**RUBRICS: HSSC 1st ANNUAL EXAMINATION 2022**

**SUBJECT: BIOLOGY HSSC-II (Local) Final 20-06-2022 Time 3:25 PM**

| **Q.# / Part #** | **Criteria**  | **Level 1 (Marks)** | **Level 2(Marks)** | **Level 3 (Marks)** | **Level 4 (Marks)** | **Level 5 (Marks)** | **Level 6 (Marks)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| $$2(i)$$ | Advantages of uric acid as nitrogenous waste | **Any three** correct advantages like least toxic, least soluble, need less water to excrete, can be stored for long, crystalline/precipitate, suitable for arid environment etc. (3) | Any two correct advantages (2) | Any one correct advantage (1) | Some relevant information (0.5)  | Wrong Answer (0) |  |
| $$2(ii)$$ | Advantage of internal location of gaseous exchange tissue | **Any one** correct advantage like reduced H2O loss, moist surface, rapid diffusion/exchange etc. (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| Enlisting properties of Respiratory Surface | **Any two** correct properties like moist surface, thin epithelium, large surface area, rich blood supply, ventilation, etc. (2) | Any one correct property (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $$2(iii)$$ | Identification | Six correct identifications i.e. 1. Myofibril, 2. Myosin, 3. Actin, 4. F.Actin, 5. Tropomyosin, 6.Troponin (3) | Any five correct identifications (2.5) | Any four correct identifications (2) | Any three correct identifications (1.5) | Any two correct identifications (1) | Any one correct identification (0.5) | Wrong Answer (0) |
| $$2(iv)$$ | Justification to impossibility of stopping reflex action | **Any one** correct justification like involuntary action, rapid speed, coordinated by mainly spinal nerves, no conscious control of the brain etc. (0.5) | Wrong Answer (0) |  |  |  |  |
| Fundamental parts of reflex arc | Mentioning all five correct parts i.e. receptor, sensory neuron, inter neuron, motor neuron and effector (2.5) | Mentioning four correct parts (2) | Mentioning three parts (1.5) | Mentioning two part (1) | Some relevant information (0.5) | Wrong answer (0) |
| $$2(v)$$ | Phenotype of parents | Correct phenotypes of both (**Normal**) (1.5) | Correct phenotype of one parent (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| Genotypes of parents | Correct genotypes of both parents Father=**XCY**, Mother=**XCXc** (1.5) | Correct genotype of one parent (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $$2(vi)$$ | Description of miscarriage | Correct description (1) | Partially correct description (0.5) | Wrong Answer (0) |  |  |  |
| Causes of miscarriage | Any two correct causes of miscarriage (2) | Any one correct cause (1) | Some relevant information (0.5)  | Wrong Answer (0) |  |  |
| $$2(vii)$$ | Type of cells forming fourth germ layer | Correct name of cells i.e. neural crest cells/borders of neural plate/ridges of neural folds (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| Structures derived from fourth germ layer | **Any four** correct structures like peripheral nerves/PNS, adrenal medulla, teeth, skull bones, cartilage, melanocyte, some part of heart etc.(2) | Any three correct structures (1.5) | Any two correct structures (1) | Any one correct structure (0.5) | Wrong Answer (0) |  |
| $$2(viii)$$ | 1. Difference between intron and exon
 | Describing correct difference (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| 1. Difference between Heterochromatin and euchromatin
 | Describing correct difference (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| 1. Difference between Nucleosome and Primosome
 | Describing correct difference (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| $2(ix$) | Explanation of genetic drift | Correct explanation (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| Causes of genetic drift | Correctly describing two causes (2) | Correctly describing one cause (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $2(x$) | Damage to H2O quality due to cutting of trees | Correct explanation (1) | Partially correct (0.5) | Wrong Answer (0) |  |  |  |
| Enlisting non-conventional energy resources | Four correct names of non-conventional energy resources (2) | Three correct names (1.5) | Two correct names (1) | One correct name (0.5) | Wrong Answer (0) |  |
| $$2(xi)$$ | Cystic fibrosis | Correct description of cystic fibrosis (1) | Partially correct description (0.5) | Wrong Answer (0) |  |  |  |
| Gene therapy for cystic fibrosis | Correct explanation of in-vivo gene therapy for cystic fibrosis (2) | Partially correct explanation (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $$2(xii)$$ | Tissue culture | Correct description (1) | Partially correct (0.5) | Wrong Answer (0) |  |  |  |
| Techniques for animal cell culture | Explanation of two correct techniques i.e. anchorage dependent (involving finite cell line) and anchorage independent (involving continuous cell lines) (2) | Explanation of any one correct technique (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| 2(xiii) | Explanation of Integrated disease management  | Correct explanation involving its procedure and objectives/results (3) | Partially correct explanation (2) | Some relevant information (1) | Wrong Answer (0) |  |  |
| $$2(xiv)$$ | Reason of referring male as heterogametic  | Correctly explained reason (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |  |
