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FOR GOA CLASS 12 PREPARATION

Goa Board Class 12 Sample Paper 2027 Biology

EXAM	YEAR	TYPE	SUBJECT
Goa Class 12	2027	Sample Paper	Biology

CLASS---- XII (SYLLABUS)

SUBJECT----- BIOLOGY

SUBJECT CODE----- 4704

THEORY

UNIT VI

REPRODUCTION (16 marks)

Chapter-2: Sexual Reproduction in Flowering Plants (6 marks)

Flower- A Fascinating Organ of Angiosperms, Pre-Fertilization: structure and Events, Double Fertilization, Post- Fertilization : structure and Events, Apomixis and Polyembryony.

Chapter-3: Human Reproduction (6 Marks)

The Male reproductive system, The female reproductive system, Gametogenesis, Menstrual cycle, Fertilization and Implantation, Pregnancy and Embryonic development, Parturition and Lactation.

Chapter-4: Reproductive Health (4 Marks)

Reproductive Health- Problems and Strategies, Population explosion and Birth control, Medical termination of Pregnancy (MTP), Sexually Transmitted Diseases (STDs), Infertility.

Unit-VII

GENETICS AND EVOLUTION (18 marks)

Chapter-5: Principles of Inheritance and Variation (6 marks)

Mendel's Laws of Inheritance, Inheritance of One Gene, Inheritance of Two Genes, Polygenic Inheritance, Pleiotropy , Sex Determination, Mutation, Genetic Disorders.

Chapter-6: Molecular Basis of Inheritance (7 marks)

The DNA, The Search for Genetic Material, RNA World, Replication, Transcription, Genetic Code, Translation, Regulation of Gene Expression, Human Genome Project, DNA Fingerprinting.

Chapter-7: Evolution (5 Marks)

What are the Evidences for Evolution?, What is Adaptive radiation?, Biological Evolution, Mechanism of Evolution, Hardy- Weinberg Principle, Origin and Evolution of Man.

Unit-VIII

BIOLOGY IN HUMAN WELFARE (12 marks)

Chapter-8: Human Health and Diseases (8 marks)

Common Diseases in Humans, Immunity, AIDS, Cancer, Drugs and Alcohol Abuse.

Chapter-10: Microbes in Human Welfare (4 marks)

Microbes in Household Products, Microbes in Industrial Products, Microbes in Sewage Treatment, Microbes in Production of Biogas, Microbes as Biocontrol Agents, Microbes as biofertilizers.

Unit-IX

BIOTECHNOLOGY (11 marks)

Chapter-11: Biotechnology - Principles and Processes (7 marks)

Principles of biotechnology, Tools of Recombinant DNA Technology, Processes of Recombinant DNA Technology.

Chapter-12: Biotechnology and its Applications (4 marks)

Biotechnological Applications in Agriculture, Biotechnological Applications in Medicine, Transgenic Animals, Ethical Issues.

Unit-X

ECOLOGY (13 marks)

Chapter-13: Organisms and Populations (5 marks)

Organism and its Environment, Populations.

Chapter-14: Ecosystem (4 marks)

Ecosystem – Structure and Function, Productivity, Decomposition, Energy Flow, Ecological Pyramids, Ecological Succession, Nutrient Cycling, Ecosystem services.

Chapter-15: Biodiversity and its Conservation (4 marks)

Biodiversity, Biodiversity conservation.

Note:

1. Refer to the latest edition of NCERT Biology text book.
2. There is no deletion of any subtopic under the main topics mentioned in each chapter.

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Syllabus of Biology Practical – Class XII (2026-2027)

List of Experiments :

Section A – Physiology Experiment (6 marks)

1. To determine the pH and water holding capacity of garden or paddy field soil.
2. To detect presence of phosphate, nitrate and sulphate salts in paddy field soil.
3. To study B.O.D. of the given sample of pond water.
4. To study the effect of different temperature on the action of salivary amylase on starch.
5. To study the effect of different pH on the action of salivary amylase on starch.

