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

**SUBJECT: Biology HSSC-I (HA) Final: Dated 14-07-22 at 09:45 AM**

| **Q.# /Part #** | **Criteria** | **Level 1 (Marks)** | | **Level 2(Marks)** | | | | **Level 3 (Marks)** | | | **Level 4 (Marks)** | | | | | **Level 5 (Marks)** | | **Level 6 (Marks)** |
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|  | Role of Peroxisomes in plant cells | Correct description of **any one** role e.g. photorespiration/ contain oxidative enzymes/ formation and decomposition of H2O2, etc. (1.5) | | Partially correct role (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
| Role of Glyoxisomes in plant cells | Correct description of **any one** role e.g. Glyoxalate cycle/ enzyme for lipid metabolism in seeds/ fatty acids to carbohydrates conversion in seedlings etc. (1.5) | | Partially correct role (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
|  | Three types of cofactors with example | Correct explanation of Activator with one example (1) | | Partially correct explanation/example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct explanation of Coenzyme with one example (1) | | Partially correct explanation/example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct explanation of Prosthetic group with one example (1) | | Partially correct explanation/example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
|  | 1. Confirmatory test for Starch | Completely correct iodine test (1) | | Partially correct (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| 1. Difference between types of starch | Any two correct differences between Amylose and amylopectin/  Correct explanation of both amylose and Amylopectin (2) | | one correct difference between Amylose and amylopectin/ Correct explanation of amylose or Amylopectin (1) | | | | Some relevant information/only names of amylose or amylopectin (0.5) | | | Wrong Answer (0) | | | | |  | |  |
|  | Table completion for water properties and functions | Six correct answers   1. Universal solvent 2. Cohesion & adhesion etc. 3. Higher reactivity/ pH control etc. 4. Higher heat capacity/ heat of vaporization 5. Insulating layer above water/ life under ice etc. 6. Hydrophobic exclusion.(3) | | | Five correct answers (2.5) | | Four correct answers (2) | | Three correct answers (1.5) | | | | Two correct answers (1) | | One correct answer (0.5) | | Wrong Answer (0) | |
|  | Group of enzymes on the basis of types of reaction | Correct description of first group of enzymes with example (1) | | Correct description of first group of enzymes/ only example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description of 2nd group of enzymes with example (1) | | Correct description of 2nd group of enzymes/ only example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description of 3rd group of enzymes with example (1) | | Correct description of 3rd group of enzymes/ only example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
|  | Name & functions of three plasma membrane proteins (Channel Protein/ Carrier Protein, Enzymes, Antigens, Receptors etc.) | Correct name of first protein with function (1) | | Correct name of 1st protein/ only function (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct name of 2nd protein with function (1) | | Correct name of 2nd protein/ only function (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct name of 3rd protein with function (1) | | Correct name of 3rd protein/ only function (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
|  | z-scheme drawing | Correct drawing with complete labeling (3) | | Correct drawing with partial labeling (2) | | | | Partially correct drawing with partial labeling (1) | | | Only drawing/some relevant information (0.5) | | | | | Wrong Answer (0) | |  |
| 2 (viii) | Absorption spectrum | Correct definition (1.5) | | Partially correct (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
| Difference in absorption spectrum | Correct difference between absorption spectrum of Chlorophyll a,b and carotenoids (1.5) | | Correct description of absorption spectrum of Chlorophyll a,b/ carotenoids (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
| ) | Steps of lytic cycle of bacteriophage | Correct description of six steps i.e. Disintegration of host DNA, takeover of host metabolic machinery, synthesis of phage components, assembly, maturation, lysis of host, release of complete phage (3) | | Correct description of four to five steps (2.5) | | | | Correct description of three steps (2) | | | Correct description of two steps (1) | | | | | Some relevant information (0.5) | | Wrong Answer (0) |
| ) | Table completion for bacterial and viral diseases | 1. Correct name of disease i.e.   Peptic ulcers/ gastritis/ stomach cancer with prevention (1) | | Correct name of disease/ prevention (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| 1. Correct name of disease (AIDS) with causative agent (HIV) (1) | | Correct name of disease/ causative agent (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| 1. Correct name of disease (Polio) with symptom (1) | | Correct name of diseases/ symptom (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
|  | Bacteria as extremophile | Correct description **of** methanogens (1) | | Partially correct (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description **of** halophiles (1) | | Partially correct (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description **of** thermoacidophiles (1) | | Partially correct (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
|  | Identification and definition of water pathways | Correct identification and definition of pathway A i.e. **Apoplast**  (1) | | Some relevant information (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct identification and definition of pathway B i.e. **Symplast** (1) | | Some relevant information (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct identification and definition of pathway C i.e. **vacuolar** (1) | | Some relevant information (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| 2(xiii) | Identification of cell for antibody mediated response | Correct identification i.e. B-cells (1) | | Wrong Answer (0) | | | |  | | |  | | | | |  | |  |
