

Reg. No. :

Code No. 9017

Name :

Second Year – March 2018

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

Part – III
BIOLOGY
Maximum : 60 Scores

General Instructions to Candidates :

- There is a 'Cool-off time' of 10 minutes in 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 the Zoology Examination.
- Use the 'Cool-off time' to get familiar with questions and to plan your answers.
- Read the instructions carefully.
- Read questions carefully before answering.
- 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 ബോട്ടണിയും സുവോളജിയും 10 മിനിറ്റ് വിതം 'കൂൾ ഓഫ് ടൈം' ഉണ്ടായിരിക്കും. കൂടാതെ ബോട്ടണി പരീക്ഷയ്ക്കുശേഷം സുവോളജി പരീക്ഷ തുടങ്ങുന്നതിനുമുമ്പ് '5 മിനിറ്റ്' തയ്യാറെടുപ്പുകൾ നടത്തുന്നതിനായി നൽകുന്നതാണ്. ഈ വേളകളിൽ ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതാനോ, മറ്റുള്ളവരുമായി ആശയ വിനിമയം നടത്താനോ പാടില്ല.
- 'കൂൾ ഓഫ് ടൈം' ചോദ്യങ്ങൾ പരിചയപ്പെടാനും ഉത്തരങ്ങൾ ആസൂത്രണം ചെയ്യാനും ഉപയോഗിക്കുക.
- നിർദ്ദേശങ്ങൾ മുഴുവനും ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- കണക്ക് കൂട്ടലുകൾ, ചിത്രങ്ങൾ, ഗ്രാഫുകൾ, എന്നിവ ഉത്തരപേപ്പറിൽ തന്നെ ഉണ്ടായിരിക്കണം.
- ചോദ്യങ്ങൾ മലയാളത്തിലും നൽകിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

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P.T.O.

PART - A
BOTANY
(Maximum : 30 Scores)

Time : 1 Hour

Cool-off time : 10 Minutes

- I. (Questions 1 to 2) : Answer All questions. Each question carries 1 Score.

(Scores : $2 \times 1 = 2$)

1. Select the disease resistant variety of Bhindi produced by mutation breeding.
(a) Himgiri (b) Parbhani Kranti
(c) Pusa Gaurav (d) Pusa Komal

2. Under unfavourable conditions many zooplankton species in lakes and ponds are known to enter a stage of suspended development. Name that stage.

- II. (Questions 3 to 15) : Answer any eleven questions from the following. Each question carries 2 Scores.

(Scores : $11 \times 2 = 22$)

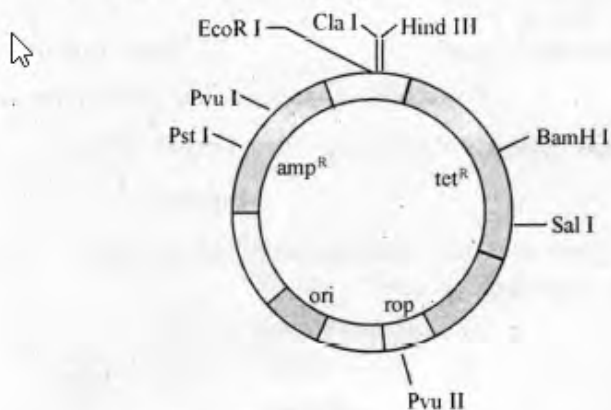
3. Ozone acts as a shield for absorbing ultraviolet radiations from the sun.
(a) Name the region of atmosphere where ozone is seen.
(b) Write the unit used to measure ozone layer.

4. Match the following organisms to their life span :

A	B
1. Butterfly	a. 140 years
2. Crow	b. 100-150 years
3. Parrot	c. 1-2 weeks
4. Tortoise	d. 15 years
	e. 60 years

5. The DNA fragments can be separated using gel electrophoresis.
(a) Name the gel used in this technique.
(b) Write the name of technique used to remove the DNA from the gel.

