceptor of non-cyclie photophosphorylation

Primary electron donar - .....

Final electron acceptor - .....

[See page 2

(v) Complete the table given below based on C_3 and C_4 photosynthesis

		C_3	C_4
(a)	Initial CO_2 acceptor	.....	.....
(b)	Site / sites of CO_2 fixation	.....	....
(c)	First stable product	.....	.....

(B) **(i)** What is an enzyme ?

.....

.....

(ii) **(a)** What is meant by enzyme co-factors ?

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.....

(b) Name **three** enzyme co-factors and state an example for each.

Type of enzyme co-factor	**Example**
.....	.....
.....	.....
.....	.....

(iii) Which property of an enzyme is shown by the Lock and Key mechanism of enzyme reaction ?

.....

(iv) State the functions of following enzymes.

Enzyme		**Function**
a) Lysozyme	-	.....
b) Phospholipase	-	.....
c) Cholin-esterase	-	.....

(v) State a species of micro organism used in commercial production of following enzymes.

Enzyme	**Species of micro organism**
a) Amylase	.....
b) Protease	.....
c) Invertase	.....

(C) **(i)** **(a)** What is binomial nomenclature ?

.....

.....

(b) State **three** important rules in binomial nomenclature.

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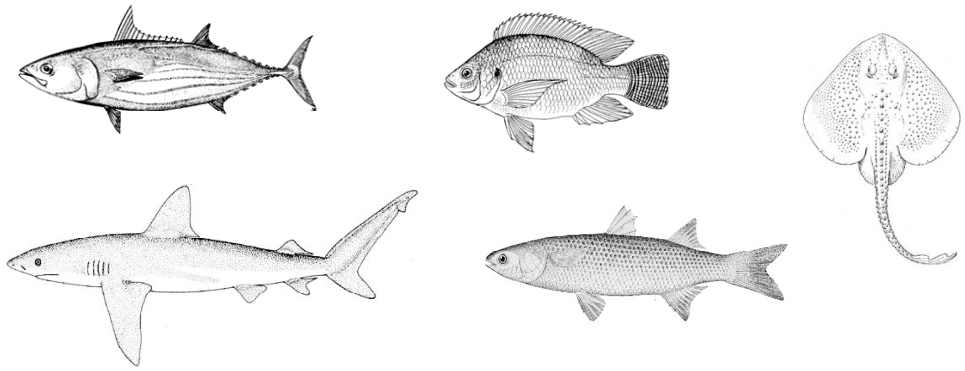
[See page 3

(ii) Name the sexual spore type of following fungi.

Fungi		**Type of sexual spore**
a) *Allomyces*	-	.....
b) *Agaricus*	-	.....
c) *Aspergillus*	-	.....

(iii) Following pictures represent fishes, Shark, Tuna, Tilapia, Ray and Grey mullet. Complete the given dichotomous key to identity those fish.



1. Heterocercal candal fin is present .....
   Heterocercal candal fin is absent .....
2. Body is dorsoventrally flattened .....
   Body is not dorsoventrally flattened .....
3. Continuous dorsal fin is present .....
   Continuous dorsal fin is absent .....
4. Longitudinal bands are present in belly region .....
   Longitudinal bands are absent in belly region .....

(iv) State the phylums of kingdom protista in which multicellular organisms are included.

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.....

(v) State **three** unique external characteristic features of animals in phylum Echinodermata, which help to identify them ?

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2. **(A)** **(i)** What are the essential characteristic features of a respiratory surface for efficient gaseous exchange ?

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[See page 4

(ii) What is the respiratory structure found millipedes and centipedes ?

.....

(iii) Millipedes and Centipedes lack respiratory pigment in their blood. What is the reason ?

.....

(iv) Name **two** major types of cells which line the wall of respiratory tract of man.

.....

.....

(v) Name **two** major unfavorable components in cigarette smoke and state an effect of each.

	Components	**Effect**
a)	.....	.....
b)	.....	.....

(vi) Respiratory disorders may cause due to some industries other than smoking. Name **two** such disorders.

.....

.....

(B) **(i)** What is the significance of co-ordination in animals ?

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(ii) What are the **two** systems important in co-ordination of animals.

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.....

(iii) State **three** major differences between co-ordination of those two systems.

