

	Key for Set A		
Sr No.	Value	Point	Marks
1	B.	( Free nuclear endosperm )	1
2	C.	(Nucellus)	1
3	D.	(Activate smooth muscles)	1
4	B.	(Amniocentesis)	1
5	D.	(Polygenic quantitative)	1
6	B.	(Sutton and Boveri)	1
7	B.	(An enhancer)	1
8	D.	(Cistron)	1
9	D.	(Water to land)	1
10	C.	(Fossils)	1
11	B.	(Lichen)	1
12	C.	(Botanical)	1
13	D.	(Exponential phase)	1
14	B.	(Homeothermal)	1
15	B		1
16	A		1
17	B		1
18	B		1
	Section:B		
19	Benign Tumour	Malignant Tumour	
	1.Remains confined to original location .	1. Invade and damage the surrounding normal tissues.	.5
	2. They are not cancerous .	2. They are cancerous .	.5
	3. The cells of this tumour are not metastatic .	3. The cells of this tumour are metastatic.	.5
	4. These are harmless.	4. These are harmful .	.5
	OR		
	Active immunity	Passive immunity	
	1. Immediate relief from ailment is not there.	1. Immediate relief from ailment .	.5
	2.Active role of sufferer in production of immunity.	2. Role of sufferer is not active.	.5
	3. Antibodies are produced on exposure to antigen.	3. Antibodies are injected.	.5
	4. Mother's milk does not provide active immunity.	4. Mother's milk provides passive immunity.	.5

20.Streptokinase is produced by streptococcus. 1

It is a clot buster which removes clots from blood vessels of patients who have undergone myocardial infection leading to heart attack. 1

21. Free living Bacterium –Azospirillum ,Azotobacter .5

Symbiotic bacterium –Rhizobium .5

Rhizobium is called symbiotic because both i.e bacteria and leguminous plants both are benefitted. .5

And Azospirillum and Azotobacter are free living i.e not associated with other living beings. .5

22. (a) More tolerant to abiotic stresses. .5

(b) Reduce reliance on chemical pesticides . .5

- (c) Helped to reduce post harvest losses . .5
- (d) Increased efficiency of mineral usage by plants. .5

23. Drosophilamelanogaster 1

- Short life span .5
- Sexual dimorphism .5
- Easy to maintain

OR

Genotype – Genetic composition for e.g Pure tall pea plant can be written as TT 1

Phenotype – Appearance of a living thing e.g Black colour of hair here black is Phenotype. 1

24. DNA polymorphism :- Mean different forms of DNA i.e DNA of one organism is different form  
The other due to difference in repetitive DNA sequences. 1

Importance : Basis of genetic mapping .

Basis of DNA fingerprinting. 1

25. Adaptive radiation means the process of evolution of different species in a given geo graphical  
Area starting from a point literally radiating to other areas of habitat . 1

Darwin's finches were originally seed eating but depending upon variety of habitats they evolved  
Their beaks for insectivorous and vegetarian finches . 1

26. Synergid two in number & Haploid 1

Anti podals three in number & Haploid 1

2 Central cells & haploid 1

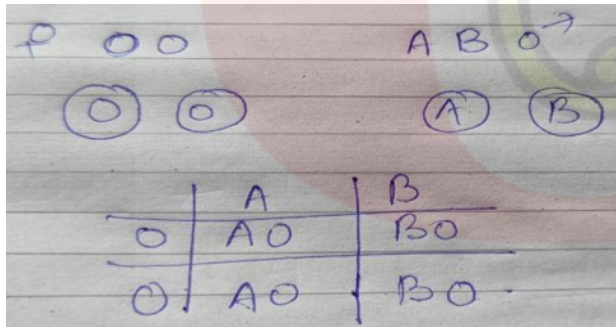
or

Epidermis : These three are for protection & help in dehiscence

Endothecium: These three are for protection & help in dehiscence

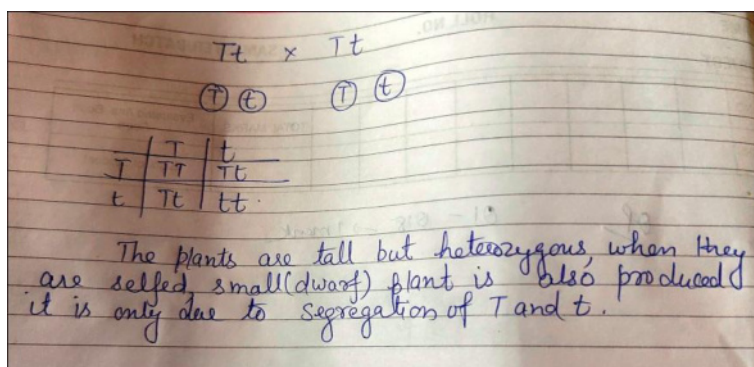
Middle layers: These three are for protection & help in dehiscence

27.