6. Observe the following figure :

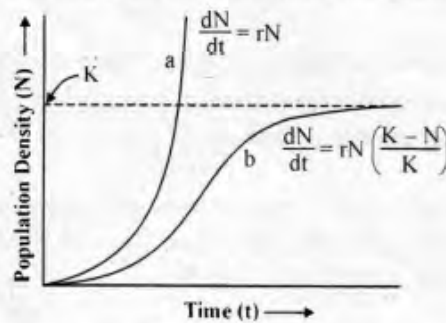


- (a) Identify the figure.
- (b) What does (i) tet^R (ii) rop (iii) ori denote ?
7. Synergids have special cellular thickening at micropylar tip.
Write the name and function of this structure.
8. Controlled breeding experiments can be carried out using artificial insemination.
What are the advantages of this process ?
9. Bio-fortification is a practical approach to improve the public health. Name any four such crops released by IARI.
10. The products of ecosystem processes are named as ecosystem services. List out any four such services.
11. In 1990's Delhi ranked fourth among the most polluted cities of the world. What are the parallel steps taken to reduce vehicular pollution ?
12. Increase in the level of green house gases leads to global warming. How can it be controlled ?

13. Genetically modified plants have been used in many ways. Give any four advantages of such plants.
14. In 1983 American Company Eli Lilly produced human insulin artificially. Write down the method followed in this technique.
15. Pyramid of energy is never been inverted, why ?

III. (Questions 16 to 18) : Write any two from the following questions. Each question carries 3 Scores. (Scores : $2 \times 3 = 6$)

16. Meloidogyne incognita is a nematode parasite infects the root of tobacco plants. It's infection can be prevented by biotechnological methods.
 - (a) Name the strategy. (Score : 1)
 - (b) Explain the principle behind this strategy. (Scores : 2)
17. The following graph shows two types of population growth curves :



- (a) Name the growth curves. (Scores : 2)
- (b) What does 'K' stand for ? (Score : 1)
18. In Angiosperms female gametophyte is known as embryo sac. Explain it's development.

PART – B

ZOOLOGY

(Maximum : 30 Scores)

Time : 1 Hour

Cool-off time : 10 Minutes

I. Answer all questions from 1-3. Each question carries 1 Score. (Scores : $3 \times 1 = 3$)

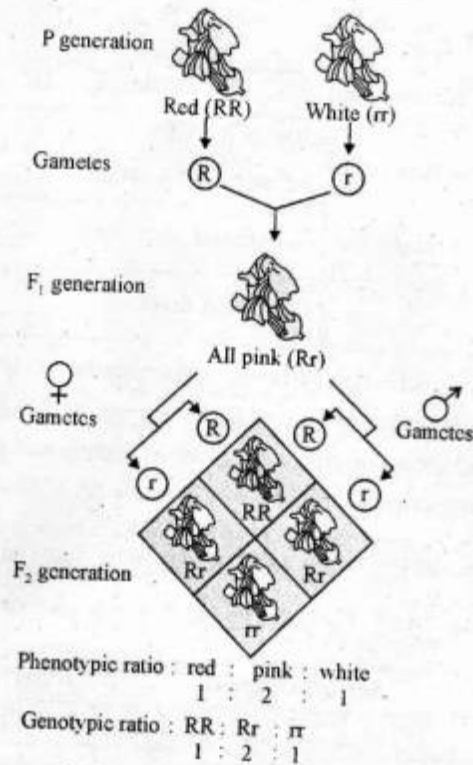
1. Name the cells in testes which synthesize and secrete the androgens.
2. Different contraceptive methods are given below. Pick out the odd one.
(a) Cu T (b) Saheli
(c) Multiload 375 (d) Lippes loop
3. Expressed sequences in the gene are called
(a) Introns (b) Mutons
(c) Exons (d) Cistrons

II. Answer any nine questions from 4-14. Each question carries 2 Scores.

(Scores : $9 \times 2 = 18$)

4. In a classroom discussion, a student said that the sex of the baby is determined by father. Analyse the statement and give reason for it.
5. Different contraceptive methods are used to control population explosion. Summarise the natural method and barrier method of contraception.
6. DNA is tightly packed structure and is found as units called nucleosomes.
(a) Explain the concept of nucleosomes.
(b) Differentiate between euchromatin and hetero-chromatin.

