

Sample Paper – 2008  
Class – XII  
Subject – Biology

*General Instructions:*

1. All questions are compulsory.
2. This question paper consists of four Sections A, B, C and D. Section -A contains 8 questions of 1 mark each, Section -B is of 10 questions of 2 marks each, Section -C has 9 questions of 3 marks each and Section D is of 3 questions of 5 marks each.
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**SECTION A**

1. What is the Ploidy of PEN ? [1]
2. A human zygote has XXY sex chromosomes along with 22 pairs of autosomes. What sex will the individual be? [1]
3. Expand FOAM. What is its significance? [1]
4. Which enzyme is known as 'molecular scissors'? [1]
5. Name the Ecological pyramid that can be inverted in Tree ecosystem. [1]
6. Explain the term emasculation. When and why does a plant breeder employ this technique [1]
7. Why is cow dung used in generation of Biogas? [1]
8. Name two animals each that are (i)Oviparous (ii) Viviparous. [1]

**SECTION B**

9. What are sacred groves ? What is their role in Biodiversity conservation? [2]
10. Mention the advantages of selecting Pea plant for experiment by Mendel. [2]

OR

- Why does Mendel's work go unnoticed?
11. What measures would you take to prevent water borne disease? [2]
  12. What are the disadvantages of human use of Insulin from other animal sources? [2]
  13. Name the diseases diagnosed by (a)WIDAL test (b)ELISA test [2]
  14. What is Biological Magnification ? [2]
  15. Differentiate between Geitonogamy and Allogamy. [2]
  16. If the sequence of coding strand in a transcription unit is written as follows : [2]  
5'- ATGCATGCATGCATGCATGC-3'  
Write the sequence of mRNA

17. Name the technique used for separation of DNA fragments. What is its principle?  
[2]
18. Define the term Adolescence. How does Peer pressure effect the personality of child?  
[2]

**SECTION C**

- 19 What is meant by Homologous organs? Give an example [3]
- 20 Differentiate between Menarche and Menopause. [3]
- 21 What do the differently written terms 'Cry' and 'cry' represent? Crystals of Bt toxin produced by some bacteria do not kill the bacteria themselves, but kill insects such as beetles and mosquitoes etc. Explain why? [3]
- 22 Bring out differences between Carbon and Phosphorus cycle of ecosystem. [3]
- 23 What are the three critical research areas of Biotechnology? [3]
- 24 What is Apiculture ? How is it important for our lives? [3]

OR

- How are microbes helpful in Sewage Treatment?
- 25 Three Codons on mRNA are not recognized by tRNA. What are they ? What is the general term used for them? What is their role in protein synthesis? [3]
- 26 Why is the length of a food chain in an ecosystem generally limited to 3-4 trophic levels? [3]
- 27 A colour blind man marries a woman with normal vision ,whose father was colour blind .Work out a cross to show the genotype of couple and their prospective sons. [3]

**SECTION D**

28. Who demonstrated the semi-conservative replication of DNA? Explain the procedure in detail.

OR

Describe the Fredrick Griffith's experiment to prove that DNA is the basic genetic material. [5]

29. What are Algal blooms ? How are they formed ? Give two harmful effects of formation of algal blooms in a water body.

OR

What is Global warming ? give its harmful effects . List strategies of reducing global warming. [5]

30. Trace the development of Megaspore mother cell of Flower in mature ovule with the help of labeled diagram.

OR

Write the function of :

- (a) Corpus luteum (b) Endometrium (c) Acrosome (d) Sperm tail (e) Fimbriae [5]

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**Time : 3 hours**

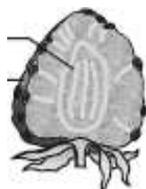
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**Section A**

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[1]