Section B – Preparation of temporary stained slide (4 marks)

1. Onion root tip for mitosis
2. Onion/Rheo anther for meiosis.

Section C – Identification/Spotting (6 marks)

1. Adaptations in insect pollinated flower (Ocimum/Leucas/Salvia)
2. Adaptations in wind pollinated flower (Maize/Grass)
3. Study of T.S. of Testis (Any vertebrate)
4. Study of T.S. of Ovary (Any vertebrate)
5. Study of V.S. of Blastula (Any vertebrate)

6. Prepared pedigree chart of inability to roll the tongue.
7. Prepared pedigree chart of Widow's peak.
8. Identification of organisms and symptoms of disease caused.

- *Ascaris lumbricoides.*
- *Entamoeba histolytica.*
- *Plasmodium vivax.*

9. Adaptation of plant to dry condition (Suitable specimen to be given)
10. Adaptation of plant to aquatic condition (Suitable specimen to be given)
11. Adaptation of animal to dry condition (Suitable specimen/chart/model to be given)
12. Adaptation of animal to aquatic condition (Suitable specimen to be given)
13. Identification of Homologous organs in plants. (eg. Thorn of bougainvillea and tendrils of Cucurbita)
14. Identification of Homologous organs in animals.(eg. Fore limbs of frog and Flipper of turtle/ Wings of bird).
15. Identification of Analogous organs in plants. (eg . Tuber of potato and sweet potato).
16. Identification of Analogous organs in animals. (eg. Wings of bird and butterfly).

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5

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TERMWISE PORTION IN BIOLOGY

ASSESSMENT SCHEME FOR THE ACADEMIC YEAR 2026-27.

STD: XII

PORTION FOR FINAL EXAM

Sr No.	Units	Marks
1.	**REPRODUCTION**	**16**
	Chapter 2: Sexual Reproduction in Flowering plants	6
	Chapter 3: Human Reproduction	6
	Chapter 4: Reproductive Health	4
2.	**GENETICS AND EVOLUTION**	**18**
	Chapter 5: Principles of Inheritance and Variations	6
	Chapter 6: Molecular Basis of Inheritance	7
	Chapter 7 : Evolution	5
3.	**BIOLOGY IN HUMAN WELFARE**	**12**
	Chapter 8: Human Health and Diseases	8
	Chapter 10: Microbes in Human Welfare	4
4.	**BIOTECHNOLOGY**	**11**
	Chapter 11: Biotechnology: Principles and Processes	7
	Chapter 12: Biotechnology and its Applications	4
5.	**ECOLOGY**	**13**
	Chapter 13: Organisms and populations	5
	Chapter 14 : Ecosystem	4
	Chapter 15: Biodiversity and Conservation	4
	TOTAL	**70**

6

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DESIGN OF THE QUESTION PAPER FOR FINAL EXAM (2026-2027)

CLASS: XII

TIME: 3 Hours **SUBJECT: BIOLOGY** **Max. Marks: 70**

The weightage of the distribution of marks over different dimensions of the question paper shall be as follows:

1. **Weightage to learning outcomes:**

Sr No.	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	28	40 %
2.	Understanding	21	30 %
3.	Application	14	20 %
4.	Skill	07	10%
	TOTAL	**70**	**100%**

2, Weightage to Content / Subject units

Sr No.	Unit	Marks
1.	Reproduction	16
2.	Genetics and Evolution	18
3.	Biology in Human Welfare	12
4.	Biotechnology and its applications	11
5.	Ecology	13
	TOTAL	**70**

7

3. Weightage to forms of questions:

Sr No.	Form of Questions	Marks for each Questions	No. of Questions	Total Marks
1.	Long Answer types (LA)	05	03	15
2.	Short Answer Type (SA – I)	03	06	18
3.	Short Answer Type (SA – II)	02	12	24
4.	Very Short Answer Type (VSA/ MCQ)	01	13 (08MCQ+5VSA)	13
	TOTAL		**34**	**70**