7.



(a) Observe the above cross and name the phenomenon.

(b) Write down the theoretically given explanations of the phenomenon.

8. Complete the boxes with the suitable words given below :

[Analogous, Homologous, Convergent evolution, Divergent evolution]



9. Explain the factors affecting the Hardy-Weinberg equilibrium.

10. Innate immunity is a non-specific type of defense and consists of four types of barriers. Categorize the barriers and give one example for each.

11. Complete the table given below :

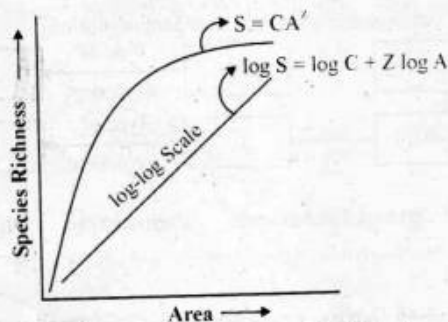
Column – I	Column – II	Column – III
Typhoid	<u> A </u>	Stomach pain Intestinal perforation
<u> B </u>	Rhinovirus	Sore throat hoarseness
Malignant Malaria	<u> C </u>	Chill high fever
<u> D </u>	Wuchereria	Chronic inflammation of lymph gland

12. Consumption of drug and alcohol affects the persons mental and physical health very badly. List the warning signs of alcohol or drug abuse.
13. Identify the disadvantages of RNA over DNA as a genetic material and explain it.
14. Complete the table with appropriate terms :

Organism	Scientific name	Bioactive Product
Fungus	<u> A </u>	Citric acid
<u> B </u>	Acetobacter aceti	Acetic acid
Fungus	Trichoderma polysporum	<u> C </u>
Yeast	<u> D </u>	Statin

III. Answer any three from 15-18 questions. Each question carries 3 Scores.

(Scores : $3 \times 3 = 9$)



15. Observe the graph and answer the following questions :

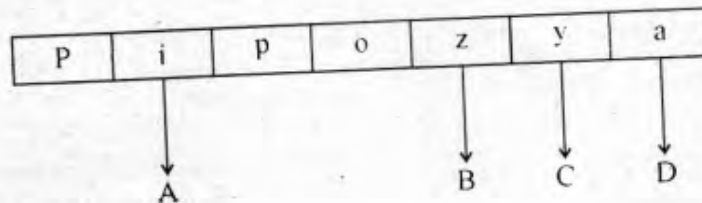
- (a) Name S, A, Z and C in the graph.
- (b) Name the scientists who explained Species-Area relationship.

(Scores : 2)

(Score : 1)

16. (a) In lac Operon lactose act as inducer molecule. Evaluate the statement and explain it. (Score : 1)

- (b) Observe the diagram of lac Operon and identify labelled parts A, B, C and D. (Scores : 2)



17. Sexually transmitted disease (STD) are mainly transmitted through sexual contact. (Score : 1)

- (a) Name any two example of sexually transmitted disease. (Score : 1)
- (b) Explain any two methods adopted to prevent STDs. (Scores : 2)

18. Heamophilia, Sickle cell anemia and Phenyl Ketonurea are Mendelian disorders. (Score : 1)

- (a) What do you mean by Mendelian disorder ? (Score : 1)
- (b) Which one of the above is an example of inborn error of metabolism ? (Scores : 2)
- Mention the cause of the disorder.