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(iv) What is the contribution of blood circulatory system in co-ordination of animals ?

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(v) **(a)** What is meant by resting potential of a neuron ?

.....

(b) What are the factors on which resting potential is based ?

.....

.....

.....

(c) Name the ion which is responsible for deporlarization stage during action potential.

.....

(d) State **two** functions of cerebellum of man.

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[See page 5

(C) **(i)** What is a receptor ?

.....

(ii) What are the features of receptors ?

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(iii) Name the types of receptor / receptors in human skin which are sensitive to following stimuli.

Heat - .....

.....

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Touch - .....

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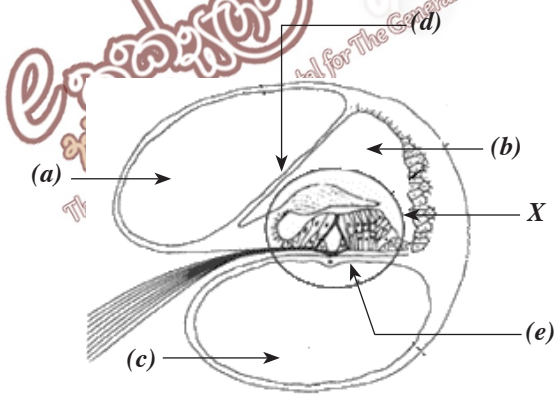
Pressure - .....

(iv) Name following structure and lebel the parts ***(a) - (e)*** in the diagram given below.



(a) - .....

(b) - .....

(c) - .....

(d) - .....

(e) - .....

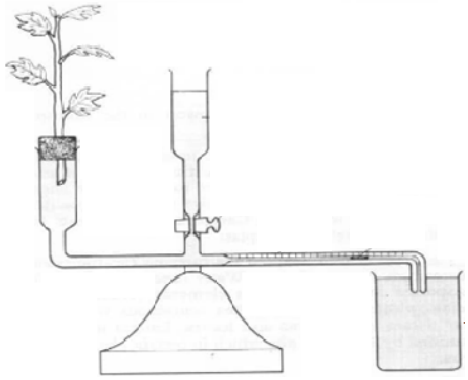
Name above diagram .....

(v) What is the part named as ' ***X*** ' in the above diagram ?

.....

[*See page 6*

3. **(A)** Diagram given below is an apparatus used in laboratory.



(a) **(i)** What is this apparatus ?

.....

(ii) What are the precautions which should be considered when this apparatus is set up ?

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(iii) State an important assumption you make when measure the rate of transpiration using above apparatus.

.....

(iv) How to supply different conditions to above apparatus in the laboratory, when examining the variations of transpiration rate according to the changes of environmental factors like wind and humidity.

Wind - .....

.....

Humidity - .....

.....

(v) State how the rate of transpiration change under following conditions.

Increase of temperature - .....

Increase of humidity - .....

(vi) Explain the reason for change of transpiration rate with the increase of wind ?

.....

(b) **(i)** Guttation and transpiration are two methods of water loss from plants. Mention **two** differences of water, excluded in above two methods.

.....

.....

(ii) Why guttation can be seen only in some plants ?

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[See page 7

(B) **(i)** **(a)** What is meant by nitrogenous excretion of animals ?

.....

(b) State the ascending order of different nitrogenous excretory products according to the loss of water, during the excretion of animals.

.....

(ii) State the major excretory structures of man.

.....

(iii) Name primary excretory products synthesized in human body.

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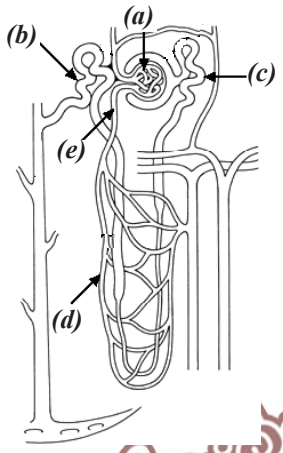
(iv) **(a)** The diagram below is the structure of uriniferous tubule of man. Name the parts ***(a) - (e)*** in the diagram.



(a) - ……

(b) - ……

(c) - ……

(d) - ……

(e) - ……

(b) State one major difference between ***(a)*** and ***(d)*** in above diagram.

.....

.....