4. Expected Time for different types of question would be as follows

Sr No.	Forms of Questions	Approx. Time for each Question in mins (t)	No. of Questions (n)	Approx. Time for each form of Questions in mins (n x t)
1.	Long Answer types (LA)	14 min	03	03 x 14 min =42
2.	Short Answer Type (SA – I)	07min	06	06 x 07 min = 42
3.	Short Answer Type (SA – II)	05 min	12	12 x 5 min = 60
4.	Very Short Answer Type (VSA)	02 min	13	13 x 2min = 26
	TOTAL		**34**	**170min**

As the total time calculated on the basis of number of questions required to be answered and the length of their anticipated answers, it would therefore, be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

9

5. Weightage to difficulty level of Questions

Sr No.	Estimated Difficulty Level of Questions	Marks	Percentage
1.	Easy	21	30 %
2.	Average	35	50 %
3.	Difficulty	14	20 %
	Total	**70**	**100 %**

The question may vary in difficulty level from individual to individual. As such, the assessment in respect of each question will be made by paper setter, on the basis of general anticipation from the group as a whole , taking the examination. This provision is only to make the paper balanced in weightage , rather than to determine the pattern of marking at any stage.

- The theory paper will be of 70 marks and 3 hours duration.
- The questions shall be from all the units.
- The question paper shall have four(4) Sections A,B,C and D
  - Section A has 13 questions of 01 mark each.
  - Section B has 12 questions of 02 marks each.
  - Section C has 06 questions of 03 marks each.
  - Section D has 03 questions of 05 marks each.
- The total number of questions will be 34.
- All questions will be compulsory.
- There is no overall choice, however an internal choice is provided in two questions of Section B , one question of Section C and two questions of Section D.

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PORTION IN BIOLOGY ASSESSMENT SCHEME

FOR THE ACADEMIC YEAR 2026-2027

STD: XII

PORTION FOR FIRST MID TERM EXAMINATION

Sr No.	Units	Marks
1.	**Reproduction**	
	Chapter 2 :Sexual Reproduction in Flowering Plants	5
	Chapter 3 : Human Reproduction	5
	Chapter 4 :Reproductive Health	4
2.	**Genetics and Evolution**	
	Chapter 5 : Principles of Inheritance and variation	6
	TOTAL	**20**

11

PORTION FOR FIRST TERM EXAMINATION

Sr No.	Units	Marks
1.	**Reproduction**	
	Chapter 2 :Sexual Reproduction in Flowering Plants	08
	Chapter 3 : Human Reproduction	08
	Chapter 4 :Reproductive Health	06
2.	**Genetics and Evolution**	
	Chapter 5 : Principles of Inheritance and variation	09
	Chapter 6 : Molecular Basis of Inheritance	09
	Chapter 7 : Evolution	07
3.	**Biology In Human Welfare**	
	Chapter 10 : Microbes in Human Welfare	06
4.	**Ecology**	
	Chapter 14 : Ecosystem	07
	TOTAL	60

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DESIGN OF THE QUESTION PAPER

FIRST MID TERM EXAMINATION (2026-2027)

STD: XII

TIME: 1 hr **SUBJECT: BIOLOGY** **MAX. MARKS: 20**

The weightage of the distribution of marks over different dimensions of the question paper shall be as follows:

1. **Weightage to learning outcomes**

Sr No.	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	07	35 %
2.	Understanding	06	30 %
3.	Application	05	25 %
4.	Skill	02	10 %
	TOTAL	**20**	**100 %**

2. **Weightage to content/ subject units (First Mid Term Examination)**

Sr No.	Units	Marks
1.	**Reproduction**	
	Sexual Reproduction in Flowering Plants	5
	Human Reproduction	5
	Reproductive Health	4
2.	**Genetics and Evolution**	
	Principles of Inheritance and variation	6
	TOTAL	**20**

13

3. Weightage to forms of questions:

Sr No.	Form of Questions	Marks for each Questions	No. of Questions	Total Marks
1.	Long Answer types (LA)	---	---	---
2.	Short Answer Type (SA – I)	03	02	06
3.	Short Answer Type (SA – II)	02	05	10
4.	Very Short Answer Type (VSA)	01	04	04
	TOTAL		**11**	**20**