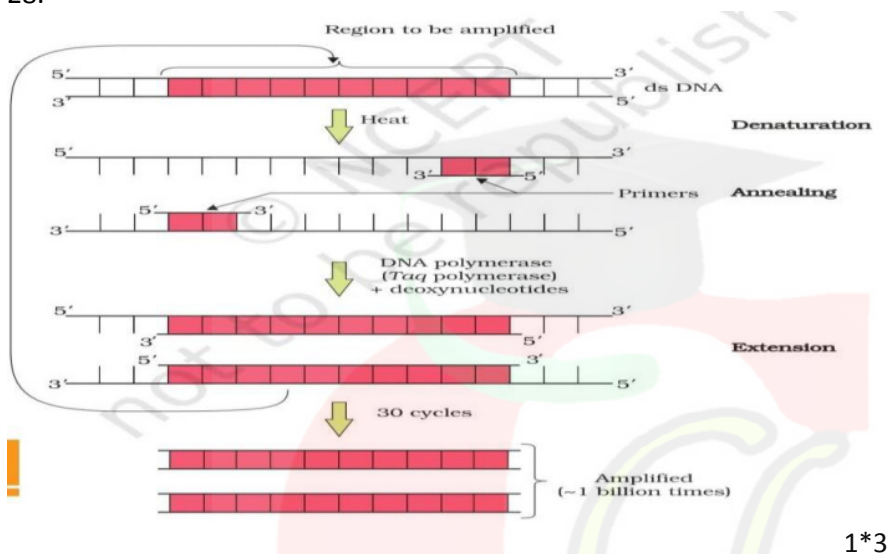
The alleles involved in this inheritance are A,B,O<sup>2+</sup>

OR



3

28.



29. The flow of energy in ecosystem is unidirectional that is from producers to consumers it takes 1  
Place by means of 10% law that is from one trophic level only 10% of energy is transferred to 1  
The next level, rest of the energy is either used in metabolic reactions of a particular trophic 1  
Or dissipated as free energy in environment.

30. Three cause of biodiversity loss are:

1. Over use : Due to over exploitation by humans speices like passenger pigeon are extinct 1
2. Habitat loss: Due to deforestation of forest some spices are extinct 1
3. Invaision of alien species 1
4. Co-exxtions

31. (1) The technique which can be beneficial for the couple is GIFT 1  
(2) Unprotected coitus means coitus without any intrauterine devices 1  
(3) Since the male is unable to copulate, his sperms can be collected and used for in-vitro 2  
And the couple can have offsprings.

OR

The male is not able to copulate, the sperms are not available for fertilisation so inspite of production of sperms the male is considered in fertile.

32. (1) The cause of Raj'sweight loss is that he is suffering from AIDS

1

- (2) HIV is virus 1
- (3) The cause of AIDS are
- a) unprotected sex
  - b) Due to infected syringes
  - c) From suffering mother to foetus
  - d) Sex with multiple partners 2

OR

- (1) Weight loss
- (2) Inability to recover from infections

33 ADA means adenosine deaminase 1

It is essential for production of immunity in human body 1

It can be treated by bone marrow transplantation, enzyme replacement, but these methods are not permanent cure

It can be treated permanently by gene therapy

The steps to cure ADA deficiency are as follows

Lymphocytes from patient are grown outside the body in culture medium

Functional ADA is introduced using retroviral vector into the lymphocytes, which are subsequently introduced into the patient from whom lymphocytes are cultured 3

OR

From *Bacillus thuringiensis* cry genes are extracted 1

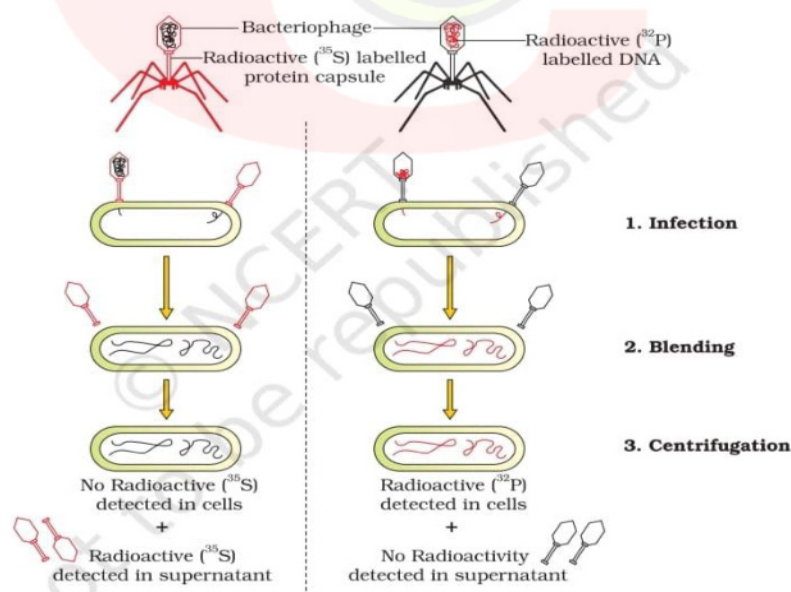
Cloning of the genes can be done by means of vectors 1

