



# BIOLOGY

## BOOKS - NAVBODH BIOLOGY (HINGLISH)

### QUESTION BANK 2021

#### Chapter 1 Mcq

1. The outer layer of pollen grain is thick and made up of complex ,nonbiodegradable

substance called as.....

A. lignin

B. cellulose

C. pectin

D. Sporopollenin

**Answer: D**



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2. Sporoderm is made up of .....

A. exosporium and endosporium

B. outer integuments and inner integument

C. testa and tegmen

D. exine and intine

**Answer: D**



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**3.** The number of meiotic and mitotic divisions necessary for development of female gametophyte in angiosperms is...

A. 1 meiosis and 2 mitosis

B. 1 mitosis and 3 meiosis

C. 1 meiosis and 1 mitosis

D. 1 meiosis and 3 mitosis.

**Answer: D**



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4. Identify the odd one with respect to pollinating agent.

A. Baobab

B. Bottle brush

C. Kadamb

D. Sausage

**Answer: B**



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5. In vitro pollen germination and pollen tube elongation can be induced by-----

A. boric acid

B. glucose

C. lactose

D. sucrose

**Answer: D**



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6. Self-incompatibility is found in flowers of plants.....

A. Calotropis

B. maize

C. Thea

D. Gloriosa

**Answer: C**



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7. Porogamy refers to entry of pollen tube through.....

A. integuments

B. chalaza

C. micropyle

D. stigma

**Answer: C**



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**8. .... is an example of helobial endosperm.**

A. Adoxa



B. coconut

C. Asphodelus

D. sunflower

**Answer: C**



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9. The single shield shaped cotyledon in monocot seed is known as .....

A. coleoptile

B. scutellum

C. aleurone layer

D. perisperm

**Answer: B**



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**10.** The example of dicot endospermic seed is ...

A. castor

B. pea

C. mango

D. bean

**Answer: A**



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## Chapter 1 Single Sentence Answers

1. Why anther is called as tetrasporangiate structure?



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2. At which stage pollen grains are shed from the anther in Angiosperms?



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3. What is hilum with respect to ovule?



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4. What is protandry?



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5. Name any one plant in which double fertilization was discovered?



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6. Why fertilization process in angiosperms is called as double fertilization?



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7. Which is the most common type of endosperm in angiospermic families?



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8. What is the role of suspensor during the development of embryo?



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9. What is adventive polyembryony?





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10. Name the hormone produced by unfertilised ovary responsible for enlargement of ovary into fruit.



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## Chapter 1 2 Marks

1. Draw a well labelled diagram of T.S. anther.



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2. Describe the structure of pollen grain.



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3. Draw a well labelled diagram of male gametophyte of angiosperms.



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4. Describe the structure of female gametophyte of an angiosperm .



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5. Mention various adaptations for wind pollination.



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6. What are the different adaptations shown by bird pollinated flowers?



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7. Explain heterostyly and herkogamy with suitable example.



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8. Write the significance of double fertilization .





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9. Mention significance of fruit and seed formation.



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10. Give an account of polyembryony.



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1. Describe internal structure of anther (diagram is not expected).



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2. Explain the development of male gametophyte in angiosperms (diagram is not expected).



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3. Explain water pollination in detail with its types.



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4. Give an account of any two biotic agents for pollination along with their adaptations.



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5. Explain any two contrivances or outbreeding devices for pollination.



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6. Describe the process of fertilization in angiosperms with the help of diagram.



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7. Write a note on different types of endosperms in angiosperms.



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8. Describe the development of dicot embryo in flowering plants.



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**9.** Draw a well labelled diagram of monocot seed you have studied.



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**10.** Explain various categories of apomixis.



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**Chapter 14 Marks**



1. Describe the structure of anatropus ovule with the help of labelled diagram.



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2. Describe the development of female gametophyte in angiosperm .



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**3.** Give an account of various abiotic agencies used in pollination along with their adaptations for pollination.



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**4.** Explain pollen-pistil interaction in detail.



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5. Describe the process of double fertilization in angiosperms and add a note on its significance.



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## Chapter 2 Mcq

1. The primary sex organ in human males is

A. prostate gland

B. seminal vesicle

C. penis

D. testis

**Answer: D**



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2. Seminal fluid is ----- in nature.

A. acidic

B. neutral

C. sugary

D. alkaline

**Answer: D**



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**3. Which of the following is not a part of uterus?**

A. body

B. cervix

C. fundus

D. cornua

**Answer: D**



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**4. Menarch, menstrual cycle and menopause are controlled by-----**

- A. thyrotropic hormone
- B. gonadotropic hormone
- C. somatotropic hormone
- D. corticotropin

**Answer: B**



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5. Nebenkern is a part of:

- A. acrosome of sperm
- B. neck of sperm
- C. middle piece of sperm
- D. mitochondrion of sperm

**Answer: D**



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6. Nervous system develops from..... of embryonic layer.

A. endoderm

B. chorion

C. ectoderm

D. mesoderm

**Answer: C**



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7. The average period of pregnancy in human lasts for..... days of pregnancy.

A. 280

B. 270

C. 266

D. 290

**Answer: C**



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8. .... is not a permanent method of birth control.

A. vasectomy

B. tubectomy

C. withdrawal

D. castration

**Answer: C**



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9. The organism which causes Gonorrhoea is.....

A. Treponema

B. Neisseria

C. Entamoeba

D. Salmonella

**Answer: B**



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10. How many pairs of testis are present in human male?

A. 2 pairs

B. 1 pair

C. only one testis

D. only one ovary

**Answer: B**



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## Chapter 2 Single Sentence Answers

1. Name the enzyme secreted by the prostate gland.



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2. What is glans penis?



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3. What is atresia with respect to ovary in human females?



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4. Name the hydrolytic enzyme secreted by the acrosome.



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5. What is morula?





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6. What is the function of inner cell mass?



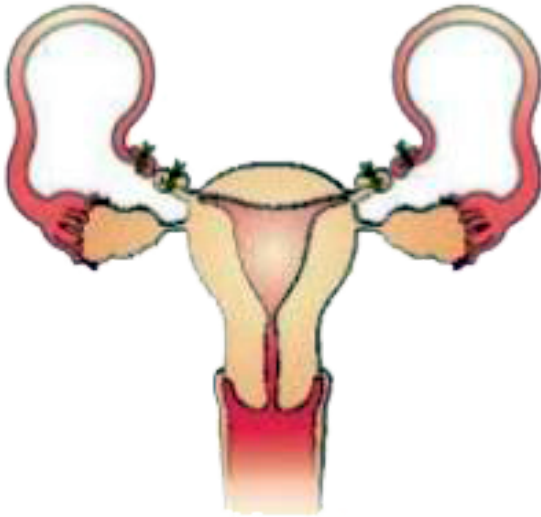
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7. Name the embryonic layer from which heart, blood and blood vessels develop.



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8. Identify the permanent birth control method in given diagram.



