

Sample

9	9	1	2	3	4
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0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

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160

Signature of Student: _____

Sign and Seal of Supt: _____

HSSC-A-I-2026 (12th) P-477 0+0=

(Section-A) Marks= (18) Time Allowed: 20 Minutes

All questions of this section must be answered on this page and handed over to the Superintendent within given time.

Student Name: _____

Name of Paper BIOLOGY (BIO-II)

Paper Date 15-MAY-26

Paper Code 76

Paper Version

SEAL

Roll No
Student Must Fill the
Roll Number Bubbles

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0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

سوالات

سوال نمبر کے مطابق درست جواب چیک کرنا ضروری ہے۔

- According to Darwin, the three types of struggle for existence are intra specific, inter specific and struggle a) environmental, b) sexual, c) genetic, d) reproductive
- In the bioconversion process, micro organisms such as bacteria digest solid wastes to produce a) Ethanol, b) Carbon dioxide, c) Hydrogen, d) Methane gas
- A method that combines transfer of electrophoresis separated DNA fragments to a filter membrane with detection by probe hybridization is: a) RFLP, b) PCR, c) Southern blotting, d) Autoradiography
- Transgenic bacteria are used to treat hemophilia for making: a) clotting factors, b) growth hormones, c) insulin, d) tPA (tissue plasminogen activator)
- The expansion of the thorax during inspiration is primarily achieved by the contraction of: a) abdominal muscles and phrenic nerves, b) inter costal muscles and diaphragm, c) pectoral muscles and sternum, d) alveoli and bronchiole
- The stage of pregnancy during which the fetus gains the most weight, up to 28 grams per day, is: a) first trimester, b) second trimester, c) third trimester, d) embryonic period
- A person with blood type AB can receive blood from donors having blood group: a) only type AB, b) only type O, c) types A and B only, d) types A, B, AB and O
- In a cross between two pea plants heterozygous for flower colour ($Pp \times Pp$), the probability that an offspring will be homozygous recessive (pp) is: a) $\frac{1}{2}$, b) $\frac{1}{4}$, c) $\frac{3}{4}$, d) 1
- In prokaryotes, the length of okazaki fragments is approximately nucleotides. a) 10 to 20, b) 100 to 200, c) 1000 to 2000, d) 5000 to 10000
- The type of chromosomal aberration in which a portion of a chromosome breaks off, turns around and rejoins in reverse orientation is called: a) deletion, b) duplication, c) inversion, d) translocation
- A patient with a spinal cord injury has a metal rod implanted for spinal stabilization. The surgeon must avoid any imaging that uses a strong magnetic field. The technique that would be contraindicated is: a) CT scan, b) MRI, c) EEG, d) x-ray
- The term "circadian rhythm" is derived from latin words meaning: a) through the light, b) around the sun, c) within the tide, d) about a day
- In syphilis disease, the incubation period is weeks. a) 3-4, b) 1-3, c) 2-4, d) 3-5
- The germ layer that gives rise to the nervous system and the skin epidermis is: a) Ectoderm, b) Mesoderm, c) Endoderm, d) Trophoblast
- According to the oxygen-hemoglobin dissociation curve, as the partial pressure of oxygen decreases, the number of oxygen molecules bound to heme: a) increases proportionally, b) remains unchanged, c) decreases, d) fluctuates randomly
- Transplant surgeons prefer to see a match of HLAs between donor and recipient equal to or more than: a) one, b) two, c) three, d) four
- The type of muscle that controls the movement of substances through hollow organs is: a) smooth muscle, b) cardiac muscle, c) skeletal muscle, d) striated muscle
- The process by which the membrane potential becomes less negative, allowing it to reach threshold, is termed as: a) repolarization, b) hyper-polarization, c) depolarization, d) polarization

1. ☐ A ☐ B ☐ C ☐ D
2. ☐ A ☐ B ☐ C ☐ D
3. ☐ A ☐ B ☐ C ☐ D
4. ☐ A ☐ B ☐ C ☐ D
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7. ☐ A ☐ B ☐ C ☐ D
8. ☐ A ☐ B ☐ C ☐ D
9. ☐ A ☐ B ☐ C ☐ D
10. ☐ A ☐ B ☐ C ☐ D
11. ☐ A ☐ B ☐ C ☐ D
12. ☐ A ☐ B ☐ C ☐ D
13. ☐ A ☐ B ☐ C ☐ D
14. ☐ A ☐ B ☐ C ☐ D
15. ☐ A ☐ B ☐ C ☐ D
16. ☐ A ☐ B ☐ C ☐ D
17. ☐ A ☐ B ☐ C ☐ D
18. ☐ A ☐ B ☐ C ☐ D
19. ☐ A ☐ B ☐ C ☐ D
20. ☐ A ☐ B ☐ C ☐ D

If the Candidate is absent, The Superintendent Should fill this Circle and pack the sheet with solved OMR sheets in roll number order

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 40

1. Attempt any ten of the following short questions. Each question carries 4 marks.
- Define otitis media. List any four causes and three symptoms of otitis media.
 - Describe proximal convoluted tubule, loop of Henle and distal convoluted tubule and state role of each in tubular reabsorption. Also give the composition of glomerular filtrate.
 - Define arthritis. List any four causes and four symptoms of arthritis. What is the leading cause of disability in individual aged over sixty five years.
 - Define brain tumour. Differentiate between primary brain tumour and metastatic brain tumour. List any four symptoms of brain tumour.
 - Elaborate why pancreas is known as dual (double) gland. State any four effects of insulin in our body.
 - Define territory as animal behaviour. Describe the social and territorial behaviour exhibited by spider monkeys when two different troops meet. What does this interaction reveal about their recognition of territorial boundaries?
 - Define spermatogenesis. Distinguish type A and type B daughter cells produced during mitotic division of spermatogonia. What happens to a primary spermatocyte after it undergoes meiosis I and meiosis II?
 - Outline Y-linked (holandric) inheritance. Why are Y-linked diseases rare? Give one example of a Y-linked trait.
 - What is down syndrome? Give its three symptoms and possible treatment.
 - Briefly describe vestigial organs and biochemistry as evidences of evolution.
 - What is greenhouse effect? List any three serious consequences of green house effect.
 - Define biotechnology. Analyze why biotechnology is known as technology of future.
 - Differentiate between messenger RNA vaccines and subunit vaccines. Give an example of each.

SECTION-C

Marks: 27

NOTE: Answer any three of the following questions. Each question carries 9 marks.

- Distinguish the right primary bronchus from left primary bronchus. How does the structure of bronchi differ from that of the trachea?
 - Describe osmoregulation in fresh water animals and marine water animals.
- How many pairs of ribs are there in humans? Distinguish between true ribs and false ribs. What are floating ribs and how many pairs of such ribs are there? Briefly describe hyoid bone.
 - Summarize the experiment of Pavlov regarding classical conditioning in four steps.
- Describe spinal cord. List any four functions of spinal cord.
 - Define aging. List two factors affecting aging process. Distinguish a "physiological young" person from "physiological old" ones.
- What is PCR. Outline denaturation primer annealing and polymerization as steps of PCR amplification cycle.
 - Compare chromosomal determination of sex between drosophila and humans.