4. Expected Time for different types of question would be as follows :

Sr No.	Forms of Questions	Approx. Time for each Question in mins (t)	No. of Questions (n)	Approx. Time for each form of Questions in mins (n x t)
1.	Long Answer types (LA)	---	---	---
2.	Short Answer Type (SA – I)	10 min	02	2 x 10 min = 20
3.	Short Answer Type (SA – II)	05 min	05	5 x 5 min = 25
4.	Very Short Answer Type (VSA)	02 min	04	4 x 2min = 8
	TOTAL			**53 min**

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers. It would, therefore be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

Scheme of options

(There will be no overall choice. However, there is an internal choice in 01 sub questions of 02

marks category and 01 sub-questions of 03 marks category)

5. **Weightage to difficulty level of Questions :**

Sr No.	Estimated Difficulty Level of Questions	Percentage
1.	Easy	30 %
2.	Average	50 %
3.	Difficulty	20 %
	TOTAL	**100 %**

- Question paper will have three sections A, B, C.
- Section A will have 04 questions of 01 mark.
- Section B will have 05 questions of 02 marks.
- Section C will have 02 questions of 03 marks.
- Question shall be from all the chapters specified above.
- Total number of questions will be 11.

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DESIGN OF THE QUESTION PAPER

FIRST TERM EXAMINATION (2026-2027)

STD: XII

TIME: 2hrs 30 mins **SUBJECT: BIOLOGY** **MAX. MARKS: 60**

The weightage of the distribution of marks over different dimensions of the question paper shall be as follows:

1. **Weightage to learning outcomes**

Sr No.	Learning Outcomes	Marks	Percentage of Marks
1.	Knowledge	18	30%
2.	Understanding	21	35%
3.	Application	15	25 %
4.	Skill	06	10 %
	Total	**60**	**100 %**

2. **Weightage to forms of questions:**

Sr No.	Form of Questions	Marks for each Questions	No. of Questions	Total Marks
1.	Long Answer types (LA)	05	02	10
2.	Short Answer Type (SA– I)	03	05	15
3.	Short Answer Type (SA– II)	02	11	22
4.	Very Short Answer Type (VSA)	01	13	13
	TOTAL		**31**	**60**

16

3. Expected Time for different types of questions should be as follows

Sr No.	Forms of Questions	Approx. Time for each Question in mins (t)	No. of Questions (n)	Approx. Time for each form of Questions in mins (n x t)
1.	Long Answer types (LA)	14min	02	2 x14min= 28
2.	Short Answer Type (SA – I)	07 min	05	5 x 07min = 35
3.	Short Answer Type (SA – II)	05 min	11	11 x 05min = 55
4.	Very Short Answer Type (VSA)	02 min	13	13 x 02min = 26
	TOTAL		**31**	**144 mins**

As the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers. It would, therefore be advisable for the candidates to budget their time properly by cutting out the superfluous words and be within the expected time limits.

Scheme of options

(There will be no overall choice. However, there is an internal choice in 01 sub question of 05 marks, 03 marks & 02 marks category)

4. Weightage to difficulty level of Questions

Sr No.	Estimated Difficulty Level of Questions	Percentage
1.	Easy	30 %
2.	Average	50 %
3.	Difficulty	20 %
	Total	**100%**

Question paper will have three sections A, B, C, D.

a. Section A will have 13 questions of 01 mark. (7 MCQ questions)
b. Section B will have 11 questions of 02 marks. (1 internal choice)
c. Section C will have 05 questions of 03 marks. (1 internal choice)
d. Section D will have 02 questions of 05 marks. (1 internal choice)
e. Question shall be from all the chapters specified above.
f. Total number of questions will be 31.