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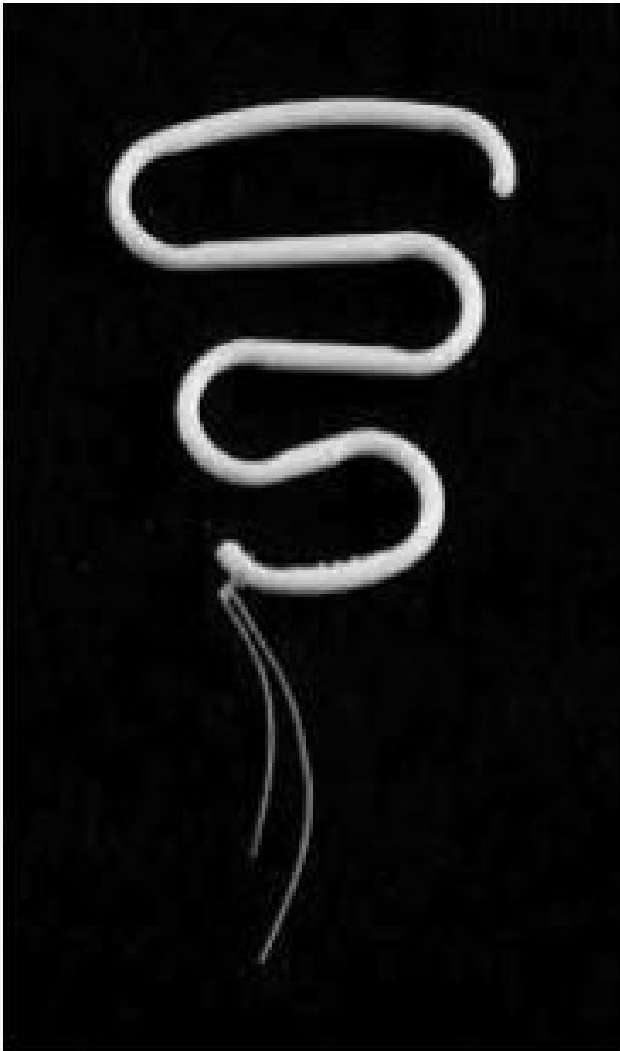
9. What is the use of tablet 'Saheli'?





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10. Identify the IUD in the given diagram.



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## Chapter 2 2 Marks

1. Draw a well labelled diagram of L.S. human testis.



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2. Describe the structure of Graafian follicle.



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3. Write a short note on fallopian tube.



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4. Give an account of external genitalia in human females.



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5. Explain the structure of secondary oocyte.



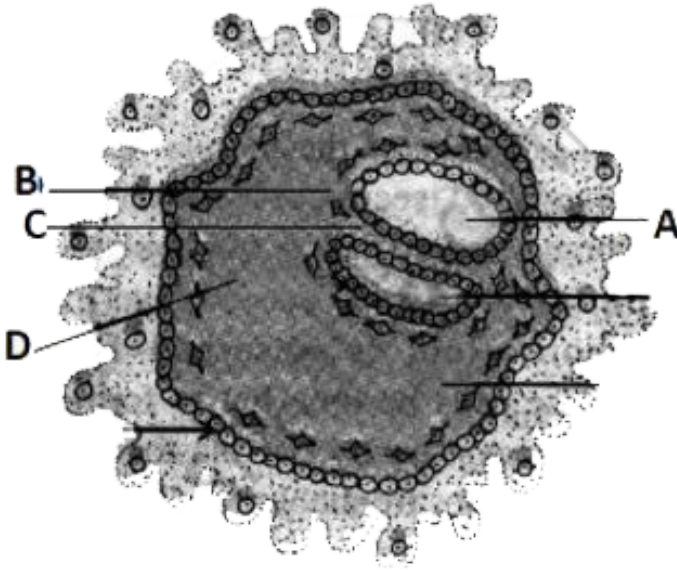
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6. Write an account of cleavage during embryonic development in humans.



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7. Identify the parts labelled in the given diagram.



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8. What is lactation? Which hormone is responsible for its regular secretion?



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9. Mention any two different goals of RCH programme.



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10. What is MTP?



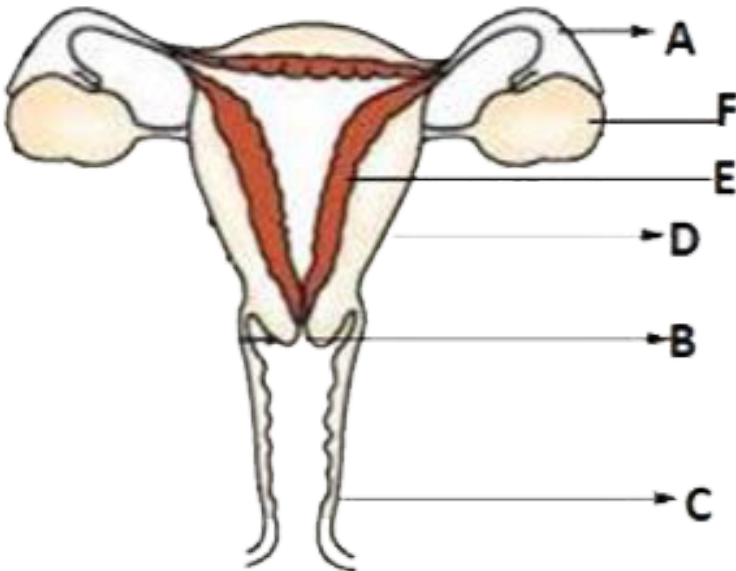
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**Chapter 2 3 Marks**

1. Describe the histology of testis with help of labelled diagram.

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2. Identify the labels from the given diagram.







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**3.** Describe the histological structure of human ovary (diagram not expected).



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**4.** Draw a labelled diagram of the microscopic structure of a human sperm.



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5. Describe the process of oogenesis in human female.



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6. Write a note on implantation.



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7. Human pregnancy shows three prominent trimesters. Answer the following question based on these trimester.

i) What is morning sickness during first trimester?

ii) Name the hormone secreted in second trimester.

iii) The organ which secretes hormone in second trimester is...



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## 8. PROCESS OF PARTURITION



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9. Explain any three measures to achieve goals of RCH.



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10. Explain any three methods that can be used to overcome infertility.



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**Chapter 2 4 Marks**

1. Write an account of seminal vesicle and bulbourethral gland in male reproductive system.



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2. Explain ovarian cycle with its different phases.



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3. (a) Describe the events of spermatogenesis with the help of a schematic representation.

(b) Write two differences between spermatogenesis and oogenesis.



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4. Explain the mechanism of fertilization and implantation.



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5. Write in detail any four temporary methods of birth control.



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## Chapter 3 Mcq

1. The three principles of Mendelism are:

A. Dominance, segregation and independent assortment

B. Linkage, segregation and independent assortment

C. Linkage, dominance and segregation

D. Linkage, dominance and Independent assortment.

**Answer: A**



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**2. Which one of the following is back cross?**



A.  $F1 \times F1$

B.  $F1 \times$  Recessive parent

C.  $F1 \times$  Dominant parent

D.  $F1 \times$  Any parent

**Answer: D**



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3. RR (red) *Antirrhinum majus* is crossed with white (rr) one. Offsprings (Rr) are pink. This is an example of:

A. Dominant -recessive

B. Incomplete dominance

C. Hybrid

D. Supplementary genes

**Answer: B**



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**4. Term chromosome was coined by**

A. Benda

B. Waldeyer

C. Robert Hooke

D. T.H.Morgan

**Answer: B**



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5. Nullisomy is represented by.....

A.  $(2n-1)$

B.  $(2n-2)$

C.  $(2n+1)$

D.  $(2n+2)$

**Answer: B**



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**6. Identify the odd one:-**

A. Monoploidy

B. Diploidy

C. Polyploidy

D. Hyperploidy

**Answer: D**



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7. In humans, the sex chromosome complement is

A. XX-XY

B. XX-XO

C. ZZ-ZO

D. ZW-ZZ

**Answer: A**



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**8.** A family of five daughters only is expecting sixth issue. The chance of its beings a son is

A. zero

B. 25 %

C. 50 %

D. 100 %

**Answer: C**



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**9.** In human beings, 45 chromosomes / single X/XO abnormality causes

- A. Down's syndrome
- B. Klinefelter's syndrome
- C. Turner's syndrome

D. Edward's syndrome

**Answer: C**



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**10.** Webbed neck is characteristic of ... syndrome.

