27

Version No.			
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ROLL NUMBER					

BIOLOGY HSSC–II

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.

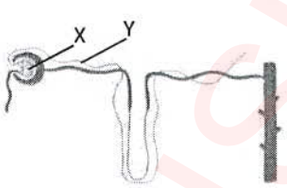
Do not use lead pencil.

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

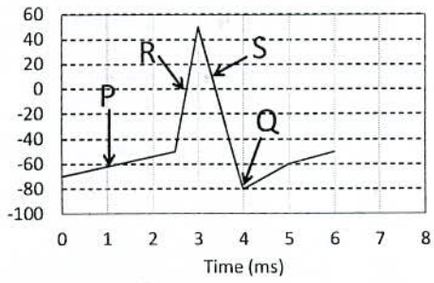
Answer Sheet No. _____

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.	A snail was moving on a table. When the table was tapped snail stopped moving. When tapping was done repeatedly, snail stopped responding to it. Identify the type of behavior shown.	Imprinting	Habituation	Innate	Instinct	○	○	○	○
2.	Due to lightning, a forest was set on fire and destroyed. The type of succession which will occur then is termed as:	Xerarch	Secondary	Hydrarch	Primary	○	○	○	○
3.	Which one is a steroid hormone?	Adrenaline	Parathormone	Insulin	Aldosterone	○	○	○	○
4.	The following diagram shows nephron. Identify the processes which occur at X and Y. 	Selective Reabsorption, Ultrafiltration	Diffusion, Tubular secretion	Ultrafiltration, Selective Reabsorption	Active Transport, Selective Reabsorption	○	○	○	○
5.	Which of the following steps are involved in **inhalation**? I. Diaphragm contracts II. Rib cage lowers III. External intercostal muscles contract IV. Pressure in lungs decreases	II, III, IV	I, III, IV	I, II, IV	I, II, III	○	○	○	○
6.	The workers in a honey bee hive exhibit:	Aggregation	Territoriality	Altruism	Dominance Hierarchy	○	○	○	○

IIII

	Question	A	B	C	D	A	B	C	D
7.	In the given figure of action potential in a Neuron, hyperpolarization is represented by: 	Q	R	S	P	○	○	○	○
8.	Which one of the following is **NOT** a Sexually Transmitted Disease?	Gonorrhea	Syphilis	AIDS	Measles	○	○	○	○
9.	The extra embryonic membrane which provides a fluid filled environment for developing fetus is:	Chorion	Allantois	Yolk sac	Amnion	○	○	○	○
10.	In pea plant, round and wrinkled seed shape is controlled by R and r alleles respectively. The cross which will give rise 1:1 ratio of both phenotypes can be:	Rr x Rr	Rr x RR	Rr x rr	RR x rr	○	○	○	○
11.	Baldness is more common in males than in females because it is a:	Sex influenced trait	Sex limited trait	Y- linked trait	Sex linked recessive trait	○	○	○	○
12.	In DNA replication, the primer:	Consists of few DNA nucleotides	Helps to unwind DNA double strand	Prevents DNA strands to pair up	Is a short segment of RNA nucleotides	○	○	○	○
13.	After successful implantation of blastocyst into endometrium of uterus, level of which hormone increases?	Human chorionic gonadotrophin	Luteinizing hormone	Oxytocin	Progesterone	○	○	○	○
14.	Normally vaccination can be done at any age for:	Measles	Hepatitis	Diphtheria	Polio	○	○	○	○
15.	According to Hardy Weinberg Theorem, which one of the following factor cannot change allelic frequency?	Mutation	Random mating	Selection	Gene flow	○	○	○	○
16.	Restriction endonucleases can be used in Genetic Engineering to:	Produce cDNA	Cut plasmid DNA	Join DNA at sticky ends	Clone DNA	○	○	○	○
17.	In Nitrogen cycle, conversion of Nitrates into nitrogen is termed as:	Ammonification	Assimilation	Denitrification	Nitrification	○	○	○	○

ROLL NUMBER					

BIOLOGY HSSC–II

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

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C'. Write your answers neatly and legibly.

SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. All parts carry equal marks. **(14 x 3 = 42)**

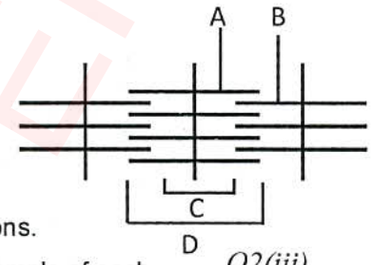
(i) Compare the mechanism of osmoregulation in Marine and Fresh water animals.

(ii) How are 'Counter Current Multiplier' mechanism and 'hormones' involved in concentrating urine?

(iii) The diagram shows structure of a Sarcomere.

a. Label the parts A, B, C, and D

b. Mention the changes in C and D in a contracted sarcomere



Q2(iii)

(iv) Enlist the cells associated with bones. Also write their respective functions.

(v) Differentiate between two types of Neurotransmitters. Also give one example of each.