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17

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DESIGN OF THE QUESTION PAPER

FIRST TERM EXAMINATION (2026-27)

STD: XII

TIME: 2hrs **SUBJECT: BIOLOGY PRACTICAL** **MAX. MARKS: 20**

Q1. Physiology Experiment --------- 6mks

Q.2 Temporary mounting---------- 4mks

Q.3 Identification ---------- 6mks

Q.4 Journal / Viva ----------4mks

(Only those experiments may be included for the practical exam whichever are completed during the first term)

Blue print of the Model question paper
Std: XII
Sub: Biology
2026-27

Unit	Chapter/Content Area	Marks	Objectives																Total
			Knowledge 40%(28 marks)				Understanding 30%(21 marks)				Skill 10%(7marks)				Application 20%(14 marks)				
			VSA (1)	SA (2)	SA (3)	LA (5)	VSA (1)	SA (2)	SA (3)	LA (5)	VSA (1)	SA (2)	SA (3)	LA (5)	VSA (1)	SA (2)	SA (3)	LA (5)	
Reproduction	2.Sexual Reproduction in flowering plants	06		2(1)							1(1)	2(1)			1(1)				06
	3.Human Reproduction	06	1(1)					2(1)				2(1)			1(1)				06
	4.Reproductive Health	04			3(1)		1(1)												04
Genetics and evolution	5.Principles of inheritance and variations	06				5(1)									1(1)				06
	6.Molecular basis of Inheritance	07		2(1)				2(1)				2(1)			1(1)				07
	7.Evolution	05		2(1)													3(1)		05
Biology in human welfare	8.Human health and diseases	09	1(2)			5(1)		2(1)											09
	10.Microbes in human welfare	03			3(1)														03
Biotechnology and its applications	11.Biotechnology: Principles and Processes	08					1(1)			5(1)						2(1)			08

	12.Biotechnology and its applications	**03**							**3(1)**									**03**
Ecology	**13.Organisms and population**	**05**						**2(1)**	**3(1)**									**05**
	14.Ecosystem	**04**												**1(2)**	**2(1)**			**04**
	15.Biodiversity and conservation	**04**	**1(1)**	**2(1)**										**1(1)**				**04**
Total		**70**	**28**				**21**				**07**			**14**				**70**

NOTE:

1) **Figures within the bracket indicate number of questions and figures outside the bracket indicate marks.**
2) **Internal variation of +1/-1 marks per chapter is permissible provided total marks of the unit are maintained.**

Biology Model Paper-2026-27

Std : XII **Time : 3 Hours**

Maximum marks : 70

INSTRUCTIONS

(i) All questions are compulsory.
(ii) Draw diagrams in lead pencil only.
(iii) The question paper consists of four (4) Sections A, B, C and D.

- **Section A has 13 questions of 01 mark each.**
- **Section B has 12 questions of 02 marks each.**
- **Section C has 06 questions of 03 marks each.**
- **Section D has 03 questions of 05 marks each.**

(iv) The total number of questions is 34.
(v) There is no overall choice, however an internal choice is provided in two questions of Section B, one question of Section C and two questions of Section D.
(vi) Multiple choice questions should be attempted only once, if attempted more than once it will not be evaluated. Choose the correct option and rewrite on the

Section A (1 mark each)

1. *Thermus aquaticus* is used to isolate an enzyme used to make billion copies of a gene. Identify the enzyme.

- DNAse
- DNA polymerase
- RNA ligase
- RNA polymerase

2. *E. coli* cells with a mutated Z gene of the lac operon cannot grow in medium containing only lactose as the source of energy because —---

- They cannot absorb lactose
- They cannot produce functional beta galactosidase
- Lactose is not a good energy source
- Mutated *E. coli* die if lactose enters their cytoplasm.

3. In Indian culture, tracts of forest are set aside, and the trees and wildlife within are venerated and given total protection. The term used for these tracts of forest is------

- National parks

- Biosphere reserves
- Sacred groves
- Hot spots

4. A wolf feeding on a deer is a ------
   - Primary consumer and herbivore
   - Secondary consumer and primary carnivore
   - Primary consumer and primary carnivore
   - Secondary consumer and secondary carnivore

5. An example of an ecological succession that leads from xeric to mesic condition is seen when -------
   - Pioneer species are Phytoplankton's.
   - A pond is newly created
   - Rocks start weathering to form soil
   - A forest fire destroys all the plants

6. A drawback for natural methods of contraception can be-------
   - Hospitalization
   - Hormonal imbalance
   - Surgery
   - Side effects

7. Pistillate flowers of maize are known to exhibit -------
   - Autogamy and geitonogamy
   - Autogamy only
   - Xenogamy only
   - Geitonogamy and xenogamy