A. XXX

B. YY

C. XXY

D. XO



**Answer:**



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## Chapter 3 Single Sentence Answers

1. Define inheritance.



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2. What is allelomorph?



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3. Test cross is



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4. Define euploidy.



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5. Give on example of complete linkage.



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6. How many linkage groups are present in *Drosophila melanogaster*?



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7. Which genes show straight inheritance?



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8. How drones are produced in honey bees?



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9. What is the reason for 21<sup>st</sup> trisomy?



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10. Give the example of X- monosomy you have studied.



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1. Discuss any two points due to which Mendel got success in his experiment?



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2. Give any two points of difference between homozygous and heterozygous. 1 mark each.  
Explain test cross with suitable chart.



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3. Explain test cross with suitable example and state its ratios.



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4. Explain incomplete dominance with suitable example.



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5. Explain codominance in colour coat in cattle with checker board method.



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6. Chromosomal Theory Of Inheritance



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7. Write short notes on sex linkage



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**8.** Differentiate between complete linkage and incomplete linkage.



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**9.** Explain the mechanism of sex determination in birds. How does it differ from that of human beings ?



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10. Give detail account of thalassemia.



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## Chapter 3 3 Marks

1. Enlist dominant and recessive characters in pea plant with respect to position of flower, colour of seed and colour of pod in tabulated form.



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2. Give an account of pleiotropy with suitable example.



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3. Describe the structure of sex chromosomes with the help of labelled diagram.



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4. What is autosomal inheritance? Explain different disorders due to autosomal inheritance.



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5. Explain inheritance pattern of colour blindness with suitable chart.



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6. Write a note on bleeder's disease and its inheritance with suitable chart.



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7. Explain the mechanism of sex determination in humans with suitable chart.



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8. Write a note on Down's syndrome.





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9. What are the different characters that develop due to Klinefelter's syndrome?



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10. Give reasons for development of Turner's syndrome and also mention its symptoms.



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## Chapter 3 4 Marks

1. Define inheritance. Give statements for various laws of inheritance.



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2. Explain intragenic and intergenic interaction with the help of example.



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3. Give detail account of sex linked inheritance.



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4. Give an account of one Mendelian and one chromosomal disorder you have studied.



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**Chapter 4 Mcq**

1. Find the odd one out:

A.  $H_2A$

B.  $H_3$

C.  $H_2B$

D.  $H_1$

**Answer: D**



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2. What happened when heat killed S cells along with live R cells were injected into mice ?

- A. Mice died and showed live S-cells
- B. Mice survived and showed live S-cells
- C. Mice died and showed live R-cells
- D. Mice died and showed dead R-cells

**Answer: A**



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3. Find out the double ring compound :

A. Adenine

B. Uracil

C. Cytosine

D. Thymine

**Answer: A**



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4. If a DNA has 20 Adenine and 30 cytosine bases. What will be the total number of purine bases in the given sample?

A. 20

B. 50

C. 30

D. 100

**Answer: B**



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5. Semiconservative mechanism of DNA was detected using:

A.  $^{35}\text{S}$

B.  $^{14}\text{C}$

C.  $^{32}\text{P}$

D.  $^{15}\text{N}$

**Answer: D**



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6. A template strand of DNA has base sequence CATGATTAC. New strand synthesized on it will be :

A. GATCAUATG

B. GTACTAACG

C. GAACTAATG

D. GTACTAATG

**Answer: D**



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7. During DNA replication, the separated strands of DNA are prevented from recoiling by

- A. DNA primase
- B. Sigma factor
- C. Rho-factor
- D. SSBP

**Answer: D**



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8. In which of the following synthesis of DNA strand is not involved directly?

A. m RNA

B. t RNA

C. Another DNA strand

D. Protein

**Answer: D**



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9. Wobble hypothesis is related with

A. Ambiguity in codon

B. Purine pyrimidine equality

C. Genetic code is triplet

D. Degeneracy of genetic code and economy

of tRNA molecules in the cell

**Answer: D**



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10. During elongation of polypeptides chain, sigma factor is

- A. Functionless
- B. Retained for specific function
- C. Released for re-use
- D. Required during closing of chain

**Answer: A**



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11. Enzyme for peptide formation is located in

- A. Peptidase
- B. Peptidyl transferase
- C. Nitrogenase
- D. Nitrate reductase

**Answer: B**



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12. Exon segments rejoined after splicing by

A. RNA primase

B. RNA protease

C. RNA polymerase

D. RNA ligase

**Answer: C**



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**13.** In lac operon, lactose acts as

A. Inducer

B. Co-inducer

C. Repressor

D. Co-repressor

**Answer: A**



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**14.** A unit lac-operon which in the absence of lactose, suppresses the activity of operator gene is

A. Structural gene

B. Regulatory gene

C. Repressor protein

D. Promoter gene

**Answer: B**



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**15.** A DNA segment has 75 cytosine and 40 thymine nucleotides. What shall be the total number of phosphates in the DNA segment?

A. 115

B. 230

C. 75

D. 220

**Answer: B**



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## Chapter 4 Single Sentence Answers

1. What is the principle of DNA profiling?



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2. What is the use of southern blotting in DNA fingerprinting?



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3. Enlist the genes in Lac operon



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4. Operon





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5. AUG codon gives \_\_\_\_\_ & \_\_\_\_\_ amino acids in prokaryotes & Eukaryotes respectively.



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6. What is meant by activation of amino acids?



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7. What is the role of  $Mg^{++}$  in Translation?



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8. What are the different types of mutations?



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9. Enlist the names of enzymes used in semiconservative replication of DNA?



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## 10. Central Dogma of Molecular Biology



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11. Isotopes used for proving semiconservative replication of DNA were :



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12. What is the function of RNA primer?



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**13. What is the function of SSBP?**



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**14. Define RFLP'**



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**15. Define Heterochromatin**



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## Chapter 4 2 Marks

1. Differentiate between Heterochromatin & Euchromatin'



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2. How t-RNA acts as an adapter molecule?  
Explain in detail with the help of a diagram.



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3. Define mutation. State its two types



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4. Describe Hershey-Chase experiment in detail.



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5. Explain the role of Lactose as inducer in Lac-operon.



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6. Draw neat and labelled diagram of Nucleosome.



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7. Write a note on: packaging of DNA in prokaryotes.



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**8.** Write a note on: packaging of DNA in Eukaryotes.



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**9.** Explain Avery, McCarty and MacLeod's experiment in detail



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10. Draw neat and labelled diagram of Replication Fork.



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## Chapter 4 3 Marks

1. Explain the Griffith's experiment in detail with diagram.



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2. Discuss the characteristics of genetic code.



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3. Write any three goals of Human Genome Project.



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4. Explain different step involved in DNA Fingerprinting.



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5. Draw a neat and labelled diagram explaining Meselson's and Stahl's experiment.



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6. How Meselson and Stahl explained the concept of Semiconservative Replication of DNA experimentally?



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7. Explain the concept of operon.



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8. Give diagrammatic representation of Lac-operon in the presence of inducer.



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9. Define Genomics. Give any two applications of the genomics.



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## Chapter 4 4 Marks

1. Describe the process of semiconservative replication of DNA with the help of neat and labelled diagram.



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2. Describe the mechanism of translation with the help of neat and labelled diagram.



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3. Explain processing of hn-RNA with the help of neat and labelled diagram.