(vi) Limbic system lies under cerebrum. Write down its parts and their functions.

(vii) A man and a woman with blood groups A and B respectively have four children all with different blood groups of ABO system. By a cross show genotypes of both parents and offsprings.

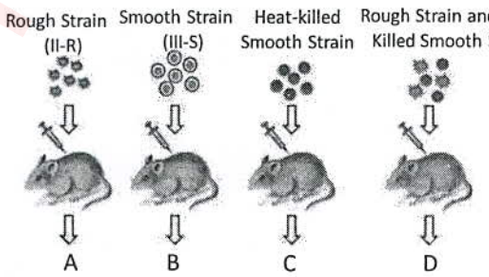
(viii) XO-XX is a pattern of sex determination. Explain with example.

(ix) Write about the causes and symptoms of Phenyl Ketonuria.

(x) An experiment is shown in the diagram.

a. Who performed this experiment and why?

b. Write down the result of experiments A-D



Q2(x)

(xi) Briefly explain any three characteristics of Genetic Code.

(xii) What is Speciation? Briefly explain Sympatric Speciation?

(xiii) What is Divergent Evolution? Explain with a suitable example.

(xiv) How does Endosymbiont hypothesis explain evolution of Eukaryotes from Prokaryotes?

(xv) Population have many characteristics. Write about any three characteristics.

(xvi) Enlist the sources of Choroflouro Carbons (CFCs). How do they cause Ozone Depletion?

(xvii) a. What is the role of CFTR gene in a normal person?

b. Write down symptoms of Cystic Fibrosis.

c. Write mechanism of Gene Therapy used to cure Cystic Fibrosis.

(xviii) Elaborate the role of Microbes in Food Processing by giving any three examples.

(xix) Write about two major techniques of animal cell culture.

(xx) What are Acclimatization and Selection? How do they help to improve crops?

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. **(2 x 13 = 26)**

Q. 3 a. Describe stages of Menstrual Cycle in Human Female. Also draw the diagram outline.

b. Explain Latent Learning with example.

Q. 4 a. Write the names and functions of hormones produced by Thyroid Gland. Write about the problems related with abnormal secretion of hormones in different stages.

b. Explain events of Gastrulation in Human. Also draw the diagram.

Q. 5 a. Describe the mechanism of DNA Analysis using Restriction Fragment Length Polymorphism (RRLP).

b. How is Carbon Dioxide transported through blood as Bicarbonate ions? Explain in detail.

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BIOLOGY HSSC–II

SECTION – A (Marks 17)

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

Answer Sheet No. _____

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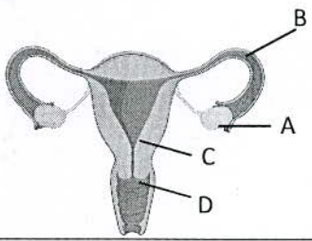
Fill the relevant bubble against each question according to curriculum: **Candidate Sign.** _____

	Question	A	B	C	D	A	B	C	D
1.	Which of the following events occur during **exhalation**? I. Diaphragm relaxes II. Rib cage lowers III. External intercostal muscles contract IV. Pressure in lungs Increases	I, II, III	II, III, IV	I, III, IV	I, II, IV	○	○	○	○
2.	If body is overheated, the body temperature can be regulated by:	More sweating, vasoconstrict-ion	Less sweating, vasodilation	Less sweating, vasoconstrict-ion	More sweating, vasodilation	○	○	○	○
3.	Which part of Limbic system is involved in long term memory formation?	Cerebellum	Hippocampus	Amygdala	Hypothalamus	○	○	○	○
4.	The type of Agonistic behavior exhibited by mountain gorilla is:	Dominance hierarchy	Altruism	Territoriality	Instinct	○	○	○	○
5.	Which one is a Sexually Transmitted Disease?	Syphilis	Measles	Polio	Tetanus	○	○	○	○
6.	Leydig cells found in testes are involved in secretion of:	Inhibin	Testosterone	Luteinizing hormone	Nutrients	○	○	○	○
7.	All of the following are examples of Reflex Action **EXCEPT**:	Blinking of eyelids in bright light	Pulling hand away from hot object	Sneezing on tickling nose	Picking pen to write name	○	○	○	○
8.	When true breeding red and white flowering plants were crossed, all pink offsprings were produced. When these pink flowered plants were self crossed, the percent of pink flowering offsprings would be:	25%	50%	75%	100%	○	○	○	○
9.	During translation, the amino acyl t-RNA complex attaches to small ribosomal unit at:	P site	E site	mRNA	A site	○	○	○	○
10.	Hemophilia is more common in males than in females because this trait is:	Y-linked recessive	Sex influenced	Sex limited	Sex linked recessive	○	○	○	○