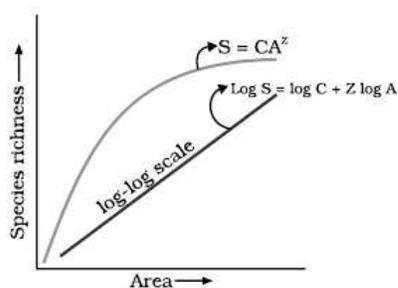
2. How will you justify that placenta acts like an endocrine tissue?  
[1]
3. A certain mutation in *E.coli* makes the *lac* operator unable to bind to the active repressor. How this would affect the cell?  
[1]
4. Red –green colour blindness is caused by a sex linked recessive allele. A colour- blind man marries a woman with normal vision whose father was colour- blind. What is the probability that their daughter will be colour – blind? What is the probability that their son will be colour – blind?  
[1]
5. Indicate the kind of defense to which each of the following phrases apply, humoral defense and cell mediated defense.  
[a] Production of antibodies

- [b] the specific recognition and direct killing of virus – infected cells  
 [c] T cells are mainly responsible  
 [d] B cells are mainly responsible [1]

6. Why is the transfer of energy in an ecosystem referred to as energy flow, not energy cycling? Justify [1]

7. What are the trophic levels for a human eating a cheese sandwich? [1]

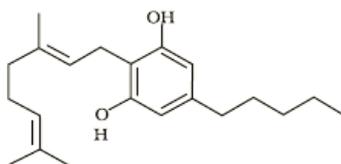
8. What is the significance of slope of regression in a species – area relationship graph as shown below? [1]



### Section B

9. Explain the term emasculation. When and why does a plant breeder employ this technique. [2]

10. Identify the chemical structure. Give the scientific name of the plant from which it is obtained. Which two plant parts are used to extract this compound? Name the body system most affected by this compound.



[2]

11. Microbes are used in production of enzymes which are medically useful. Two such useful molecules are *streptokinase* and *statins*. Name the organisms from which they are obtained and state how are they useful for human beings? [2]



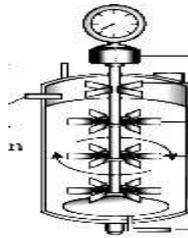
<http://www.boardguess.com>

12. A fungi belonging to genera Microsporium are responsible for causing an infectious disease in man. [i] Identify the disease [ii] Name the two other genera of fungi which too cause the same disease [iii] Give two major symptoms of the disease.  
[2]
13. How do biofertilisers enrich the fertility of soil? Explain giving examples.  
[2]
14. Which property of DNA double helix led Watson and Crick to hypothesize semi conservative mode of DNA replication. Describe the experiment which proved the above.[2]
15. If a cross is made between a hybrid tall and red flowering plant (TtRr) with dwarf and white flowered (ttrr) what will be the genotype and phenotype of the F<sub>1</sub> generation? What is such a cross called?  
[2]
16. Write a short note on Biopiracy.  
**Or**  
Explain what is RNA interference with the help of an example.  
[2]
17. Where are sacred groves in eastern India? What is their role in conservation?  
[2]
18. Explain the consequences of deforestation.  
[2]

### Section C

19. What is menstruation? What are the specific functions of FSH, LH, estrogen and progesterone in the menstrual cycle?  
[3]
20. How does Miller's experiment support the theory of biochemical origin of life? Explain.  
[3]
21. Explain central dogma of molecular biology.  
[3]

22. A woman sues a man for the parentage of her child. Woman's blood group is A ,her child's O and the man has blood group B. Explain whether she is right by applying your knowledge of genetic inheritance of blood groups.  
[3]
23. The first clinical gene therapy was given in 1990 to a four year old girl with adenosine deaminase deficiency. Explain how this was brought about?  
[3]
24. Identify the device ,label the parts marked and explain its use?  
[3]



25. What is a cloning vector? Why are cloning vectors necessary in cloning? Name any two such vectors that are used for experiments.

**Or**

What are the advantages of molecular diagnostics over conventional methods? Explain a technique with an example used for this purpose.

[3]

26. Expand GEAC. What role does it play? How many documented varieties of Basmati rice are grown in India? How has this variety of rice been exploited?  
[3]
27. What is meant by ozone shield ? Name two ozone depleting substances . How do the ozone depleting substances affect the ozone shield? Write two damaging effect of ozone-depletion on humans.  
[3]



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### Section D

28. What is infertility? State the different reasons for the same. Describe the different methods available to assist infertile couples to have children.