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4. With respect to lac- operon explain the following terms:-

i) regulator gene

ii) promoter gene

iii) structural gene

iv) inducer



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5. What is DNA fingerprinting? Mention its application.



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**Chapter 5 Mcq**

1. \_\_\_\_\_ is considered as connecting link between ape and man.

A. Australopithecus

B. Homo habilis

C. Homo erectus

D. Neanderthal man

**Answer: A**



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2. Humans are most closely related to \_\_\_\_\_.

A. Marsupial

B. Lemur

C. Chimpanzees

D. Tarsier

**Answer: C**



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3. The proportion of an allele in the gene pool to the total number of alleles at a given locus is called \_\_\_\_\_.

- A. gene pool
- B. gene frequency
- C. gene flow
- D. genetic drift

**Answer: B**



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4. Transfer of a part of chromosome or set of genes to a non-homologous chromosome is called \_\_\_\_\_.

A. deletion

B. duplication

C. inversion

D. translocation

**Answer: D**



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5. Any random fluctuation in allele frequency, occurring in the natural population by pure chance is called \_\_\_\_\_.

- A. gene pool
- B. gene mutation
- C. genetic recombination
- D. genetic drift

**Answer: D**



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## Chapter 5 Single Sentence Answers

1. Mendelian population.



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2. Define gene pool.



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3. Name the ancestor of human also known as man with ape brain.



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4. Name the ancestor of human nicknamed as Handy man



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5. The ancestor of man whose fossils were found in Shivalik hills:



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## Chapter 5 2 Marks

1. Mention any two developments in human which helped him to move around safely on land.



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2. Distinguish New world and old world monkeys based on their tail along with their examples.



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3. What is hybrid sterility?



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4. What led to better utilization of hands for holding objects effectively and better motor skills?



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5. Describe modern man.



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6. Distinguish between Australopithecus and Neanderthal man



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7. Distinguish between Homo erectus and Neanderthal man



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## Chapter 5 3 Marks

1. Name any three types of premating isolating mechanisms.



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2. Name any three types of postmating isolating mechanisms.



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### 3. Explain Geographical Isolation



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4. Write down the three main concepts of modern synthetic theory.



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5. What is chromosomal aberration? Give any two types of aberrations found in population.



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6. Complete the table based on the special features of Human ancestors showing their

cultural and social development.

<b>Ancestors</b>	<b>Special features</b>
<i>Homo erectus</i>	
	Buried their dead
	Made tools from stones



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7. Write a note on Homo habilis



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## Chapter 5 4 Marks

1. What is genetic variation? Explain any three factors responsible for genetic variation.



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2. Explain the action of natural selection with reference to industrial melanism



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1. Water present in the form of hydrated oxides of Silicon, Aluminium is called \_\_\_\_\_

- A. Hygroscopic Water
- B. Gravitational Water
- C. Combined Water
- D. Capillary Water

**Answer: C**



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2. Most plant cells and tissues constitutes  
\_\_\_\_\_ % water

A. 90 – 95 %

B. 70 – 80 %

C. 10 – 25 %

D. 0 – 20 %

**Answer: A**



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3. \_\_\_\_\_ type of tissues are present in epiphytic roots

A. Meristematic

B. Parenchyma

C. Velamen

D. Epithelial

**Answer: C**



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4. In the zone of absorption, epidermal cells form unicellular hair like extensions called

-----

- A. Epiblema cells
- B. Roots
- C. Root hairs
- D. Velamen tissues

**Answer: C**



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5. Outer layer of root hair is made up of \_\_\_\_\_

A. Cellulose

B. Lignin

C. Starch

D. Pectin

**Answer: D**



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6. Inner layer of root hair is made up of \_\_\_\_\_

A. Cellulose

B. Lignin

C. Starch

D. Pectin

**Answer: A**



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**7. Cell wall is**

A. Selectively Permeable

B. Freely Permeable

C. Non Permeable

D. Impermeable

**Answer: B**



**Watch Video Solution**

**8. Plasma membrane is**

A. Selectively Permeable

B. Freely Permeable

C. Non Permeable

D. Impermeable

**Answer: A**



**Watch Video Solution**

9. Root hair is \_\_\_\_\_ extension of epiblema cells

A. Cytoplasmic

B. Protoplasmic

C. Nucleoplasmic

D. Cellulosic

**Answer:**



**Watch Video Solution**

**10.** Fine soil particles imbibe or absorb water and hold it. This is called as \_\_\_\_\_

A. Hygroscopic Water

B. Gravitational Water

C. Combined Water

D. Capillary Water

**Answer: A**



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## Chapter 6 Single Sentence Answers

1. Why water acts as a thermal buffer?



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2. Define : Root hair



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3. What is meant by Gravitational water?



[Watch Video Solution](#)

4. What is meant by Hygroscopic water?



[Watch Video Solution](#)



5. What is meant by Combined water?



[Watch Video Solution](#)

6. What is meant by Capillary water?



[Watch Video Solution](#)

7. What is the composition of outer layer of root hair?



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**8.** What is the composition of inner layer of root hair.



**Watch Video Solution**

**9.** From which type of cells, root hair is originated



**Watch Video Solution**

10. Which type of tissue is present in epiphytic roots?



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## Chapter 6 2 Mark

1. Why water is called as 'Elixir of Life'?



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2. What are the different types of water?



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3. Explain the structure of root hair.



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4. In which forms water is available to roots for absorption?



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5. Explain the different properties of water.



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## Chapter 6 3 Marks

1. Draw a neat and labelled diagram of Root tip showing root hair zone.



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2. Write a note on morphological structure of root.



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3. How roots can act as a water absorbing organ?



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**Chapter 6 4 Marks**

1. Explain the structure of root hair with the help of neat and labelled diagrams.



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## Chapter 7 Mcq

1. A farmer is fed up of weeds in his Wheat farm. Which of the following chemicals he can use to overcome the problem?

A. IBA

B. IAA

C. NAA

D. 2,4 - D

**Answer: D**



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2. Gibberellins are synthesised from \_\_\_\_\_.

A. Acetic acid

B. Mevalonic acid



C. Tryptophan

D. Ethephon

**Answer: B**



**Watch Video Solution**

**3. First natural cytokinin was obtained from**

\_\_\_\_\_.

A. Rice plants

B. Tobacco callus

C. Maize grains

D. Human urine

**Answer: C**



**Watch Video Solution**

## Chapter 7 Single Sentence Answers

1. Buyers often complain that a particular fruit merchant uses some chemical to ripen fruits in

his shop.

Name the chemical he must be using to do so.



**Watch Video Solution**

2. Why is ABA known as antitranspirant?



**Watch Video Solution**

3. Name the tissue that transports hormones within the plant body?



**Watch Video Solution**

## Chapter 7 2 Marks

1. Match the column A with B

A	B
i) Epinasty of flower	a) GA3
ii) Natural auxin	b) NAA
iii) Flowering in Litchi	c) IAA
iv) Bolting of Beet	d) Ethylene



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2. A gardener wants to give bushy appearance to plants in our college campus.

i) What should he do to achieve the same?

ii) Which property of phytohormones he must be aware of?



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## Chapter 7 3 Marks

1. Write the name of \_\_\_\_

a) First hormone discovered in plants.

b) Biological name of fungus from which Gibberellins were first isolated.

c) The name given to the first cytokinin by Skoog and Miller.



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2. Write the name of \_\_\_\_

a) Gaseous growth hormone known to you.

b) Standard bio assay method for auxins.

c) Hormone that can overcome the requirement of vernalization.



