SECOND YEAR HIGEHR SECONDARY MODEL EXAMINATION MARCH-2022
Part-III
ZOOLOGY

<table>
<tr><th>Qn. No</th><th>Scoring Key</th><th>Score</th></tr>
<tr><td colspan="3">A-Answer any three questions from 1 to 4. Each carries 1 score</td></tr>
<tr><td>1.</td><td>i) Gene migration or gene flow,
ii) Genetic drift,
iii) Mutation,
iv) Genetic recombination and
v) Natural selection(Any one)</td><td>1</td></tr>
<tr><td>2</td><td>Morula</td><td>1</td></tr>
<tr><td>3</td><td>single nucleotide polymorphism</td><td>1</td></tr>
<tr><td>4</td><td>menopause</td><td>1</td></tr>
<tr><td colspan="3">B-Answer all questions from 5 to 6. Each carries 1 score</td></tr>
<tr><td>5</td><td>Johannesburg</td><td>1</td></tr>
<tr><td>6</td><td>Penicillin</td><td>1</td></tr>
<tr><td colspan="3">A-Answer any two questions from 7 to 9. Each carries 2 score</td></tr>
<tr><td>7</td><td>• Presence of an additional copy of the chromosome number 21 (trisomy of 21).
• Short statured
• Small round head,
• Furrowed tongue
• Partially open mouth
• Palm is broad with characteristic palm crease.
• Physical, psychomotor and mental development is retarded.
(Any four characteristic feature)</td><td>0.5×4= 2</td></tr>
<tr><td>8</td><td>This associations helps
• to absorbs phosphorus from soil and passes it to the plant.
• Resistance to root-borne pathogens,
• Tolerance to salinity and drought,
• Overall increase in plant growth and development</td><td>0.5×4= 2</td></tr>
<tr><td>9</td><td>A-Salmonella typhi
B-Malaria
C-Fungi
D-Ascaris/Round worm</td><td>0.5×4= 2</td></tr>
<tr><td colspan="3">B-Answer any two questions from 10 to 13. Each carries 2 score</td></tr>
<tr><td>10</td><td>
<table>
<tr><th>Active Immunity</th><th>Passive Immunity</th></tr>
<tr><td>When a host is exposed to antigens, which may be in the form of living or dead microbes or other proteins, antibodies are produced in the host body</td><td>When ready-made antibodies are directly given to protect the body against foreign agents, it is called passive immunity</td></tr>
<tr><td>Active immunity is slow and takes time to give its full effective response</td><td>Passive immunity is quick and takes short time to give its full effective response</td></tr>
<tr><td>Examples:
01-Injecting the microbes deliberately during immunisation or infectious</td><td>Examples:
01-The yellowish fluid colostrum secreted by mother during the initial days of</td></tr>
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</td><td>3</td></tr>
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	organisms gaining access into body during natural infection induce active immunity.	lactation has abundant antibodies (IgA) to protect the infant. 02-The foetus also receives some antibodies from their mother, through the placenta during pregnancy

11	a)Chemical evolution b) S.L. Miller	**1** **1**
12	a)Mammary tubule b)Mammary duct	**1** **1**
13	a) It is the crossing of a progeny with its recessive parent . b)It is used to find unknown genotype of an individual.	**1** **1**
A– Answer any three questions from 14 to 17. Each carries 3 score		
14	(i) Avoid undue peer pressure (ii)Education and counselling (iii)Seeking help from parents and peers (iv)Looking for danger signs (v)Seeking professional and medical help (Any three measures)	**1** **1** **1**
15	**Pedigree analysis.** It is the analysis of trait in a several generations of a family is called pedigree analysis. i)Mating between relatives (consanguineous mating) ii)Sex unspecified iii)Female iv)Mating	**1** **0.5** **0.5** **0.5** **0.5**
16	a)Z = slope of the line (regression coefficient) C = Y-intercept b)Within a region species richness increased with increasing explored area, but only up to a limit c) 0.1 to 0.2	**0.5** **0.5** **1** **1**

17

Homologous organs	Analogous organs	
Homologus organs are organs having same structure and origin but different functions.	Analogous Organs having same function but different structure and origin	**1**
Eg:1) whales, bats, Cheetah and human (all mammals) share similarities in the pattern of bones of forelimbs Eg;2) the thorn and tendrils of Bougainvillea and Cucurbita represent homology Eg;3) vertebrate hearts or brains (Any one example)	Eg;1) Wings of butterfly and of birds Eg;2) the eye of the octopus and of mammals Eg;3) the flippers of Penguins and Dolphins Eg;4) Sweet potato (root modification) and potato (stem modification) (Any one example)	**1**
Homologus organs are developed due to **divergent evolution.**	Analogous are developed due to **Convergent evolution**	**1**

B-Answer The following question. Carries 3 Scores		
18	The Heterogenous nuclear RNA (HnRNA) contain both the exons and the introns and are non-functional. Hence, it is	

	subjected to a processing **Splicing** Here the introns are removed and exons are joined in a defined order. **capping** In capping an unusual nucleotide (methyl guanosine triphosphate) is added to the 5'-end of hnRNA. **Tailing** In tailing, adenylate residues (200-300) are added at 3'-end in a template independent manner.	**1** **1** **1**
Answer any one question from 19 to 20. Carries 5 scores		
19	a) central Dogma in molecular biology is the unidirectional flow of information from DNA-RNA-Protein/ or/ the genetic information flows from DNA-->RNA-->Protein. **Processes in central Dogma in molecular biology** DNA Replication DNA Transcription DNA Translation (Any two processes) **b)Regulation of gene expression in Eukaryotes** i) Transcriptional level (formation of primary transcript), ii) Processing level (regulation of splicing), iii) Transport of mRNA from nucleus to the cytoplasm, iv) Translational level	**1** **2** **0.5** **0.5** **0.5** **0.5**
20	(a) A–Ampulla B–Ovary C–Fimbriae D–Cervical canal b) Surgical contraceptive method in male : **Vasectomy** Surgical contraceptive method in male : **Tubectomy** • The part which is cut or tied up in Vasectomy: **Vas deferens** • The part which is cut or tied up in Tubectomy: **oviduct/fallopian tube**	**0.5** **0.5** **0.5** **0.5** **1** **1** **0.5** **0.5**