**RUBRICS: HSSC1stANNUAL EXAMINATION 2022**

**SUBJECT: BIOLOGY HSSC-II (Hard Area) 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)** | **Level 7 (Marks)** |
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|  | Effect of Hole in the membrane surrounding lungs | Correct explanation showing collapse of Lungs affecting the breathing process (3) | | | | | Partially correct response (2) | | | | | | | | Some relevant information (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
|  | Effect of low blood pressure in afferent arteriole | Correct explanation showing low water and solute movement across the membrane affecting the filtration (3) | | | | | Partially correct response (2) | | | | | | | | Some relevant information (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
|  | Identification / Labeling | Correct six labels  1. Smooth  2.Skeletal  3. In visceral organs e.g. stomach, kidneys, blood vessels etc.  4. Heart  5. Involuntary/ Autonomic NS  6. Voluntary / Somatic NS (3) | | | | | Any five correct (2.5) | | | | Any four correct (2) | | | | | | | | | Any three correct (1.5) | | | | | Any two correct (1) | | Any one correct (0.5) | Wrong (0) |
|  | Pathway of nerve impulse | Correct pathway  1. Stimulus/sound  2. Sensory neuron/auditory nerve  3. CNS  4. Motor neuron  5. Effector  6. Response/head turn (3) | | | | | Any five with correct sequence (2.5) | | | | | | | | Any four with correct sequence (2) | | | | Any three correct (1.5) | | | | | Any two correct (1) | | | Any one correct (0.5) | Wrong (0) |
|  | Hemophilia | Correct explanation of inheritance like sex linked recessive (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| Colorblindness | Correct explanation of inheritance like sex linked recessive (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| Muscular dystrophy | Correct explanation of inheritance like sex linked recessive (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
|  | Corpus luteum | Correct explanation i.e. formed after ovulation, yellowish color, glandular etc. (2) | | | | | Any one aspect correctly explained (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Role during menstrual cycle | One correct role (1) | | | | | Some relevant information (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
|  | Aging (changes at cellular level) | **Any three** correct changes like  1. Less division  2. Short length of telomeres  3. Changes in Intracellular components like proteins, enzymes and other nutrients  4. Increase pigmentation  5. Deposition of fatly substances etc.  (3) | | | | | Any two correct changes (2) | | | | | | | | Any one correct change (1) | | | | Some relevant information (0.5) | | | | | Wrong Answer (0) | | |  |  |
|  | Reason for Short mRNA in Eukaryotes | Correct explanation of splicing (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| Mechanism for protection | Correct explanation of cap and tail (2) | | | | | Correct explanation of any one aspect (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| ) | Nitrogen fixation | Correct description of biological, industrial and atmospheric methods (3) | | | | | Any two correct methods (2) | | | | | | | | Any one correct method (1) | | | | Some relevant information (0.5) | | | | | Wrong Answer (0) | | |  |  |
| ) | Succession | Correct description (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong (0) | | | |  | | | | |  | | |  |  |
| How earlier species help later species | Correct explanation showing nutrients provision, substratum and fertility of soil for growth etc (2) | | | | | Partially correct response (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
|  | Principle of electrophoresis | **Any four** correct aspects like separation on the basis of size, shape, charge, number of stands and concentration of gel etc. (2) | | | | | Any three correct aspects (1.5) | | | | | | | | Any two correct aspects (1) | | | | Any one correct aspect (0.5) | | | | | Wrong Answer (0) | | |  |  |
| Applications of electrophoresis | Two correct applications (1) | | | | | One correct application (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
|  | Steps in DNA sequencing | Three correct steps (3) | | | | | Any two correct steps (2) | | | | | | | | Any one correct step (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| 2(xiii) | Role of microbes in energy production | Correct explanation (3) | | | | | Partially correct explanation (2) | | | | | | | | Some relevant information (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
|  | XO – XX sex determination with example | Correct explanation with example (3) | | | | | Partially correct response (2) | | | | | | | | Some relevant information (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
|  | Hormones of Anterior pituitary gland | Correct names of six hormones i.e. GH/STH, ACTH,TSH, FSH, LH/ICSH, Prolactin/LTH (3) | | Correct names of any five hormones (2.5) | | | | | | Correct names of any four hormones (2) | | | | | | Correct names of any three hormones (1.5) | | | | Correct names of any two hormones (1) | | | Correct name of any one hormone (0.5) | | | Wrong Answer (0) |  |  |
