**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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| $$2(i)$$ | 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) |  |  |  |
| $$2(ii)$$ | 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) |  |  |  |
| $$2(iii)$$ | Identification / Labeling | Correct six labels 1. Smooth2.Skeletal 3. In visceral organs e.g. stomach, kidneys, blood vessels etc.4. Heart5. Involuntary/ Autonomic NS6. 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) |
| $$2(iv)$$ | Pathway of nerve impulse | Correct pathway1. Stimulus/sound2. Sensory neuron/auditory nerve3. CNS4. Motor neuron5. Effector6. 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) |
| $$2(v)$$ | 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) |  |  |  |  |
| $$2(vi)$$ | 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) |  |  |  |  |
| $$2(vii)$$ | Aging (changes at cellular level) | **Any three** correct changes like1. Less division2. Short length of telomeres 3. Changes in Intracellular components like proteins, enzymes and other nutrients4. Increase pigmentation5. Deposition of fatly substances etc.(3) | Any two correct changes (2) | Any one correct change (1) | Some relevant information (0.5) | Wrong Answer (0) |  |  |
| $$2(viii)$$ | 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) |  |  |  |
| $2(ix$) | 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) |  |  |
| $2(x$) | 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) |  |  |  |
| $$2(xi)$$ | 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) |  |  |  |  |
| $$2(xii)$$ | 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) |  |  |  |
| $$2(xiv)$$ | XO – XX sex determination with example  | Correct explanation with example (3) | Partially correct response (2) | Some relevant information (1) | Wrong Answer (0) |  |  |  |
| $$2(xv)$$ | 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) |  |  |  |  |
| $$3(a)$$ | 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) |  |  |  |  |
| $3(b$) | 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) |  |  |  |
| $4$ (a) | Identification/labeling | Correctly labeling all six i.e. A. Inner cell massB. Amniotic fluid/ EpiblastC. Embryonic disc/HypoblastD. EpiblastE. Hypo blastF. 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) |  |  |
|  |  |
| 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 labelingA. Bowman’s capsule/ GlomerulusB. Proximal/first coiled tubuleC. Descending loop of HenleD. Ascending loop of HenleE. Distal/last coiled tubuleF. 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) |  |  |  |  |