SECOND YEAR HIGHER SECONDARY EXAMINATION

SAMPLE QUESTION PAPER

HSE II

PART III – BIOLOGY

(Botany & Zoology)

Maximum: 60 Scores

Time: 2 Hours
Cool-off time: 20 Minutes
Preparatory Time: 5 Minutes

General Instructions to Candidates:

- There is a 'Cool-off time' of 10 minutes each for Botany and Zoology in addition to the writing time of 1 hour each. Further there is a '5 minutes' 'Preparatory Time' at the end of the Botany Examination and before the commencement of Zoology Examination.
- Use the 'Cool-off time' to get familiar with questions and to plan your answers.
- Read questions carefully before answering.
- Read the instructions carefully.
- Calculations, figures and graphs should be shown in the answer sheet itself.
- Malayalam version of the questions is also provided.
- Give equations wherever necessary.
- Electronic devices except non-programmable calculators are not allowed in the Examination Hall.

വിദ്യാർത്ഥികൾക്കുള്ള പൊതുനിർദ്ദേശങ്ങൾ:

- നിർദ്ദിഷ്ട സമയത്തിന് പുറമെ ബോട്ടണിക്കും സുവോളജിക്കും 10 മിനിറ്റ് വീതം "കൂൾ ഓഫ് ടൈം' ഉണ്ടായിരിക്കും. കൂടാതെ ബോട്ടണി പരീക്ഷയ്ക്കു ശേഷം സുവോളജി പരീക്ഷ തുടങ്ങുന്നതിനു മുമ്പ് 5 മിനിറ്റ് തയ്യാറെടുപ്പുകൾ നടത്തുന്നതിനായി നല്കുന്നതാണ്. ഈ വേളകളിൽ ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതാനോ, മറ്റുള്ളവരുമായി ആശയ വിനിമയം നടത്താനോ പാടില്ല.
- "കൂൾ ഓഫ് ടൈം' ചോദ്യങ്ങൾ പരിചയപ്പെടാനും ഉത്തരങ്ങൾ ആസൂത്രണം ചെയ്യാനും ഉപയോഗിക്കുക.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- നിർദ്ദേശങ്ങൾ മുഴുവനും ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- കണക്ക് കൂട്ടലുകൾ, ചിത്രങ്ങൾ, ഗ്രാഫുകൾ, എന്നിവ ഉത്തരപേപ്പറിൽ തന്നെ ഉണ്ടായിരിക്കണം.
- ചോദ്യങ്ങൾ മലയാളത്തിലും നൽകിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

PART – B

ZOOLOGY

(Maximum: 30 Scores)

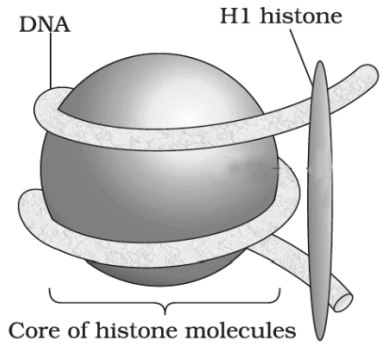
Time: 1 Hour
Cool-off time: 10 Minutes

I. Answer any 3 questions from 1 to 5. Each carries 1 score. **(3 x 1=3)**

1. The implanted stage during embryonic development is
   a. Gastrula b. Morula c. Zygote d. Blastocyst
2. Select the initiation codon from the triplet codons given below:
   a. AAA b. AUG c. GUA d. UGA
3. Pick out the odd one giving reason.
   a. HIV b. Chlamydiasis c. Genetic warts d. Hepatitis B
4. Scientist who proposed Rivet Popper Hypothesis is …….
5. Expand the following terms:
   a. MALT b. NACO

II. Answer any 9 questions from 6-16. Each carries 2 scores. **(9 x 2=18)**

6. When the urine sample of a lady was tested, presence of Human Chorionic Gonadotropin (HCG) was found.
   a. What does the presence of HCG indicate?
   b. Which is the source of HCG?
7. CuT is a contraceptive device.
   a. Suggest the contraceptive action of CuT.
   b. Name the hormone releasing IUDs.
8. As part of a dispute of parentage, the Court put an order to conduct a test for proving the father of the child.
   a. Name the test used.
   b. Procedure of the test is given below. Complete it.
      i. Isolation of DNA
      ii. DNA is cut using restriction endonuclease
      iii. ……
      iv. ……
      v. Hybridisation using VNTR probe
      vi. …….
9. Observe the figure given below:



   a. Identify the figure.

b. How many histone molecules are present in the histone core?

c. Distinguish Euchromatin and Heterochromatin.