| 2(xvi) | Vaccine | Correct description (1.5) | | | | | Partially correct description (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Importance of vaccine | Correct description of importance (1.5) | | | | | Partially correct description (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| 2(xvii) | Causes of male Infertility | **Any three** correct causes like azoospermia, oligospermia, sperm deformities, autoimmune disorder and genetic defects etc. (3) | | | | | Any two correct causes (2) | | | | | | | | Any one correct cause (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| 2(xviii) | Names and organs derived from Germ Layers | Correctly mentioning ectoderm and organs derived from it i.e. skin and nervous system (1) | | | | | Correct Names/Organs (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| Correctly mentioning endoderm and organs derived from it i.e. gut and parts of respiratory system (1) | | | | | Partially correct/Names/Organs (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| Correctly mentioning mesoderm and organs derived from it i.e. all systems except gut, skin and nervous system (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| 2(xix) | Water Cycle | Correctly drawn and labeled diagram showing complete water cycle (3) | | | | | Partially correct response (2) | | | | | | | | Some relevant information (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| 2(xx) | Structure of voice box | Correct structure i.e. muscles and cartilage, fibrous bands/ vocal cords etc. (2) | | | | | Partially correct structure (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Function of voice box | One correct function (sound formation/ Air passing (1) | | | | | Some relevant information (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
|  | Explanation of PCR process | Correct explanation of denaturation (2) | | | | | Partially correct explanation of denaturation (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
|  |  |
| Correct explanation of primer annealing (2) | | | | | Partially correct explanation of primer annealing (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Correct explanation of extension/polymerization (2) | | | | | Partially correct explanation of extension/polymerization (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Correct diagram (1) | | | | | Partially correct diagram (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |
| ) | Techniques for improvement of crops yield  (any three techniques) | Name and explanation of **first technique** (2) | | | | | Partially correct response (1) | | | | | | | | Any relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Name and explanation of **second technique** (2) | | | | | Partially correct response (1) | | | | | | | | Any relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Name and explanation of **third technique** (2) | | | | | Partially correct response (1) | | | | | | | | Any relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| (a) | Identification/labeling | Correctly labeling all six i.e.  A. Inner cell mass  B. Amniotic fluid/ Epiblast  C. Embryonic disc/Hypoblast  D. Epiblast  E. Hypo blast  F. Mesoderm/primitive streak (3) | Any five correct labeling (2.5) | | | | | | Any four correct labeling (2) | | | | | Any three correct labeling (1.5) | | | | Any two correct labeling (1) | | | | Any one correct labeling (0.5) | | | Wrong Answer (0) | |  |  |
| Role of gastrulation in specialization of cells | Correct explanation (1) | | | | | Partially correct (0.5) | | | | | | | | Wrong (0) | | | |  | | | | |  | | |  |  |
| 4 (b) | Process of gastrulation in human | Correct explanation of three germinal layers through formation of inner cell mass, embryonic disc, Epiblast and Hypoblast primitive streak etc. (5) | | | | | Correct explanation of the three layers by mentioning majority of the mentioned steps (4) | | | | | | | | Correct explanation of the three layers by mentioning some of the mentioned steps (3) | | | | Partially correct response (2) | | | | | Some relevant information (1) | | | Wrong Answer (0) |  |
| 4 (c) | Explanation of variations in wheat grain color | Correct explanation of polygenic inheritance,  Complete cross/ explanation about genes and reason for many variations in the wheat grain color (4) | | | | | Partially correct response involving number of genes and variation of seed color (3) | | | | | | | | Some explanation about multiple genes in wheat/cross (02) | | | | Some relevant information (01) | | | | | Wrong Answer (0) | | |  |  |
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| 5 (a) | Explanation of the process of repair of fracture | Correct explanation of four steps (4) | | | Correct explanation of three steps (3) | | | | | | | Correct explanation of two steps (2) | | | | | Correct explanation of one step (1) | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | |  |  |
| 5 (b) | 1. Identification/Labeling | Six correct labeling  A. Bowman’s capsule/ Glomerulus  B. Proximal/first coiled tubule  C. Descending loop of Henle  D. Ascending loop of Henle  E. Distal/last coiled tubule  F. Collecting duct (3) | | | | Five correct labeling (2.5) | | Four correct labeling (2) | | | | | Three correct labeling (1.5) | | | | Two correct labeling (1) | | | | One correct labeling (0.5) | | | | Wrong Answer (0) | |  |  |
| 1. Process of urine formation | Correct explanation of glomerular filtration (2) | | | | | Partially correct response (1) | | | | | | | | Some relevant information (0.5) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Correct explanation of selective reabsorption (3) | | | | | Partially correct response (2) | | | | | | | | Some relevant information (1) | | | | Wrong Answer (0) | | | | |  | | |  |  |
| Correct explanation of tubular secretion (1) | | | | | Partially correct response (0.5) | | | | | | | | Wrong Answer (0) | | | |  | | | | |  | | |  |  |