Or

Enumerate the events that take place in a flower from the time pollen grains are deposited on the stigma up to the completion of fertilization.

[5]

29. Describe the steps in DNA- fingerprinting. Who developed this technique? Mention its application.

Or

[i] Describe the Hardy Weinberg's equilibrium and the factors affecting it

[ii] Name the common ancestors of ferns ,horsetails and gnetales

[iii] Name the animal that evolved into the first amphibians

[5]

30. [i]What is meant by ecological succession? Differentiate between pioneer community and climax community.  
[ii] What would happen to the successive trophic levels in the pyramid of energy ,if the rate of reproduction of the phytoplankton was slowed down?

Or

Explain the five population interactions with an example in each interaction.

[5]

Prepared by:  
Raja Chaudhry

## Sample Paper – 2008

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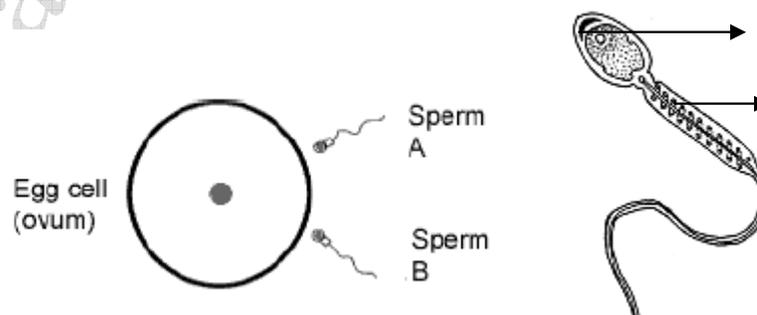
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#### Section A

1. How many eggs do you think were released by the ovary of a female dog ,which gave birth to six puppies? How many eggs do you think would have been released by a human mother , who gave birth to identical twins? Would your answer change if the twins were born fraternal? [1]
2. The diagram below show a human egg and a human sperm.



- [a] Why is the egg much larger than the sperm?  
 [b] What is the significance of the two labeled parts? [1]
3. Why do you think plants are more readily manipulated by genetic engineering than the animals? [1]
4. If the frequency of the parental form is higher than 25% in a dihybrid test cross, what does it indicate about the two genes involved? Name the condition and the person who coined the term for it. [1]
5. The gene for haemoglobin Hb has two codominant alleles: Hb<sup>A</sup> (the normal gene) and Hb<sup>S</sup> (the mutated gene). How many phenotypes it can show? Name the three phenotypes. [1]
6. Some crop varieties bred by hybridization and selection, for disease resistance to Fungi, bacteria and viral disease are given below. Complete the table. [1]

Crop	Variety	Resistance to disease
Cowpea	Pusa Komal	_____
_____	Pusa swarin (Karan Rai)	_____
Wheat	_____	Leaf and stripe rust, hill bunt

7. Genetic engineering is a very young discipline, and is only possible due to the development of certain techniques from the 1960s onwards. Two such techniques are [a] Restriction enzymes [b] PCR. State the purpose of each technique. [1]
8. The bacterium *Agrobacterium tumifaciens* is found naturally in soil. It is able to infect over 1 000 species of broad-leaved plants, entering by wounds (for example, those made by insects), yet this bacteria is considered so useful in biotechnology, how? [1]

### Section B

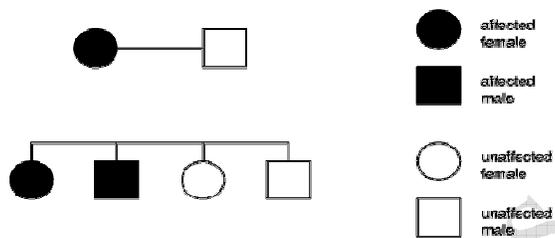
9. Do you think reproductive health has improved in our country in the past 50 years? If yes, mention four areas of improvement. [2]
10. Compare and contrast: isogamy and anisogamy. What are some examples of organisms that have each kind of gamete production? [2]

11. When a red flower of *Antirrhinum* plant was crossed with a white flower of *Antirrhinum* plant, the F<sub>1</sub> offspring had pink flowers. Mention (a) the genotype of F<sub>1</sub> plants and (b) the reason why it did not bear the parental red or white flowers?