| Mechanism of Antibody mediated response | Correct description of Activation of B-cells, production of plasma clone B-cells, memory B-cells and antibodies. (2) | | Partially correct description (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
|  | Evolutionary adaptations in Echinoderms | Correct description of evolutionary adaptation in Digestion (1) | | Partially correct response (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description of evolutionary adaptation in Respiration (1) | | Partially correct response (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description of evolutionary adaptation in Nervous system (1) | | Partially correct response (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| 2 (xv) | Roles of large intestine | **Any three** correct roles e.g. absorption of water, production and absorption of vitamins, reducing acidity, protection, storage, etc. (3) | | Any two correct roles (2) | | | | Any one correct role (1) | | | Some relevant information (0.5) | | | | | Wrong Answer (0) | |  |
| 2(xvi) | Life cycle of slime mold | Correctly drawn life cycle showing diploid and haploid generations, plasmodium, meiosis, flagellated/amoeboid cells fertilization etc. (3) | | Correctly drawn life cycle showing any four aspects (2) | | | | Correctly drawn life cycle showing any three aspects (1.5) | | | Partially correct drawn life cycle (1) | | | | | Some relevant information (0.5) | | Wrong Answer (0) |
| 2 (xvii) | Fungi a separate Kingdom | Correct description of one difference from Plantae, one difference from Animalia and one unique character related to fungi only (3) | | Any two correct criteria (2) | | | | Any one correct criterion (1) | | | Some relevant information (0.5) | | | | | Wrong Answer (0) | |  |
| 2 (xviii) | classification of pants on the basis of photoperiodism | Correct description of long-day plants with one example (1) | | Correct description of long-day plants /example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description of short-day plants with one example (1) | | Correct description of short-day plants /example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Correct description of day-neutral plants with one example (1) | | Correct description day-neutral plants /example (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| 2 (xix) | Description of transduction in bacteria | Correct description of transduction (1) | | Partially correct description (0.5) | | | | Wrong Answer (0) | | |  | | | | |  | |  |
| Mechanism of transduction in bacteria | Correct explanation of mechanism (2) | | Partially correct explanation of process (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
| 2 (xx) | Role of natural killer cell against infection | Correct mode of action of natural killer/ cytotoxic T-cells i.e. release of perforins, granzymes, cytotoxins etc.(3) | | Any two correct criteria (2) | | | | Any one correct criterion (1) | | | Some relevant information (0.5) | | | | | Wrong Answer (0) | |  |
| 3 (a) | Evolution of seed in plants | Correct explanation of development of Heterospory (2) | | Partially correct explanation of development of Heterospory (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
| Correct explanation of Evolution of Pollen tube (3) | | Partially correct explanation of Evolution of Pollen tube (2) | | | | Some relevant information (1) | | | Wrong Answer (0) | | | | |  | |  |
| Correct explanation of Evolution of Integument (2) | | Partially correct explanation of Evolution of Integument (1) | | | | Some relevant information (0.5) | | | **Wrong Answer (0)** | | | | |  | |  |
| 3 (b) | Storage and metabolic role of Liver | Correct explanation of two aspects of storage role of Liver (2) | | Correct explanation of one aspect of storage role of Liver (1) | | | | Some relevant information (0.5) | | | Wrong Answer (0) | | | | |  | |  |
| Correct explanation of four aspects of Metabolic role of Liver (4) | | Correct explanation of three aspects of Metabolic role of Liver (3) | | | | Correct explanation of two aspects of Metabolic role of Liver (2) | | | Correct explanation of one aspect of Metabolic role of Liver (1) | | | | | Some relevant information (0.5) | | Wrong Answer (0) |
| 4 (a) | General characteristics of mammals | Twelve to Thirteen correct characteristics (6.5) | Ten to eleven correct characteristics (5) | Eight to nine correct characteristics (4) | | Six to seven correct characteristics (3) | | | | Four to five correct characteristics (2) | | | | Two to three correct characteristics (1) | | Some relevant information (0.5) | | Wrong Answer (0) |
| Names of subgroups | Correct names of 3 sub-groups (1.5) | | Correct names of 2 sub-groups (1) | | | | Correct names of 1 sub-groups (0.5) | | | | Wrong Answer (0) | | | |  | |  | |
| 4 (b) | Features of Watson and crick DNA model | Correct explanation of five features (5) | | Correct explanation of four features (4) | | | | Correct explanation of Three features (3) | | | Correct explanation of Two features (2) | | | | | Correct explanation of one feature (1) | | Wrong Answer (0) | |
| 5.(a) | Role SA Node | Correct role of SA Node in heart beat (3) | | Partially correct description (2) | | | | Some relevant information (1) | | | | | | | | Wrong Answer (0) | |  | |
| Role of AV Node | Correct role of AV Node in heart beat (2) | | Partially correct description (1) | | | | Some relevant information (0.5) | | | | | | | | Wrong Answer (0) | |  | |
| Role Purkinje fibers | Correct role of Purkinje fibers in heart beat (3) | | Partially correct description (2) | | | | Some relevant information (1) | | | | | | | | Wrong Answer (0) | |  | |
| 5 (b) | Mechanism of Sugar movement in plants | Correct explanation of translocation mechanism in plants with concept of source, sink and pressure/mass flow(3) | | Partially correct description (2) | | | | Some relevant information (1) | | | | | | | | Wrong Answer (0) | |  | |
| Labeled diagram | Correct diagram with four labeling (2) | | Correct diagram with two labeling (1) | | | | Partially drawn diagram (0.5) | | | | | | | | Wrong Answer (0) | |  | |