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Version No.				
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ROLL NUMBER						

BIOLOGY HSSC-I

SECTION – A (Marks 17)

Time allowed: 25 Minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed.

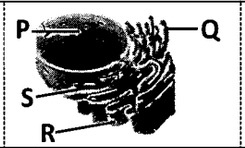
Do not use lead pencil.

حصہ اوّل لازمی ہے۔ اس کے جوابات اسی صفحہ پر دیے کرنا ظم مرکز کے حوالے کریں۔ کاٹ کر دوبارہ لکھنے کی اجازت نہیں ہے۔ لیڈ پنسل کا استعمال ممنوع ہے۔

Answer Sheet No. _____

ہر سوال کے سامنے دیے گئے، کریکولم کے مطابق درست دائرہ کو پر کریں۔ **Invigilator Sign.** _____

Fill the relevant bubble against each question according to curriculum: **Candidate Sign.** _____

	Question	A	B	C	D	A	B	C	D
1.	When energy flows from one trophic level to the next, the amount of energy lost is about:	10%	50%	90%	100%	○	○	○	○
2.	The part involved in detoxification of drugs is: 	P	Q	R	S	○	○	○	○
3.	The **main function** of progesterone in human female reproductive system is:	Ovulation	Follicle development	Endometrium development	Implantation of embryo	○	○	○	○
4.	When RNA polymerase binds to promoter for transcription, the unit which detaches form it is:	α (Alpha)	β (Beta)	γ (Gamma)	θ (Theta)	○	○	○	○
5.	Which one of the following sequence of reactions is **correct** regarding Calvin cycle?	3PGA→ 1–3BPG→ G3P	3PGA→G3P→ RuP	G3P →RuBP →3PGA	G3P → RuP→ 3PGA	○	○	○	○
6.	The stem cells which can differentiate into few cell types are:	Totipotent	Unipotent	Pluripotent	Oligopotent	○	○	○	○
7.	The protein present in tendons and ligaments is:	Casein	Keratin	Elastin	Fibrinogen	○	○	○	○
8.	The compound malonate is competitive inhibitor of:	Fumarate	Succinate	Succinic dehydrogenase	Histidine decarboxylase	○	○	○	○
9.	The condition in which centromere of a chromosome is located slightly away from the center is termed as:	Acrocentric	Sub metacentric	Telocentric	Metacentric	○	○	○	○
10.	Which fungus is **poisonous**?	*Agaricus*	*Morchella*	*Aspergillus*	*Amanita*	○	○	○	○
11.	Hepatitis–D is caused by:	Bacteria	Virus	Prions	Viroids	○	○	○	○
12.	Bark is produced by:	Cork cambium	Lateral meristem	Apical meristem	Intercalary meristem	○	○	○	○
13.	The sex linked traits which are more common in males than female are:	Autosomal recessive	Y– linked dominant	X– linked dominant	X– linked recessive	○	○	○	○
14.	The organism having Chlorophyll – a, Phycocyanin and Heterocyst may be a/an:	Bacterium	Cyanobacterium	Fungus	Alga	○	○	○	○
15.	Which of the following structure is common to all chordate embryo?	Placenta	Notochord	Vertebral column	Lungs	○	○	○	○
16.	Identify the trait which is **NOT** controlled by polygenes?	Intelligence	Height	Skin color	Tongue rolling	○	○	○	○
17.	Which of the following is an example of **homologous organs**?	Wing of an insect & a bird	Forelimb of human & wing of a bat	Wing of an insect & a bat	Gills of fish & lungs of mammals	○	○	○	○

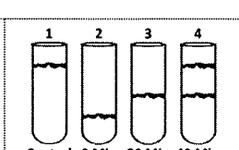
BIOLOGY HSSC–I

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Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

SECTION – B (Marks 42)

Q. 2 Answers the following parts briefly. **(14 x 3 = 42)**

(i)	How does Golgi complex play role in Cell secretion and Cell division?	03	OR	Compare the characteristics of Cofactors of enzymes with one example of each.	03
(ii)	Write any three main features of Bryophytes.	03	OR	Enlist any three physical methods used to control bacteria with their mechanisms.	03
(iii)	Justify the statement "Water is a universal solvent".	03	OR	Endospore formation is a mechanism in bacteria to survive under unfavorable conditions. Justify.	03
(iv)	List the Accessory glands associated with male reproductive system with their respective locations.	03	OR	What is incomplete dominance? Explain with a suitable example.	1+2
(v)	Why and how cyclic Photophosphorylation occurs in light reactions?	1+2	OR	Write steps of lytic cycle in bacteriophage.	03
(vi)	What is mycorrhiza? Differentiate between its types.	1+2	OR	What is point mutation? How it causes sickle cell anaemia?	1+2
(vii)	Compare apoplast and symplast pathways involved in uptake of water by roots in plants.	03	OR	Molecular biology provides evidence of evolution. Justify the statement with reference to any three examples.	03
(viii)	Write about de-nitrification and assimilation processes in nitrogen cycle.	1.5 + 1.5	OR	Write about the structure and functions of ovary and oviduct in female reproductive system.	2+1
(ix)	What is Y– linked inheritance? How these traits are transmitted? Also give two examples.	1x3	OR	Name and briefly explain Growth Phases of bacteria. (Any three)	03
(x)	Complete the table with reference to enzymes: **a** | | Break large molecules with water | **b** Lyases | | **c** | | Cytochrome oxidase (Enzyme / Mechanism of action / Example)	03	OR	Coat color in *Labrador retriever* shows epistasis. If a black(BbEe) and a chocolate (bbEe) *Labradors retrievers* are crossed: **a.** Show genotypes and phenotypes of offspring(s). **b.** Calculate the probability of black and yellow coat color.	2+1
(xi)	Illustrate the conversion of pyruvic acid to acetyl CoA as link reaction between glycolysis and Krebs cycle.	03	OR	Interpret the results of Meselson and Stahl experiment when they grew bacteria in N_{15} and then in N_{14} medium for tube 2, 3 and 4. 	03
(xii)	Write difference in flower, stem and seed of dicots and monocots.	03	OR	Name any three enzymes with their functions involved in DNA replication.	03
(xiii)	Elaborate the endosymbiont theory regarding evolution of chloroplast and mitochondria.	03	OR	How is maltose different from sucrose in glycosidic linkage, monosaccharide units and specific role?	1x3
(xiv)	What are the limitations of Lamarckism?	03	OR	Write characteristics of angiosperms with reference to vascular tissues and alternation of generation.	03

SECTION – C (Marks 26)

Attempt the following questions.

Q.3	Explain the steps of life cycle of Human Immunodeficiency Virus (HIV). Also draw its life cycle.	5+2	OR	Explain different stages of xerarch succession on bare rock starting form lichens to flowering plants.	07
Q.4	Explain translation process starting from initiation complex till termination. Also draw diagram of initiation complex and elongation steps.	2+2 + 1+2	OR	How electrons move through electron transport chain till they reach final acceptor? Explain. Draw diagram of electron transport chain.	5+2
Q.5	Describe the pathways involved in moving signals from outside to inside the cell with their diagrams.	4+2	OR	Elaborate the structures and roles of steroids and prostaglandins as important group of lipids.	3+3
Q.6	Explain the mechanism of photoperiodism.	06	OR	Write three distinguishing characteristics and one example of each of the phylum Cnidaria Arthropoda and Mollusca.	2x3