**Or**

In a man brown eyes (B) are dominant over (b) and dark hair (R) dominant to red hair (r). A man with brown eyes and red hair, whose father was blue eyed, marries a woman with blue eye and dark hair whose mother was red haired. They have four children. Give the genotype of the parents and phenotype and genotype of the children [2]

12. What conclusion can be drawn from the following pedigree chart?



[2]

13. How is frame shift mutation different from point mutation? Give an example of point mutation. What causes mutations? [2]
14. Explain the four types of barriers of Innate immunity. [2]
15. Diagrammatically show the steps in the formation of recombinant DNA by action of restriction endonuclease enzyme – EcoRI. [2]
16. Crystals of Bt toxin produced by some bacteria do not kill the bacteria themselves, but kill insects such as beetles and mosquitoes etc. Explain why? [2]
17. Write a short note on RNA. [2]
18. According to an experiment performed the following results were obtained:

**S strain**       $\longrightarrow$       **Inject into mice**       $\longrightarrow$       **Mice die**

**R strain**       $\longrightarrow$       **Inject into mice**       $\longrightarrow$       **Mice live**

**S strain** (heat killed) → **Inject into mice** → **Mice live**

**S strain** (heat killed) → **Inject into mice** → **Mice die**

+

**R strain** (live)

What conclusion was drawn from the following experiment? Who performed the above experiment? Name the organism with which it was performed. [2]

### Section C

19. Cancer is one of the most dreaded diseases of human beings and is a major cause of death all over the globe. Explain the [a] causes of cancer [b] Techniques of detection and diagnosis [c] Treatment and cure. [3]
20. Show diagrammatically the stages of embryo development from zygote upto implantation in human being. [3]
21. Some species of Asteraceae have evolved a special mechanism, to produce seeds without fertilization. What it is called? How does it lead to polyembryony? Explain its significance. [3]
22. Alleles in a gene pool show the frequency according to the values given below

	<b>p= 0.80</b> Allele freq. of A	<b>q= 0.20</b> Allele freq. of a
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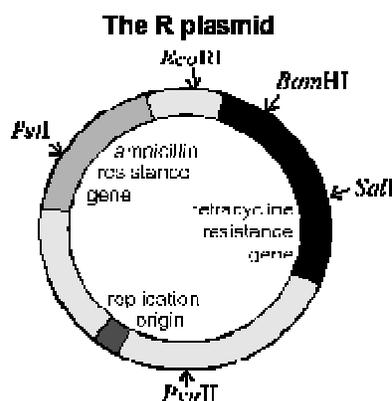
- What are the genotype and allele frequencies in the population? Is the population following Hardy-Weinberg equilibrium calculate the result? State four conditions under which the Hardy-Weinberg equilibrium may not be applicable. [3]
23. How did Hershey and Chase differentiate between DNA and protein in their experiment while proving that DNA is the genetic material? [3]
24. Discuss the role of microbes in sewage treatment. [3]
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Or

- Expand STD. Name four diseases that are classified under this category. How do they pose a major threat to a healthy society? [3]
26. Acquired immunity is pathogen specific. Explain the different working mode of primary and secondary response in the body. [3]
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Identify the figure and explain the features that are required to facilitate cloning into a vector.

**Or**

Some animals have their DNA manipulated to possess and express a foreign gene. What are such animals called? Why are such animals being produced? How can man benefit from such modifications? Explain five common reasons.

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29. Plant breeding programmes are carried out in a systematic way world wide. Explain the five main steps in breeding a new genetic variety.

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Do you think friends can influence one to take alcohol/drugs? If yes, how may one protect himself or herself from such an influence? Once started why is it difficult to get rid of this habit?