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## Chapter 7 4 Marks

1. Name the phytohormone related with the given phenomenon

a) Apical dominance

b) Bolting of Cabbage

c) Artificial ripening of fruit

d) Acts as Antitranspirant by closing stomata



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2. Write full form of

a) IAA

b) IBA

c) NAA

d) 2,4-D



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## Chapter 8 Mcq

1. In human respiration, chemical energy is released in the form of \_\_\_\_.



A. Acetyl co-enzyme A

B. ADP

C.  $ADPH_2$

D. ATP

**Answer: D**



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2. Alveoli provide the surface area for exchange of \_\_\_\_\_.

A. food

B. enzymes

C. gases

D. hormones

**Answer: C**



**Watch Video Solution**

**3.** The movement of diaphragm, intercostal muscles and rib cage helps in \_\_\_\_\_.

A. digestion

B. circulation

C. excretion

D. respiration

**Answer: D**



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4. The volume of air that remains in the lungs after maximum respiration is \_\_\_\_\_.

A. 1000 to 1100 ml

B. 1100 to 1200 ml

C. 2000 to 3000 ml

D. 5200 to 5800 ml

**Answer: B**



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5. Find out the example in which due to absence of respiratory pigment transport of respiratory gases does not takes place.

A. Cockroach

B. Scoliodon

C. Frog

D. Human

**Answer: A**



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**6. Which of the following have thickest wall : —**

A. Right auricle

B. Right ventricle

C. Left auricle

D. Left ventricle

**Answer: D**



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7. The phase of contraction of heart is termed as \_\_\_\_\_.

A. diastole

B. systole

C. heart beat

D. heart sound

**Answer: B**



**Watch Video Solution**

**8.** The free edges of cuspid valves are attached to the papillary muscles of the heart by fibres are called \_\_\_\_\_.

A. chordae tendinae

B. columnae carneae

C. connecting fibres

D. autorhythmic fibres

**Answer: A**



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9. Ventricular depolarization is represented by

\_\_\_\_\_.

A. P wave



B. QRS complex

C. T wave

D. P and T waves

**Answer: B**



**Watch Video Solution**

**10.** The erythropoietic tissue in adult is mainly found in \_\_\_\_\_.

A. kidney

B. liver

C. red bone marrow

D. spleen

**Answer: C**



**Watch Video Solution**

## Chapter 8 Single Sentence Answer

1. Name the cartilage which divides the nasal cavity into right and left nasal chambers.



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**2. Give the function of epiglottis.**



**Watch Video Solution**

**3. Define total lungs capacity.**



**Watch Video Solution**

4. Sachin shows symptoms of inflammation of the sinuses and mucous discharge due to viral and bacterial infection. Identify the disorder.



**Watch Video Solution**

5. Define haematology.



**Watch Video Solution**

6. Which type of blood flows through pulmonary veins?



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7. In between which layers of pericardium, pericardial fluid is present?

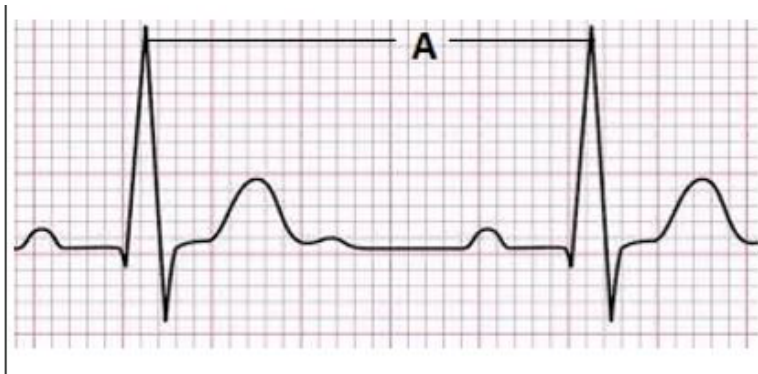


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8. How many molecules of haemoglobin are found in each erythrocyte?

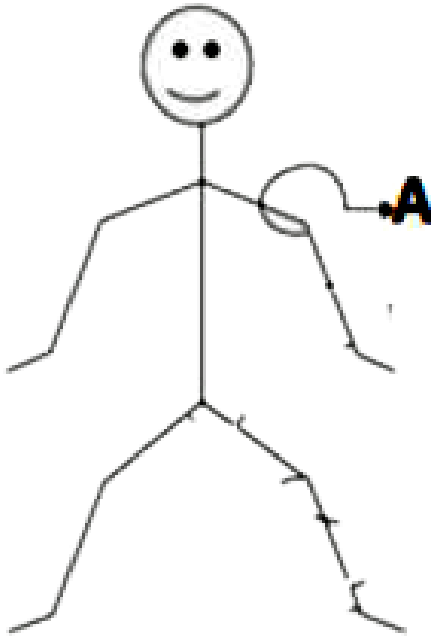
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9. Identify 'A' from the following ECG.



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10. Identify the pulse point 'A' from below given diagram.



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1. Fill in the blanks with the help of chart.

Organism	Habitat	Respiratory surface/ organ
Coelenterates	-----	-----
Spiders	-----	-----



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2. Define Bohr effect and Haldane effect



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3. Give any two effects of carbon monoxide poisoning.



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4. Define intracellular transport and extracellular transport.



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5. Name the pigment and enzyme found in erythrocytes?



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6. Draw diagram of conducting system of human heart. Label SA node and bundle of His.



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7. How a portal vein differs from normal vein?



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## Chapter 8 3 Marks

1. Distinguish between inspiration and expiration.



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2. Write a note on Hering-Breuer reflex.



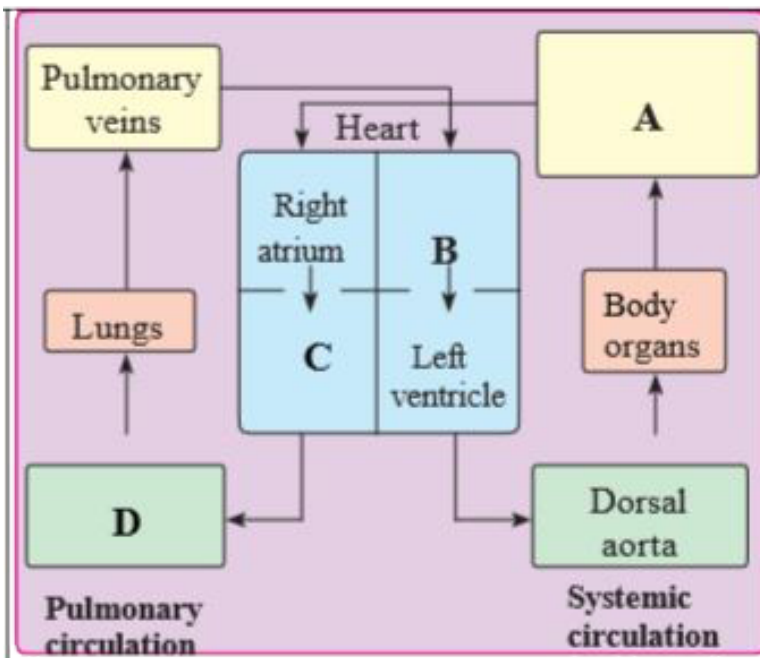
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3. Define Hamburger's phenomenon. Add a note on it.



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4. Draw the chart of double circulation and label A, B, C and D.



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5. Write a note on coagulation of blood.



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6. Define hypertension. Explain coronary artery disease and angina pectoris.



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7. Draw diagrammatic representation of cardiac cycle. Explain ventricular systole.



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**Chapter 8 4 Marks**




1. With the help of labelled diagram explain the exchange of gases between alveolus and capillary.



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2. With the help of chart identify and write the function of any four leucocytes.