10. Distinguish Darwinian variation and Mutational variation. (Any 4 differences).

11. State whether the following statements are true or false. If false, rewrite them by changing the word underlined.

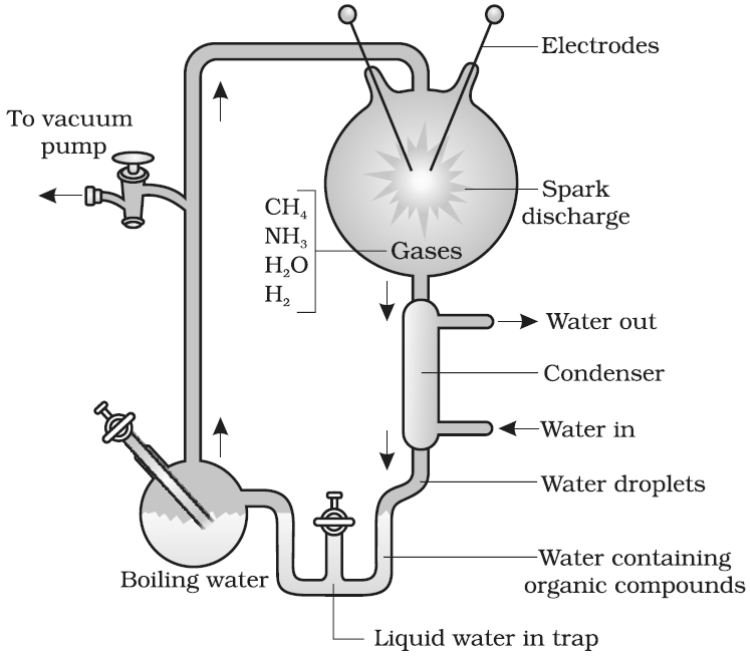
a. Double helical model of DNA was proposed by Jacob and Monod.

b. Sugar present in RNA is Ribose.

c. Introns are the coding sequences of a eukaryotic gene.

d. DNA replication occurs by semi-conservative method.

12. Stanley Miller set up an experimental apparatus as shown below.



a. Which theory was proven by this experiment?

b. State that theory and name the scientists who proposed it.

13. During a monohybrid cross involving a tall pea plant, the offspring population were tall and dwarf in equal ratios. Work out a cross to show it is possible.

14. Read the principle and answer the questions:

"Allele frequencies in a population are stable and is constant from generation to generation."

a. Name the principle mentioned here.

b. Mention any three factors that affect the equilibrium.

15. In an *E. coli* culture, lactose is used as food instead of glucose.

a. How do the bacteria respond to the above situation at genetic level?

b. If lactose is removed from the medium, what will happen?

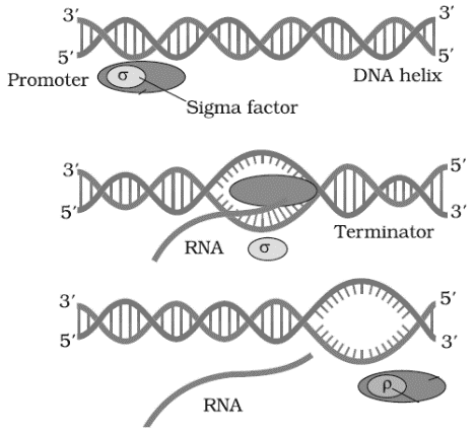
16. (a) Expand STDs.

(b) A person has earlier symptoms of STDs. What will happen if he does not consult a doctor? (Mention any two consequences).

III. Answer any 3 questions from 17 to 20. Each carries 3 scores. **(3 x 3=9)**

17. Blood of a man is tested positive for cannabinoid.
    a. What are these?
    b. Mention any 4 ill-effects of alcoholism.

18. The diagrammatic representation of a process in bacteria is given below:



    a. Identify the process.
    b. Name the enzyme involved in this process.
    c. Explain the three major steps in this process.

19. Mention and explain three arguments of the reasons for biodiversity conservation.

20. (a) Mention any two properties of an ideal contraceptive.

    (b) Categorise the given birth control methods into two groups under proper headings.

    Cervical caps, vasectomy, diaphragms, condoms, tubectomy

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