8. Formation of corpus luteum occurs during----------
   - Ovulation
   - Luteal phase
   - Follicular phase
   - Menstrual phase

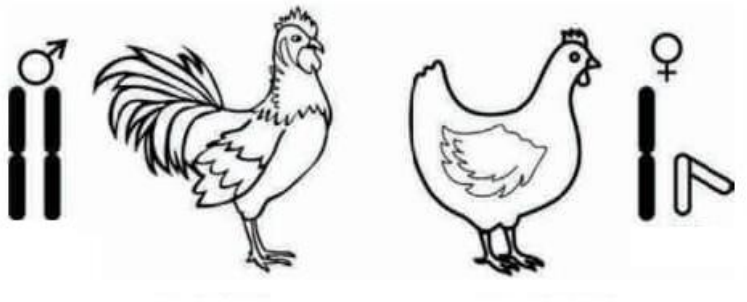
9. Draw a neat diagram of L.S. of Apple.

10. Your classmate complains of cough and headache. The Doctor confirms that he is suffering from common cold and not pneumonia on the basis of certain symptoms. Deduce any 2 of these symptoms.

11. In case of a venomous snake bite, an injection is given to the patient. What does the injection contain?

12. Vedant and his friends rescued an injured Deer from a nearby forest and after medical treatment handed it over to the forest officials for conserving it in a Zoological park. Give the
term used for this approach of biodiversity conservation.

13. Name the type of sex determination pattern seen in the picture.



Section B (2 marks each)

14. Draw a neat diagram of the structure of a typical anatropous ovule.
15. Describe in brief the adaptations seen in flowers pollinated by insects.

OR

Describe in brief the structure of microsporangium.
16. Differentiate between the process of Spermatogenesis and Oogenesis in humans. (2 points)
17. The small standing crop of phytoplankton's feeds a large standing crop of zooplanktons . Describe the shape of pyramid of biomass and pyramid of energy in this example giving reasons.
18. Define adaptive radiation give an example that Darwin studied on Galapagos Island.
19. DNA is better genetic material than RNA. Justify the statement.
20. In order to resolve a paternity dispute, the High Court directed Pinto family to undergo a DNA test. The VNTRs patterns of DNA samples of the parents and the child were matched by Southern blot hybridization technique. List the major steps involved in the process.
21. Draw a neat diagram of DNA double helix.
22. Invasion by alien species causes biodiversity loss. Explain with an example.
23. Which enzymes will have to be used to break open cells of the mango tree and that of mushroom respectively by research students of Biotechnology Institute in order to release their DNA?
24. Describe the role of Light as an abiotic factor in the environment.

OR

Describe the behavioral responses shown by desert lizard to cope with variations in their
environment.
25. A cancer patient was advised to go for immunotherapy treatment. What is administered in his body and how will it work?

Section C (3 marks each)

26. Draw a neat diagram of the structure of the Human sperm. Name and label the part that secretes enzymes for fertilization.
27. Explain the different types of IUDs and their mode of action.

OR

Explain the surgical methods of contraception.
28. In a population of 1000 parakeets in a given area the number of individuals with long tail feathers (Allele L is dominant) were 800 and those with short tail feathers (allele l is recessive) were 200. What would be the frequencies of dominant allele L and recessive allele l in this population? Also find out the number of heterozygous dominant individuals using Hardy Weinberg equation. Show your calculations.
29. Gene therapy can be used as a cure for ADA deficiency. Explain.
30. What are 'flocs'? State their role in effluent treatment and their ultimate fate in the sewage
treatment tank.
31. Write a note on Suspend as a response to abiotic factors.

Section D (5 marks each)

32. Discuss in detail Haemophilia and Sickle cell anaemia as Mendelian disorders.

OR

Discuss in detail Colour blindness and Thalassemia as Mendelian disorders.
33. What are Restriction enzymes? Describe in detail the role of restriction enzymes as a tool in
recombinant DNA technology.

OR

What are cloning vectors? Describe in detail the features that are required to facilitate cloning into a vector.
34. Drug and alcohol abuse is common among some youngsters. Explain measures useful for its prevention and control.

25