Type	Leucocytes	Name of cell	Function
<b>Granulocytes</b>		-----	-----
		-----	-----

		-----	-----
<b>Agranulocytes</b>		-----	-----
		-----	-----



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**3. Draw labelled diagram of internal structure of human heart.**

Label right atrium, mitral valve, left ventricle and pulmonary semilunar valve.

Write a function of Eustachian and tricuspid valve found in human heart.



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1. Diffused type of nervous system is seen in  
\_\_\_\_\_.

A. Hydra

B. Planaria

C. Cockroach

D. Earthworm

**Answer: A**



**Watch Video Solution**

2. Planaria shows \_\_\_\_\_ type of nervous system.

A. nerve net.

B. ladder

C. ganglionated

D. brain

**Answer: B**



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3. In order for a stimulus to be effective, the stimulus must have a minimum intensity called \_\_\_\_\_ stimulus.

A. subliminal

B. depolarised

C. threshold

D. polarised

**Answer: C**



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4. Resting potential of a nerve is

- A. 30 millivolts
- B. – 30 millivolts
- C. 70 millivolts
- D. – 70 millivolts

**Answer: D**



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5. The third ventricle of brain is connected to the fourth ventricle of brain through \_\_\_\_\_.

A. Foramen of Monro

B. Duct of Sylvius

C. Metacoel

D. Eustachian tube

**Answer: B**



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6. Degeneration of dopamine producing neurons in the CNS causes \_\_\_\_\_ disease.

A. ADHD

B. Alzheimer's

C. Parkinson's

D. Fever

**Answer: C**



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7. \_\_\_\_\_ is a mineralocorticoid secreted by Adrenal gland.

A. Aldosterone

B. Cortisol

C. Corticoid

D. Androgen

**Answer: A**



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8. \_\_\_\_\_ has an important role in the development of immune system by maturation of T lymphocytes.

A. Thyroxine

B. Thymosin

C. Aldosterone

D. Parathormone

**Answer: B**



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9. Hyper secretion of growth hormone in childhood causes \_\_\_\_\_.

A. Acromegaly

B. Dwarfism

C. Gigantism

D. Goitre

**Answer: C**



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10. \_\_\_\_\_ shows gastric contractions and inhibit the secretion of gastric juice.

A. Gastrin

B. Secretin

C. Entero- gastrone

D. Inhibin

**Answer: C**



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## Chapter 9 Single Sentence Answers

1. Which cells of PNS secrete myelin sheath around the nerves?



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2. Give function of astrocytes in nervous system.



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3. What is the covering of nerve fascicule called?



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4. How electrical synapse differs from chemical synapse?



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5. What is the function of red nucleus?



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6. Define Saltatory conduction.



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7. Name the hormone secreted by Pars intermedia in lower vertebrates.



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8. Which disease is caused by hyper secretion of Glucocorticoids?



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9. Which organ acts a temporary endocrine gland in females?



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10. Give one role of hormone therapy.



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1. 'Injury to medulla oblongata causes sudden death'. Explain why.



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2. Which two hormones are responsible for the regulation of calcium and phosphorus in the blood?



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3. Describe any two hormones produced by the ovaries



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4. Name the glucocorticoid used in treatment of allergy and why?



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5. Which hormone is secreted by Pineal gland?

What is its function?



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6. Sketch and label T.S of Spinal cord.



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7. Sketch and label V.S of Pituitary gland.



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## Chapter 9 3 Marks

1. Write a note on meninges of Brain.



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2. Describe any three functions of hypothalamus.



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3. Name three Mixed cranial nerves along with their numbers.



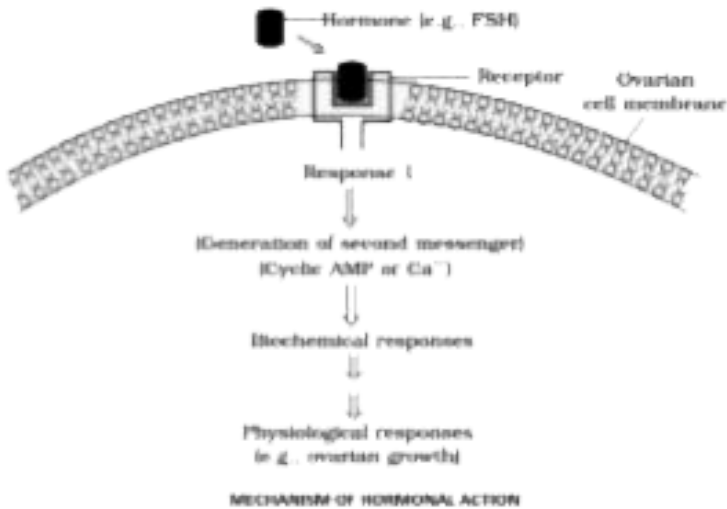
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4. Distinguish between Cerebrum and Cerebellum.



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5. Answer the questions after observing the diagram given below.



1) What acts as the first messenger?

2) Why can't hormones like catecholamines enter their target cells through plasma membrane?

3) Name the mode of hormone action shown in the diagram.



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6. Complete the table based on disorders caused due to under secretion or over secretion of Thyroid gland.

Secretion	Adults	Children
Hypo secretion		
Hyper secretion		



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7. Give the names of the hormones released by neurohypophysis.

A boy shows excessive thirst and micturition because of deficiency of a hormone secreted by neurohypophysis. Name the disease he is suffering from.



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1. Describe the functional areas of Cerebrum.



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2. Distinguish between Sympathetic and parasympathetic nervous system.



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3. Describe any four hormones secreted by Adenohypophysis.



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4. Write a note on the four different kinds of cell in Pancreas.



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## Chapter 10 Mcq

1. Immunity acquired after an infection is \_\_\_\_\_  
immunity

A. Artificial Acquired

B. Passive

C. Innate

D. Natural Acquired

**Answer: D**



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2. Passive immunity is \_\_\_\_\_.

A. Acquired through natural overt or latent  
infection

B. Acquired through Vaccination

C. Acquired through readymade antibodies

D. Acquired by activating immune system of  
the body

**Answer: C**



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3. 'Pathogens' are \_\_\_\_\_

A. Substances produced against any disease.

B. Chemical substances produced by the host cells to kill the parasite animal.

C. Disease causing organisms.

D. Cells which kill the parasites

**Answer: C**



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4. Which one of the following diseases is a communicable?

A. Rickets

B. Malaria

C. Diabetes

D. Scurvy

**Answer: B**



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5. Which one of the following is the most accurate definition of the term 'health'?

A. Health is the state of body and mind in a balanced condition.

B. Health is the reflection of a smiling face.

C. Health is a state of complete physical, mental and social well-being.

D. Health is the symbol of economic prosperity.

**Answer: C**



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6. AIDS is caused by

A. Fungus

B. Virus

C. Bacterium

D. Helminth worm

**Answer: B**



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7. A person preparing food in an unhygienic place can be a major source of spread of disease \_\_\_\_\_

A. Pneumonia

B. Syphilis

C. Typhoid

D. Cancer

**Answer: C**



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8. Carcinoma is cancer of \_\_\_\_\_ cells.

A. Epithelial

B. Connective tissue

C. Bone

D. Blood

**Answer: A**



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9. Inactive gene that can cause cancer is called

-----

A. Transposon

B. Proto-oncogene

C. Tumour promoter gene

D. Tumour suppressor gene

**Answer: B**



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10. antiviral proteins released by cells infected by the virus are called \_\_\_\_\_

A. histamines

B. interferons

C. pyrogens

D. allergens

**Answer: B**



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## Chapter 10 Single Sentence Answers

1. Define 'Health', as given by WHO.



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2. What are Non-communicable diseases?