| Cross showing male as heterogametic  | Correct cross with proper explanation of two types gamete formation (2) | Partially correct explanation/cross (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $$2(xv)$$ | Definition of hormones | Correct definition (1) | Partially correct (0.5) | Wrong Answer (0) |  |  |  |
| Classification on the basis of chemical nature | Five correct classifications (2) | Any four correct classifications (1.5) | Any three/two classifications (1) | Any one correct classification (0.5) | Wrong Answer (0) |  |
| 2(xvi) | Biological rhythms | Correct definition (1) | Partially correct definition (0.5) | Wrong Answer (0) |  |  |  |
| Importance of Biological rhythms | Correctly describing the importance of biological rhythms (2) | Partially correct description (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| 2(xvii) | Causes of infertility in human females | **Any three** correct causes like failure to ovulate, blocked oviduct, uterus damage, cervical mucus defect, genetic defects etc. (3) | Any two correct causes (2) | Any one correct cause (1) | Wrong Answer (0) |  |  |
| 2(xviii) | Cleavage | Correct description/definition (1) | Partially correct (0.5) | Wrong Answer (0) |  |  |  |
| Patterns of cleavage | Correct explanation of two patterns (2) | Correct explanation of any one pattern (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| 2(xix) | Ecological Pyramid | Correct description/definition (1) | Partially correct (0.5) | Wrong Answer (0) |  |  |  |
| Types of Ecological Pyramids | Correct explanation of any two types (2) | Correct explanation of any one type (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| 2(xx) | Roles of microbes in human welfare | Three correct roles (3) | Two correct roles (2) | One correct role (1) | Wrong Answer (0) |  |  |
| $$3(a)$$ | 1. Identification
 | Correct labeling/identifyingA. Helicase/GyraseB. Primase/RNA polymeraseC. DNA polymerase-IIID. Ligase/DNA polymerase-I/II/ IIIE. Okazaki fragments/Lagging strandF. Leading strand (3) | Correctly labeling any five (2.5) | Correctly labeling any four (2) | Correctly labeling any three (1.5) | Correctly labeling any two (1) | Correctly labeling any one (0.5) | Wrong Answer (0) |
| 1. Functions of A, B, C and D
 | Correct functions of all four labeled parts (4) | Correct functions of any three parts (3) | Correct functions of any two parts (2) | Correct function of any one part (1) | Wrong Answer (0) |  |
| 1. Maintenance DNA stability and variability
 | Correct explanation (2) | Partially correct (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $3(b$) | Explanation of Multiples alleles | Correct explanation of multiple alleles (1) | Partially correct (0.5) | Wrong Answer (0) |  |  |  |
| ABO blood group as an example of Multiple alleles | Correct explanation ABO blood group involving IA, IB, i alleles (3) | Partially correct (2) | Some relevant information (1) | Wrong Answer (0) |  |  |
| $4$ (a) | Identification/labeling  | Correct six identifications i.e.A. Meninges, B. Cerebrum,C. Pituitary, D. Cerebellum,E. Pons F. Medulla Oblongata (3) | Correctly identifying any five (2.5) | Correctly identifying any four (2) | Correctly identifying any three (1.5) | Correctly identifying any two (1) | Correctly identifying any one (0.5) | Wrong Answer (0) |
| Main parts of brain | Correctly writing three main parts of brain i.e. Fore brain, Mid brain and Hind brain (1.5) | Correctly writing any two parts (1) | Correctly writing any one part (0.5) | Wrong Answer (0) |  |  |
| Functions of part D | Correct functions (1.5) | Partially correct functions (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| Functions of part E | Correct functions (1.5) | Partially correct functions (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| Functions of part F | Correct functions (1.5) | Partially correct functions (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| 4 (b) | Probability of albinism in children of normal parents  | Explanation/cross showing correct probability (4) | Partially correct explanation showing correct probability (2) | Some relevant information (1) | Wrong Answer (0) |  |  |
| 5 (a) | Types of joints on basis of their mobility | Correctly describing and classifying moveable joints with any **two types** like ball and socket joints, hinge joints and pivot joints etc. (2) | Partially correct classification (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| Correctly describing immoveable joints (1) | Partially correct description (0.5) | Wrong Answer (0) |  |  |  |
| Correctly describing slightly moveable joints (1) | Partially correct description (0.5) | Wrong Answer (0) |  |  |  |
| Skeletal disorder | Properly explained any one disorder (3) | Partially explained (1.5) | Some relevant information (1) | Wrong Answer (0) |  |  |
| 5 (b) | 1. Principle of electrophoresis
 | **Any four** correct aspects like separation on the basis of size, shape, charge, number of stands and concentration of gel etc. (4) | Any three correct aspects (3) | Any two correct aspects (2) | Any one correct aspect (1) | Wrong Answer (0) |  |
| 1. Uses for electrophoresis
 | Correct explanation showing all uses (2) | Any two uses (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |