Reg. No. : .....

Name : .....

Code No. 2017

Second Year – JUNE 2016
SAY / IMPROVEMENT

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 each for Botany and Zoology in addition to the writing time of 1 hour each. Further there is '5 minutes' 'Preparatory Time' at the end of the Botany Examination and before the commencement of Zoology Examination.
- You are not allowed to write your answers nor to discuss anything with others during the 'cool-off time' and 'Preparatory Time'.
- Use the 'cool-off time' to get familiar with questions and to plan your answers.
- Read questions carefully before answering.
- All questions are compulsory and only internal choice is allowed.
- When you select a question, all the sub-questions must be answered from the same question itself.
- 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.

നിർദ്ദേശങ്ങൾ :

- നിർദ്ദിഷ്ട സമയത്തിന് പുറമെ ബോട്ടണിയ്ക്കും സുവോളജിക്കും 10 മിനിറ്റ് വീതം 'കൂൾ ഓഫ് ടൈം' ഉണ്ടായിരിക്കും. കൂടാതെ ബോട്ടണി പരീക്ഷയ്ക്കുശേഷം സുവോളജി പരീക്ഷ തുടങ്ങുന്നതിനുമുമ്പ് '5 മിനിറ്റ്' തയ്യാറെടുപ്പുകൾ നടത്തുന്നതിനായി നൽകുന്നതാണ്. ഈ വേളകളിൽ ചോദ്യങ്ങൾക്ക് ഉത്തരം എഴുതാനോ, മറ്റുള്ളവരുമായി ആശയവിനിമയം നടത്താനോ പാടില്ല.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- എല്ലാ ചോദ്യങ്ങൾക്കും ഉത്തരം എഴുതണം.
- ഒരു ചോദ്യനമ്പർ ഉത്തരമെഴുതാൻ തെരഞ്ഞെടുത്തു കഴിഞ്ഞാൽ ഉപചോദ്യങ്ങളും അതേ ചോദ്യനമ്പരിൽ നിന്ന് തന്നെ തെരഞ്ഞെടുക്കേണ്ടതാണ്.
- 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.

Part – A

BOTANY

(Maximum : 30 Scores)

Time : 1 Hour **Cool-off time : 10 Minutes**

1. The development of pollengrains in Angiosperms is called

   (a) Microsporogenesis (b) Embryogenesis

   (c) Megasporogenesis (d) Gametogenesis **(Score : 1)**

2. Select the one which is not helping vegetative propagation.

   (a) Bulb (b) Clone

   (c) Adventitious buds (d) Eyes of the potato **(Score : 1)**

3. (a) Describe the major steps followed for the production of new genetic variety starting from the collection of germplasm upto elucidating the cultivars.

   (Scores : 1½)

   (b) A plant breeder has a rare variety of cultivar with him but unfortunately it has become infected with virus. Suggest a suitable technique to produce many viable number of progenies with a short note. **(Scores : 1½)**

4. Which of the following part in a flower is haploid ?

   (a) Antherwall (b) Pollen mother cell

   (c) Synergid (d) Secondary nucleus **(Score : 1)**

5. In aquatic plants like water hyacinth and water Lily the pollinating agent is

   (a) Wind and insect (b) Water

   (c) Birds and butterflies (d) Aquatic organisms **(Score : 1)**

6. Electrophoresis is a method commonly used in Biotechnology. Write briefly about GelElectrophoresis.

   (Scores : 2)

7. RNA can suppress the activity of a gene. Explain it with suitable example. **(Scores : 2)**

8. (a) Biogeochemical cycle is an important phenomenon in very ecosystem. Describe phosphorus cycle. **(Scores : 3)**

OR

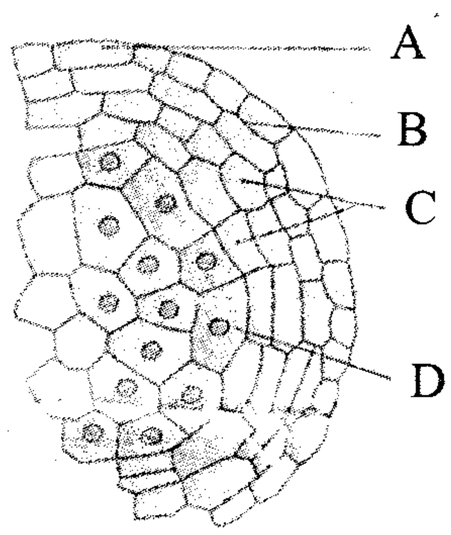
(b) The plant communities in a given area show successive changes. Mention the stages of succession in a xerosere. **(Scores : 3)**

9. The hard outer layer of pollen is composed of

(a) Exine (b) Intine

(c) Integument (d) Sporopollenin **(Score : 1)**

10. Observe the following diagram and label A, B, C and D.



(Scores : 2)

11. Genetic engineering is a promising branch recently developed in biological science.

(a) Expand PCR and name three steps in each cycle. **(Scores : 2)**

OR

(b) What is a plasmid ? Name three features required for cloning vectors. **(Scores : 2)**

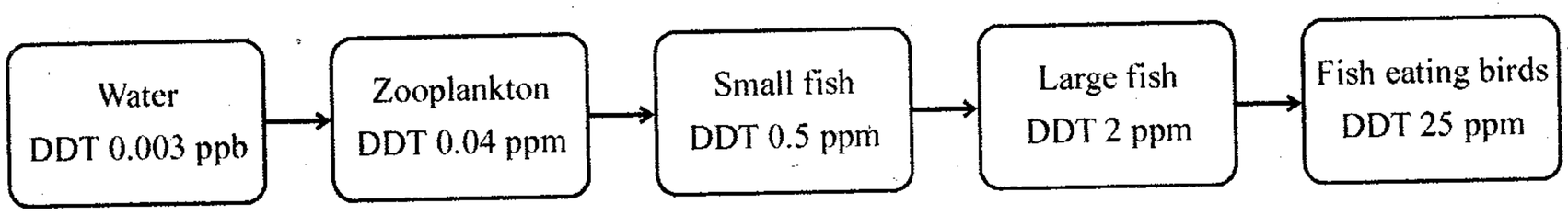
12. Many diseases could be treated by an advanced technique called gene therapy. Assess its role in the treatment of lymphocyte disorder, giving any suitable example. **(Scores : 2)**

13. Population growth may be exponential or logistic. Differentiate between them. **(Scores : 2)**

14. Quantity of pollutants increase in successive trophic levels. Observe the flowchart regarding biomagnifications of DDT in an aquatic food chain and answer the following :

(a) What is biomagnification ?

(b) What are the consequences of biomagnification ? **(Scores : 2)**



15. Plants are adapted to grow in different habitats. Name any four adaptations of plants in desert habitat. **(Scores : 2)**

16. Earthworms are commonly referred as farmers' friends. Define fragmentation. **(Score : 1)**

17. Adequate waste management is an environmental issue to be considered. Discuss the advantages of Eco-san toilet. **(Scores : 2)**

Part – B

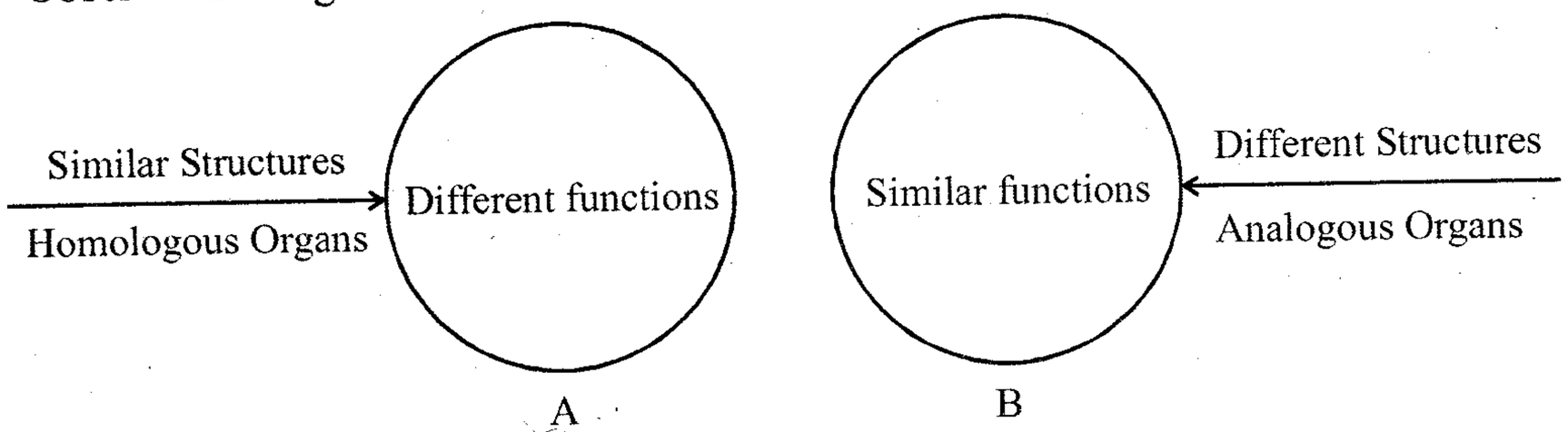
ZOOLOGY

(Maximum : 30 Scores)

Time : 1 Hour **Cool-off time : 10 Minutes**

1. The process of fusion of a sperm with ovum is called _____. **(Score : 1)**

2. Observe the diagram and answer the questions below :



(a) Identify the types of evolution in the concept diagrams A and B. **(Score : 1)**

(b) Write example pair each for homologous and analogous organs. **(Score : 1)**

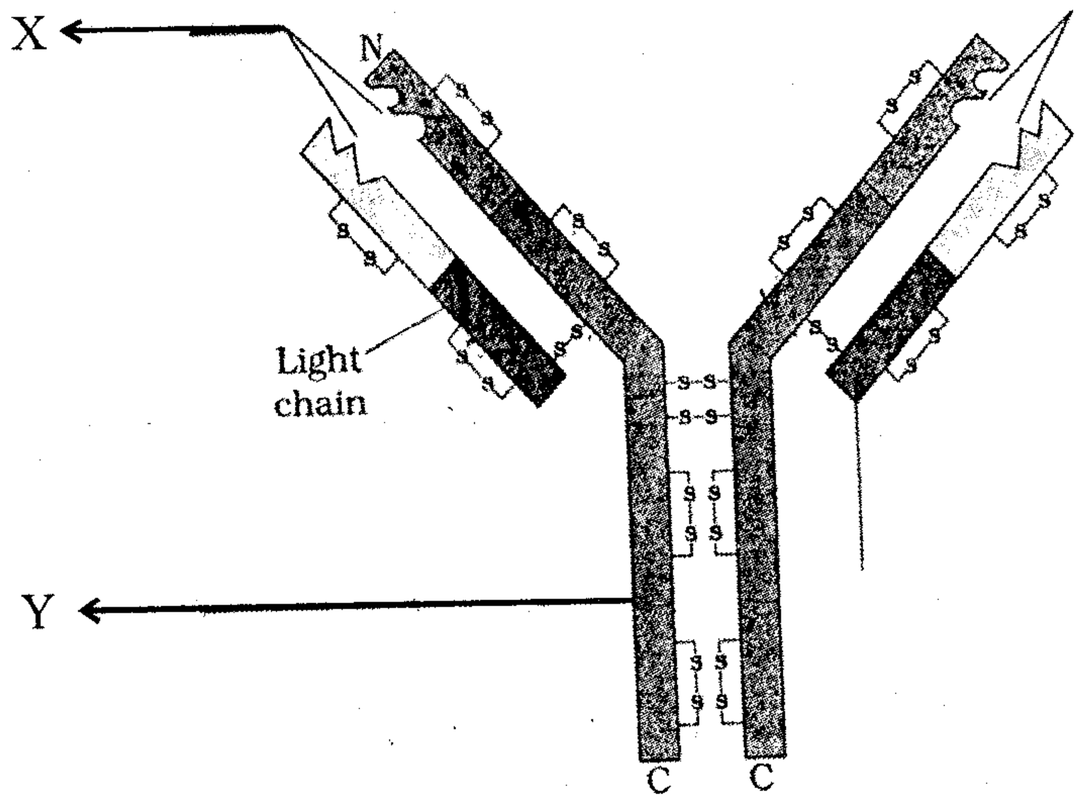
3. Choose the correct answer from the bracket.

Cyclosporin A is produced by _____.

[(a) Aspergellus (b) Clostridium (c) Trichoderma (d) Acetobacter]

(Score : 1)

4. Answer the questions about the given figure :



(a) Identify the parts X and Y. **(Score : 1)**

(b) Name any two types of this molecule. **(Score : 1)**

5. Select a bio-control agent from the given microbes :

(a) Baculo virus (b) Rhino virus

(c) Picorna virus (d) Adeno virus **(Score : 1)**

6. Match columns A and B :

A	B
Ovulation	Sperm
Luteal Phase	Oogenesis
Acrosome	Blasto cyst
Inner cell mass	LH
	Progesterone

(Scores : 2)

7. Statements below show the features of some human fossils. Read carefully and identify the fossil.

(a) Human like beings with brains capacities between 650 – 800 cc

(b) Lived in East and Central Asia with brain capacity of 1400 cc. **(Scores : 2)**

8. Observe the figure of mRNA and answer the questions :

(a) Find the start and stop codons. **(Score : 1)**

(b) How many amino acids will be present in the protein translated from this mRNA ?

(Score : 1)

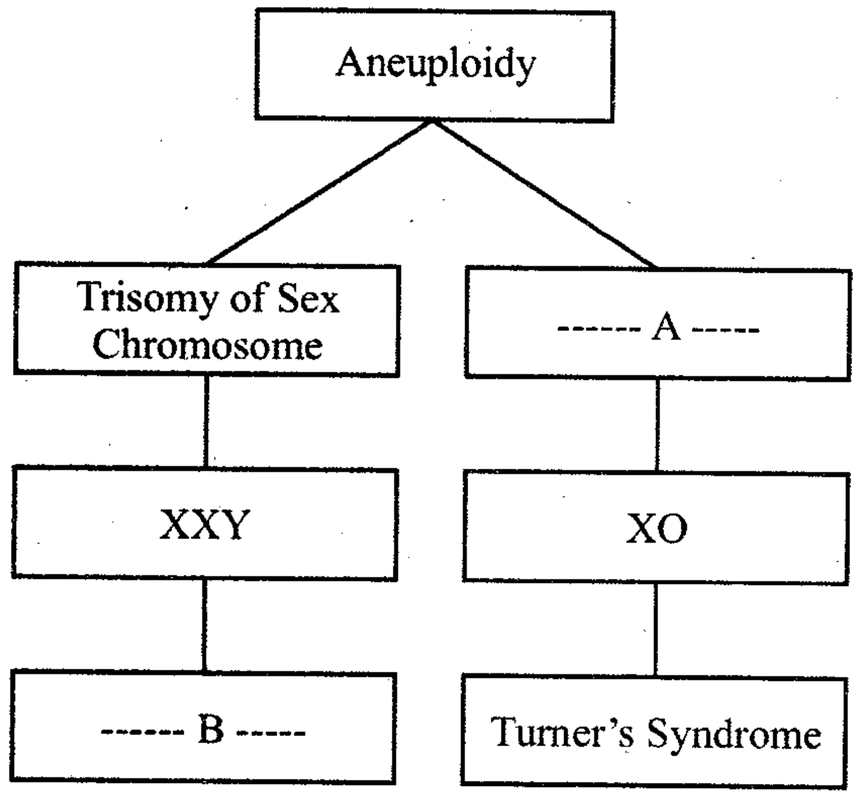
(c) The additional sequences that are not translated in mRNA are called _____.

(Score : 1)

9. Select the odd one out and justify your selection.

Malaria, Gonorrhea, Amoebiasis, Filariasis **(Score : 1)**

10. (a) Complete the flow chart of chromosomal disorder by filling the blank boxes (A and B) :



(Scores : 2)

(b) What is aneuploidy ? **(Score : 1)**

11. (a) The hints of the lac operon is given below :

Hints :

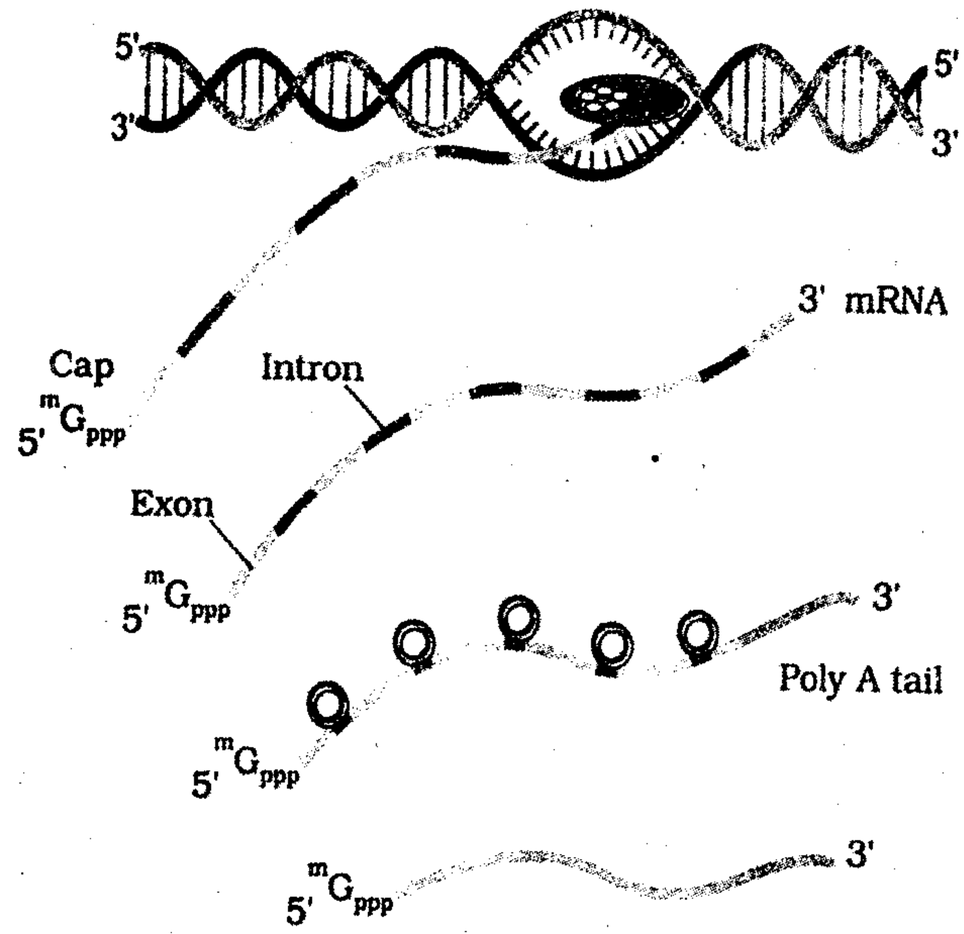
Inducer, Repressor, Structural genes, operator Regulatory gene