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3. Name the causative pathogen of Ascariasis.



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4. What is 'serology'



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5. Name the vector of malarial pathogen.



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6. What are congenital disease?



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7. Name the vector of pathogen responsible for filariasis.



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8. When a drug addict is not allowed to take drugs he shows certain typical symptoms. What are these symptoms termed as?



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9. What is 'Leukemia'?



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10. Define 'Adolescence'.



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## Chapter 10 2 Marks

1. Enlist the four types of T- lymphocytes, responsible for immune response of our body



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2. Enlist any four barriers that contribute to innate immunity.



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3. Explain any four therapies used in treatment of cancer



[Watch Video Solution](#)



4. Give any four the symptoms of Ascariasis.



[Watch Video Solution](#)

5. State the significance of mother's milk to a newborn.



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6. Enlist any two features of Acquired immunity.



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## 7. Sketch and label – Structure of Antibody



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### Chapter 10 3 Marks

1. The immune system of a person is suppressed. In the Elisa test, he was found positive to a pathogen.

(a) Name the disease the patient is suffering from.

(b) What is the causative organism?

(c) Which cells of body are affected by the pathogen?



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2. Explain the importance of epithelial surface in innate immunity.



**Watch Video Solution**

3. Explain any three causes of substance abuse during adolescence.





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**4.** Explain the three stages of adolescence.



**Watch Video Solution**

**5.** Give the preventive measures of AIDS



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**6. a)** How is a tumor formed in the body?

**b)** What are the two types of tumor?

c) Which of these under goes metastasis?



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7. Explain the mode of transmission of HIV.



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## Chapter 10 4 Marks

1. Explain the various types of acquired immunity.



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2. Explain the clinical manifestation of AIDS.



[Watch Video Solution](#)

3. Explain any four therapies used in treatment of cancer



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1. Wheat -Atlas 66 has high contents of \_\_\_\_\_.

A. protein

B. vitamin

C. carbohydrates

D. Fats

**Answer: A**



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2. Species of \_\_\_ is involved in cheese formation.

A. Penicillium

B. Lactobacillus

C. Saccharomyces

D. Leuconostoc

**Answer: A**



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**3. Aspergillus niger is used to prepare vit \_\_\_**

**A. D**



B. B2

C. B12

D. C

**Answer: D**



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4. *Saccharomyces cerevisiae* is used to produce enzyme \_\_\_.

A. Invertase

B. Pectinase

C. Lipase

D. Cellulase

**Answer: A**



**Watch Video Solution**

**5. Select the odd one from given herbicides.**

A. Cactoblastis

B. Alternaria

C. Fusarium

D. Phytophthora

**Answer: A**



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6. \_\_\_\_\_ associated with plants like Azolla and Cycas can be used as a biofertilizers.

A. Anabaena

B. Nostoc

C. Plectonema

D. Oscillatoria

**Answer: A**



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7. Chloromycetin is obtained from

A. *Streptomyces erythreus*

B. *Penicillium chrysogenum*

C. *Streptomyces venezuelae*

D. *Streptomyces griseus*

**Answer: C**



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**8.** Indian curd is prepared by inoculating milk with \_\_\_\_\_.

A. *Lactobacillus acidophilus*

B. *Lactobacillus bulgaricus*

C. *Penicillium roquefortii*

D. *Penicillium camembertii*

**Answer: A**



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## Chapter 11 Single Sentence Answer

1. What is biofortification ?



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2. Name biofortified wheat variety for high protein content.



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3. What is the main function of a fermenter?



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4. Name the chamber in which the suspended objects are filtered and removed during sewage

treatment?



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5. What is mycorrhiza?



**Watch Video Solution**

6. Name the tank to which the sewage water is passed after the preliminary treatment?



**Watch Video Solution**



7. What are flocs with respect to sewage treatment



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8. Small part of activated sludge is passed back into primary sedimentation tank.

If the above statement is correct then rewrite as it is and in case it is incorrect then reframe it.



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## Chapter 11 2 Marks

1. Rearrange the names of tanks used in sewage treatment as per the flow of procedure.

a) settling tank

b) Grit Chamber

c) aeration tanks

d) primary sedimentation tank.



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2. Give names of two organisations which provide most commonly used models of biogas plants.



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3. A young girl is health conscious. Her dietician advised her to include mushrooms in her diet. What must be the reason?



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4. Match the column A with B and rewrite correct pairs.

A

B

i. Atlas 66

a) vit A

ii. Rice

b) vit C

iii. Spinach

c) protein

iv. bitter gourd

d) Iron



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5. Name two bacteria which are responsible for fermenting dough of idli, dosa.



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6. Name two acids produced by using *Aspergillus niger*?



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7. Name two amino acids found in fortified Maize variety?



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**Chapter 11 3 Marks**

1. Match the column A with B and rewrite correct pairs

A

B

I. Mycoherbicides

a) Cactoblastis

II. Bacterial herbicides

b) Alternaria

III. Insects as herbicides

c) Xanthomonas



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2. State any three benefits of using Biogas.



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3. Write chemical reactions to represent Methanogenesis.



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4. Describe the structure of a biogas plant.



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5. State any three benefits of mycorrhiza.



[Watch Video Solution](#)

6. State any three benefits of Biofertilizers.



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7. Match the column A with B and rewrite correct pairs.

<b>A</b>	<b>B</b>
1) citric acid	a) in medicine for solubility of $\text{Ca}^{++}$
2) fumaric acid	b) confectionary
3) gluconic acid	c) in resins as wetting agents



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## Chapter 11 4 Marks

1. Match the column A with B and rewrite correct pairs.

A

B

- |                                      |              |
|--------------------------------------|--------------|
| a) <i>Penicillium roquefortii</i>    | i) Alcohol   |
| b) <i>Lactobacillus bulgaricus</i> . | ii) Cheese   |
| c) <i>Lactobacillus acidophilus</i>  | iii) Yoghurt |
| d) <i>Saccharomyces cerevisiae</i>   | iv) curd     |



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2. Explain the process of sewage water treatment before it can be discharged into

natural bodies.



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3. Match the column A with B and rewrite correct pairs.

A

- i. Symbiotic N<sub>2</sub> fixing bacteria
- ii. Free-living N<sub>2</sub> fixing bacteria
- iii. Phosphate solubilizer
- iv. Endomycorrhizae

B

- a) VAM
- b) Rhizobium
- c) Nostoc
- d) Micrococcus



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1. The technique which involves addition or deletion of genes is :

A. genetic engineering

B. gene therapy

C. gene splicing

D. gene piracy

**Answer: A**



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2. ECoRI is obtained from...

- A. Escherichia coli R13
- B. Escherichia coli Ry13
- C. Escherichia coli R225
- D. Escherichia coli RC

**Answer: B**



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3. The enzyme restriction endonuclease ...

A. cuts double strand of DNA

B. joins strand of DNA

C. cuts RNA strand

D. cuts single stranded DNA

**Answer: A**



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4.  $T_1$  plasmid is used for making transgenic plants. It is obtained from

A. *Agrobacterium rhizogenes*

B. *Escherichia coli*

C. *Agrobacterium T20*

D. *Agrobacterium tumefaciens*

**Answer: D**



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5. Polymerase chain reaction is most useful in

A. DNA amplification

B. DNA synthesis

C. protein synthesis

D. selective replication of DNA

**Answer: A**



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**6. In Bt cotton a transgenic plant, Bt refers to....**

A. bold cotton

B. *Bacillus thuringiensis*

C. beta carotene

D. tumor inducing bacteria

**Answer: B**



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7. In transgenic crop substance provitamin A is obtained in....