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In a medium where E.coli was growing, lactose was added, which induced the lac operon. Then, why does the lac operon shut down after some time after the addition of lactose in the medium. Explain

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**Prepared by:**

**Sadiq**

**Email: [Sad iq\\_perfect@yahoo.com](mailto:Sadiq_perfect@yahoo.com)**

**Delhi**

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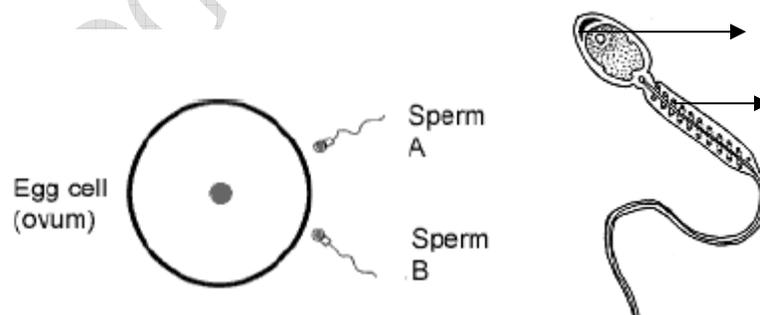
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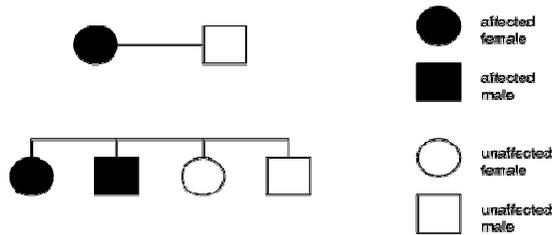
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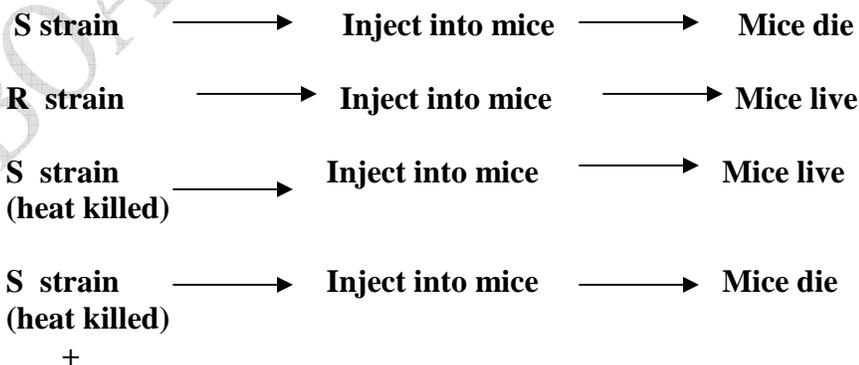
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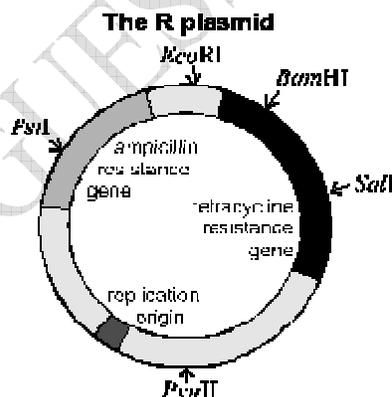
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**Prepared by:  
Ram Jaisawal**

**Sample Paper - XII**  
**Maximum marks-40**  
**Time-1.30hrs**

1. Define linkage. What is the % linkage shown by white eyed and yellow body when the white eye, yellow bodied female was crossed with red eye and brown body male? 1
2. Use a line diagram to show sex determination in humans 2
3. Explain the genetic basis of sickle cell anemia 2
4. What does trisomy of 21 chromosome cause? Give 2 identifying characteristics. 2
5. Why human females are carrier for hemophilia? 2
6. Explain the law of independent assortment in terms of a dihybrid cross with a suitable example 3
7. Out of a population of 800 F<sub>2</sub> individuals of a cross between yellow round and green wrinkled ,choose and justify the number of yellow wrinkled out of the following choices-  
a)150 b)200 c)400 d)800 2
8. If a cross is made between a hybrid tall and red flowering plant (TtRr) with dwarf and white flowered (ttrr) what will be the genotype of the F<sub>1</sub> generation? 2
- 9 which property of DNA double helix led Watson and Crick to hypothesize semi conservative mode of DNA replication. Describe the experiment which proved the above. 3
10. Show schematically the regulation of a negatively controlled operon. 3
11. What are the dual functions of rRNA? 2
12. Why is DNA considered more stable than RNA. Give 3 reasons. 3
13. Write a short note on HGP or DNA fingerprinting 5
14. Write one sentence each on – 5
  - a)VNTR
  - b)RNA Pol
  - c)Promotor
  - d) Adaptor molecule
  - e) splicing
15. What are the salient features of the Genetic Code? 3