(i) Which substance is acting as inducer in this operon ? **(Score : 1)**

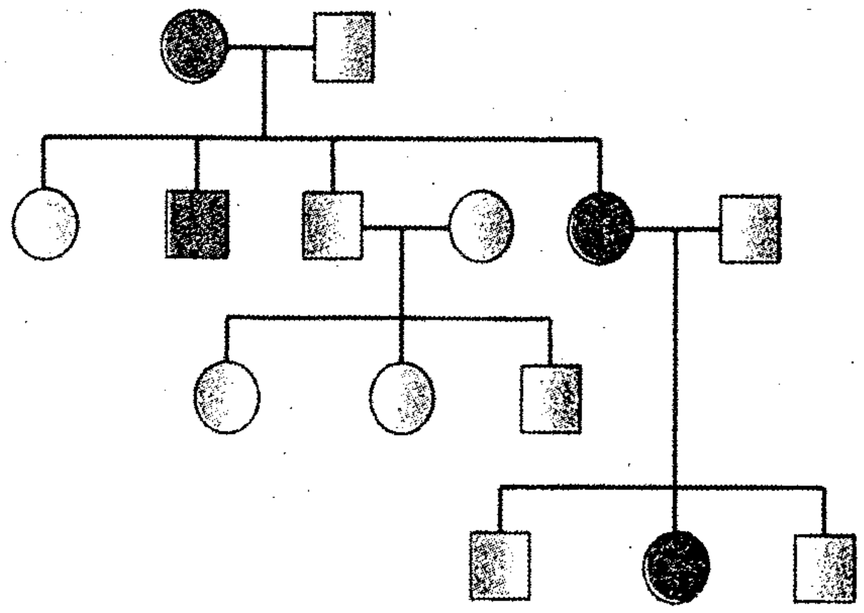
(ii) Explain the working of operon in presence of the inducer. **(Scores : 2)**

OR

(b) With the help of the figure given, explain the processing of hnRNA to mRNA in eukaryotes. **(Scores : 3)**



12. Observe the figure below and answer the questions following :



(a) Identify the figure

(b) What shows the shaded symbols used ? **(Scores : 2)**

13. Diagnostic report of two couples having infertility problems are given below :

(1) The woman cannot produce ovum.

(2) The man has very low sperm count in semen.

Suggest a suitable Assisted Reproductive Technologies (ART) for each problem in expanded form. **(Scores : 2)**

14. Complete the table by filling a, b, c and d.

Disease	Pathogen	Symptom
---a---	*Streptococcus pneumonae*	Alveoli filled with fluid
Common cold	---b---	Nasal congestion and discharge
---c---	*Plasmodium vivax*	Chill and fever
Filariasis	*Wuchereria*	---d---

(Scores : 2)

15. (a) "When we conserve and protect the whole ecosystem, its biodiversity at all levels is protected." Based on this statement explain the strategies of biodiversity conservation. **(Scores : 3)**

OR

(b) "When need turns to greed, it leads to biodiversity loss." Substantiate this statement by explaining two causes of biodiversity loss. **(Scores : 3)**