	Question	A	B	C	D	A	B	C	D
11.	A female having $44+XO$ chromosome, webbed neck and large number of moles is suffering from:	Turner syndrome	Down syndrome	Kilnefelter syndrome	Sickle cell anaemia	○	○	○	○
12.	The ability of a particular environment that can support maximum individuals is termed as:	Uniform distribution	Clumped distribution	Carrying capacity	Density	○	○	○	○
13.	All of the following are Stop Codons **EXCEPT**:	UGA	UAG	UAA	AUG	○	○	○	○
14.	Identify the part where fertilization of ovum occurs. 	A	B	C	D	○	○	○	○
15.	To prove DNA replication is semi conservative, Meselson and Stahl labelled DNA with N^{15}, DNA sample appeared heaviest which was collected after.	0 minutes	20 minutes	40 minutes	60 minutes	○	○	○	○
16.	Which type of behaviour helps animals with short life span to live successfully?	Learning	Innate	Imprinting	Altruism	○	○	○	○
17.	All are characteristics of Haemoglobin **EXCEPT**:	Has more affinity with oxygen	Loses oxygen at PO_2 60mmHg	Transports oxygen	Has four iron atoms in molecule	○	○	○	○

ROLL NUMBER					

BIOLOGY HSSC–II

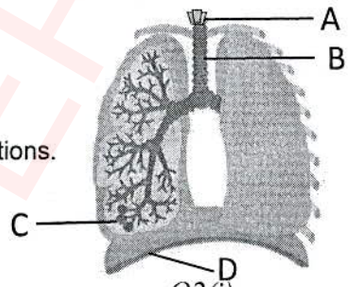
Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

NOTE: Answer any fourteen parts from Section 'B' and any two questions from Section 'C'. Write your answers neatly and legibly.

SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. All parts carry equal marks. **(14 x 3 = 42)**

(i) Diagram shows human respiratory system.
   a. Identify the labelled parts A, B, C and D
   b. Write functions of parts C and D



Q2(i)

(ii) a. Write down the two specific symptoms of Sinusitis.
   b. Enlist divisions of Autonomic Nervous System and write their functions.

(iii) Write about the role of Na^+ and K^+ ions in maintaining Resting Membrane Potential.

(iv) Brifely describe any three problems leading to Female Infertility.

(v) What is Habituation? Explain with the example of squirrel.

(vi) Write about the methods of Regulation of Gene Expression.

(vii) What is meant by Non-Conventional energy source? Enlist any three Non- Conventional Energy sources. What is their advantage to use?

(viii) Write names of the layers present in Uterine wall. Also write their structure and functions.

(ix) Elaborate the role of Foetal Hormones in birth process.

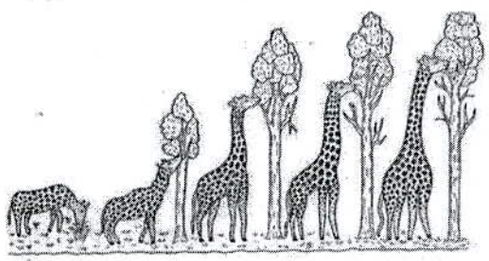
(x) The blood groups of father and mother are AB and O respectively. Write genotypes of parents and offspring by making a cross.

(xi) XY-XX is a pattern of Sex Determination. Explain this pattern by giving example.

(xii) Write about any three factors which can change Allelic Frequency of a population.

(xiii) What is Convergent Evolution? Explain with an example.

(xiv) a. Which theory of evolution is depicted in figure and who proposed it?
   b. Enlist the main points of this theory?


Q2(xiv)

(xv) Briefly explain different methods of Nitrogen Fixation.

(xvi) Enlist any three causes and effects of Acid Rain.

(xvii) Which properties should a vector have in it? Why it is used in Genetic Engineering.

(xviii) How does Vaccination help in controlling Hepatitis?

(xix) Write role of Hybridization and Back Cross to improve crops.

(xx) Briefly explain steps of Polymerase Chain Reaction.

SECTION – C (Marks 26)

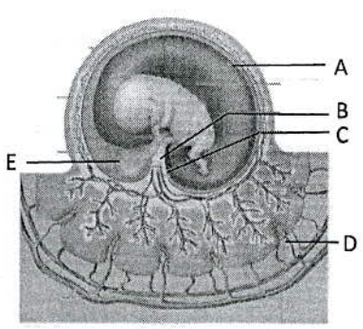
Note: Attempt any TWO questions. All questions carry equal marks. **(2 x 13 = 26)**

Q. 3 **a.** Write names and functions of hormones released by Anterior Pituitary Gland which affect growth and metabolism. Also explain problems related to their abnormal secretion.

b. Ammonia and urea are excretory products. How is their excretion is related to habitat? Also give examples.

Q. 4 **a.** Why is Sanger's method of DNA Sequencing called Dideoxy Method? Explain its procedure.

b. In the given diagram:



Q4(b)

(i) Label the parts A, B, C, D, and E. Also write their functions

(ii) How is part D made? What is its role?

(iii) Which type of blood vessels are present in part B?

Q. 5 **a.** The transcribed mRNA in eukaryotes is changed and modified before translation. Explain how it occurs. Also give reasons for the changes.

b. Describe the steps of Bone Repair after Simple Fracture.