(c) What is the part in human nephron which is always impermeable to water ?

.....

(d) What is the part in nephron which becomes permeable to water in the presence of ADH ?

.....

(v) Name **three** components contained in glomerular filterate of healthy man which are not found in urine.

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[See page 8

(C) **(i)** What is the overall role of the circulatory system of animals ?

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(ii) Why development of a circulatory system was required in animals during evolution ?

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(iii) State **two** major differences between close circulation and open circulation

Close circulation	**Open circulation**
.....	.....
.....	.....

(iv) **(a)** State **four** adaptations of human erythrocyte related to oxygen transportation.

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.....

(b) What is the most abundant enzyme in human erythrocyte ?

.....

(c) What is the hormone which stimulates the production of erythrocytes in man ?

.....

(v) Mention how to differentiate human neutrophills and monocytes.

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4. **(A)** **(i)** What is meant by cross-pollination ?

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.....

.....

(ii) What is the advantage of cross-pollination ?

.....

.....

(iii) Draw a labelled diagram of female gametophyte / embryo sac of Anthophyte.

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(iv) Describe the process of double fertilization takes place in the reproductive process of Anthophytes.

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(v) State **four** post-fertilization changes occur in Anthopyte ovule.

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(vi) What is seed dormancy ?

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(vii) What is the importance of seed dormancy ?

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(B) **(i)** Explain following terms.

Pure line - .....

.....

Homologous chromosomes - .....

.....

Codon - .....

.....

(ii) State **two** similarities seen in genetic factors which mentioned by Mendal and behavior of chromosomes during reproduction and cell division

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.....

(iii) Name the following non-mendalian patterns of inheritance and state the F_2 phenotype ratio result in standard crosses.

	Pattern of genetics	F_2 phenotype ration
a) An allele of a gene is not completely dominant over the other	.....	.....
b) Suppress the action of dominant gene in both loci by double recessive alles of another gene.	.....	.....
c) Suppress the action of a dominant gene by another dominant gene.	.....	.....

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(vi) Assume **A** and **B** are linked genes in a sexually reproducing population. They became **a** and **b** respectively being mutated in a certain ratio. What are the genotypes would be expected in next population ?

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.....

(v) State how the genetic variations occur according to the following theories.

(a) Lamark's theory - .....

.....

(b) Darwin's theory - .....

.....

(vi) State **three** factors which disturb the Hardy-Weinberg equlibrium in most populations

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.....

(C) **(i)** The measured amount of energy of an ecosystem is given in Kilo Jules, per square meter, per year

Total solar energy = 4.71×10^8

Net primary productivity = 4.95×10^6

Respiration in primary producers = 0.88×10^6

(a) State **two** major functional features of an ecosystem.

.....

.....

(b) What is meant by net primary production of an ecosystem ?

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.....

.....

(c) Theoretically, what is the amount of total energy gained by heterotrophs of above mentioned ecosystem ?

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.....

(d) Calculate the percentage of fixed energy out of incident energy of above ecosystem.

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(ii) What is meant by "Bio diversity hotspot" ?

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(iii) What are the expected objectives of " bio diversity convention" ?

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(iv) (a) What is meant by the term "extinction of species" ?

.....

(b) What is the evolutionary importance of the process of extinction ?

.....

(c) State the period of last catastrophic mass extinction occurred in bio diversity history and name **two** groups of organism that have been extincted in that period.

Period of extinction	**Group of organism**
.....	.....
	.....

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Part B - Essay

* Answer **four** questions only.
* Use labeled diagram when required.

(Allocated marks for each question is 15)

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5. "Water is an essential component for life". Discuss the importance of water to living organisms relating physical and chemical properties.

6. *(a)* Describe the location, gross structure and tissue organization of human stomach.

(b) Explain the functions of stomach.

7. *(a)* Describe the tissue structure of primary dicot root

(b) Explain the transportion of soil water up to root xylem with underline principles.

8. State the hormones secreted by the pituitary gland of man and describe the role of them.

9. *(a)* What are solid waster ?

(b) What are the environmental problems created by open dumping of solid waster ?

(c) Describe the current methods used in managing solid waste ?

10. Write shorts notes on following.

(a) Glycolysis

(b) Seminal fluid of man

(c) Sex linked inheritance of man

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