A. rice

B. tomato



C. canola

D. sugarcane

**Answer: A**



**Watch Video Solution**

**8. In Anaemia the Recombinant protein...is produced by r-DNA technology.**

A. Relasein

B. Insulin

C. Erythroprotein

D. Antoitrrpsin

**Answer: B**



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**9. In biotechnology GMO refers to....**

A. generation mediated organisms

B. genetically modified organisms

C. good modified organisms

D. gross modified organisms

**Answer: B**



**Watch Video Solution**

**10.** First biopatent to genetically engineered bacterium....

A. Pseudomonas

B. Agrobacterium

C. Azatobacter

D. E. coli.

**Answer: A**



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## Chapter 12 Single Sentence Answers

1. In which transgenic plant the substance Flavonoids obtained as antioxidants.



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2. What is Germline therapy?



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3. Which Recombinant proteins is obtained for Hepatitis-B by r-DNA technology.



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4. What is a plasmid?



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5. What is Palindromic sequence?



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6. Alu-I is obtained from which organism?



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7. What is the role of Taq-polymerase in PCR technology?



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8. Bt-cotton shows adverse effect on the population of which butterfly?



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## Chapter 12 2 Marks

1. What is Biopiracy? Explain it with respect to Turmeric.



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2. How Biotechnology is applicable with respect to Genomics?



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3. Explain how transgenic fish is commercially beneficial.



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4. Write any two human disorders and to cure which recombinant proteins are produced?



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5. For production of edible vaccines plants are used. Explain this any one example.



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6. Write a note on uses of somatic cell gene therapy.



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7. Define vector? write any two examples.



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**Chapter 12 3 Marks**

1. Explain traditional use of Biotechnology.



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2. Define biotechnology? Which are the basic principles and process of biotechnology?



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3. What is gene cloning? Explain different tools used for it.



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4. What is Recognition sequence? Explain in brief.



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5. Define Biotechnology? How it is used in production of Human insulin.



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6. What is GM plant? Write its different advantages.



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## Chapter 12 4 Marks

1. What is PCR? Explain different steps involved in it.



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2. Define biotechnology. Give any three application of it?



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3. Which are different adverse effect of biotechnology on human health and environment?



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4. Explain biopatent and Biopiracy with different examples?



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## Chapter 13 Mcq

1. An association of individuals of different species living in the same habitat and having functional interactions is

A. biotic community.

B. population.

C. ecosystem.

D. tropical niche.

**Answer: A**



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**2. Community is defined as....**

A. Group of similar Angiosperms.

B. interacting populations.



C. interacting ecosystem

D. group of mangroves.

**Answer: B**



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**3.** Regional and local variations within each biome lead to the formation of variety of...

A. Habitats

B. niches

C. species

D. genus

**Answer: A**



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**4. Maximum absorption of rainfall water is done by....**

A. tropical evergreen forest.

B. tropical deciduous forest.

C. coniferous forest.

D. deserts

**Answer: A**



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**5. Cattle egret and grazing cattle is an example for :**

A. Mutualism.

B. Parasitism.

C. Commensalism.

D. Competition

**Answer: C**



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**6.** The ecological niche of population is a:

A. geographical area where it lives.

B. set of conditions and resources that it  
uses.

C. habitat of organisms

D. place of origin of organisms

**Answer: B**



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7. Tropical dense forests are due to

A. high rainfall and low temperature

B. high rainfall and warm temperature

C. low rainfall and high temperature

D. low rainfall and low temperature

**Answer: B**



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**8. Polar bears show hibernation during...**

A. winter

B. summer

C. rainy season

D. favourable conditions

**Answer: A**



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**9. In Logistic growth curve lag phase shows...**

A. fast growth

B. initial stage of growth

C. stationary phase of growth

D. diminishing phase of growth

**Answer: B**



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10. The number of deaths under ideal conditions is known as

A. Absolute mortality

B. Realized mortality

C. Absolute natality

D. Realized natality

**Answer: A**



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## Chapter 13 Single Sentence Answers

1. Define Absolute Mortality.



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2. How absolute Natality differs from Realized Natality.



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3. What is population ecology?



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4. What is spatial niche?



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5. What is ESS?



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6. Define the term Habitat.



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7. Rearrange the terms population, Biome, Community and Organisms in ecological hierarchy



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8. What Allen's rule indicates in adaptation?



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## Chapter 13 2 Marks

1. Show the graphical representation of mean annual rainfall with respect to mean annual temperature.



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2. Define the term Biome and population



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**3. How Habitat differs from Niche?**



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**4. How 'Temperature' as an abiotic factor plays a role in ecology?**



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5. Define the term Adaptation. State its two advantages.



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6. What is Mortality? What are its two types?



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7. Define the term population interactions. State its two types



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## Chapter 13 3 Marks

1. Define Niche with its different types.



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2. Define mutualism. Explain its one type.



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3. List any three important characteristics of a population and explain.



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4. Explain different population interactions with examples.



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5. What is Commensalism? Explain it with suitable example.



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6. Explain the role of any three abiotic factors affecting the environment.



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7. Explain different types of growth models.



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## Chapter 13 4 Marks

1. Define population growth. Explain different types of age pyramids.



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2. Which are different biotic and abiotic factors involved in ecology and how they play their role?



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3. What is population interaction? Explain the interactions in Mutualism and Competition.



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## Chapter 14 Mcq

1. Lichens taking roots on bare rocks are an example of \_\_\_\_\_.

- A. climax community
- B. pioneer species
- C. climax species
- D. secondary succession

**Answer: B**



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2. Growth of new grasses and shrubs on a patch of forest burnt down by forest fire, is a an example of \_\_\_\_\_

A. secondary succession

B. pioneer species

C. climax species

D. primary succession

**Answer: A**



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**3.** All types of ecological succession whether on land or in water always reaches \_\_\_\_\_

- A. climax community
- B. pioneer species
- C. climax species
- D. secondary succession

**Answer: A**



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**Chapter 14 Single Sentence Answers**

1. What is sere ? It constitutes how many types of communities .



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2. Ecological succession is



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3. What is climax community?



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## Chapter 14 2 Marks

1. Name the types of succession of plants based on the nature of habitat.



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2. Give reasons – ‘Primary succession is always slower than secondary succession’



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## Chapter 14 3 Marks

1. What are 'pioneer species'? Give two examples of them.



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## Chapter 14 4 Marks

1. Explain the progress of ecological succession in newly formed volcanic island.



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## Chapter 15 Mcq

1. Dodo bird, stellar sea cow and passenger pigeon are few examples of extinction due to \_\_\_\_\_.

- A. habitat loss
- B. hunting
- C. Alien species invasion
- D. overexploitation

**Answer: D**



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2. Select the odd example with respect to types of conservation strategies.

A. Pawra tribals in Satpuda have protected varieties of corn with different coloured kernels.

B. Kanha forest as tiger reserve

C. Crocodile bank of Chennai

D. Sacred groves

**Answer: C**



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**3.** India boasts a handsome share of \_\_\_\_ % of total biodiversity wealth of the earth.

A. 2.4

B. 8.1

C. 14

D. 22

**Answer: B**



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## Chapter 15 Single Sentence Answers

1. What is 'Hello Forest'?



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2. Name the Japanese method of plantation adapted by our government.



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## Chapter 15 2 Marks

1. Write full form of \_\_

i) IUCN

ii) NBA



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2. Give any four factors that favour high speciation at lower altitudes.



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3. With the help of any one example explain Alien species invasion as one of the causes of Biodiversity losses.



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1. Describe any four measures to achieve Mission Harit Maharashtra



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