**Sample Paper - XII**  
**TEST-2**  
**Maximum marks-40**  
**Time-1.30hrs**

**1\*8=8**

1. Why are testis in humans extra abdominal in position?
2. Name a non steroidal oral pill for female contraception.
3. Which Cells secrete Testosterone?
4. Define Puberty.
5. What is a Graffian follicle?
6. Which Cellular structure of Spermatid forms the acrosome? What are its secretions called?
7. At which stage does implantation occur in humans?
8. What is the Foetal Ejection Reflex?

**2\*6=12**

9. Why is the use of contraceptives justified?
10. Which are the hormones controlling the menstrual cycle ? Ovulation is triggered by which hormone ?
11. What are the major functions of the male accessory duct and glands?
12. Give 2 points of differences between Spermatogenesis and Spermiogenesis.
13. Why is removal of gonads not considered as an ideal method of contraception?

14. Describe **ZIFT** briefly.

**3\*5=15**

15. What is the effect of **FSH** and **LH** on males and females?
16. Describe the 3 important steps of oogenesis.
17. How is sex determined in the humans?



18. What is the function of placenta? Where will you find stem cells in an embryo?
19. Name any 4 characteristics of an ideal contraceptive. Mention any 2 broad categories of contraceptive methods.
20. Draw a labeled diagram of a human sperm and describe its structure.  
Or  
Name 1 non medicated and 1 hormone releasing IUD. How do they bring about contraception? Which group of women are these targeted at?

**Contributed By:**  
**Hrishikesh**

Biology Paper Class XII CBSE 2008

Section A ( 1 mark each )

1. What are bioweapon agents, give one example.
2. What does the term osmosis mean?
3. What do Leydig cells secrete?
4. How many ATPs are produced from three turns of Krebs's cycle?
5. Which transgenic plant produces hirudin?

Section B ( 2 marks each)

6. Explain unidirectional flow of blood maintained in the heart of cockroach.
7. Explain location and function of A.V. node.
8. Why are C<sub>4</sub> plants preferred to C<sub>3</sub> plants?
9. What is ecological efficiency?
10. What are the two devices used to remove particulate air pollutants?

Or

State the relation between biotic potential and environmental resistance.

11. Distinguish between primary and secondary immune response.
12. Define biopiracy and biopatent.
13. Explain the Computed tomography technique.
14. How is opening and closing of stomata controlled?
15. Where is the pneumotaxic centre located in humans? How does it function?

Section C (3 marks each)

16. Name the three cellular organelles that are involved in photorespiration.
17. How does the proximal convoluted tubule contribute to homeostasis?
18. Describe the thermal stratification occurring in lakes.
19. How do skin and liver help in excretion?
20. Draw a well labeled diagram of the human ear and label at least 6 parts.

Or

Draw a well labeled diagram of the human eye and label any four parts.

21. Describe the role of phytochrome in flowering and seed germination.
22. Name the site of fertilization in mammals, what are the two functions performed by fertilization?
23. Explain the sliding filament theory of muscle contraction.

24. How is Rhizopora adapted to survive in its habitat?  
25. Explain the symbiotic nitrogen fixation.

Section D (5 marks each)

26. Explain the Calvin cycle.

Or

Explain C4 Cycle

27. Describe the hormonal control of reproductive system in human female.

Or

Explain the process of spermatogenesis.

28. Differentiate between osmoregulators and osmoconformers.

What are ureotelic, uricotelic and ammonotelic animals? Give at least two examples of each.

Or

What is meant by

- a.) GM food
- b.) Single cell proteins
- c.) Replacement level
- d.) Immunomodulators
- e.) Biofertilizers

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