The cloned genes can be introduced through *Agrobacterium tumefaciens* [a natural pathogen], which can be disarmed 1

The cryIAC and cryIIAb control cotton bollworm as these genes produce 1

Protoxin [in active form] but when the insect ingests the inactive toxin, it is converted into an active form of toxin due to alkaline pH of the gut. The activated toxin creates pores in the gut wall and eventually causes death of the insect 1

34



1

1

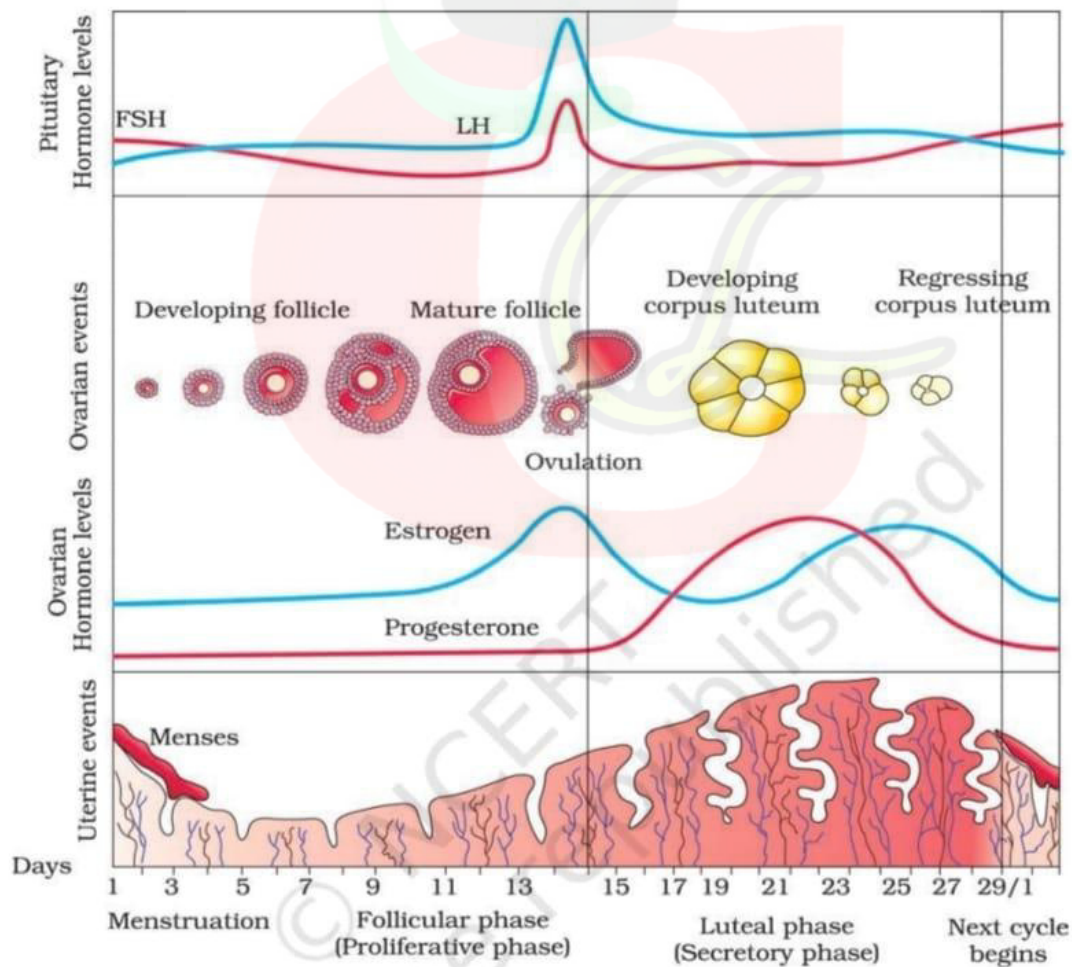
1

Bacteria which was infected with viruses that had radioactive DNA were radioactive, indicating that DNA was the material that passed from the virus to the bacteria. Bacteria that were infected with viruses that had radioactive proteins were not radioactive. This indicates that proteins did not enter the bacteria from the viruses. DNA is therefore the genetic material that is passed from virus to bacteria (Figure 5.5).

He concluded that the R strain bacteria had somehow been **transformed** by the heat-killed S strain bacteria. Some 'transforming principle', transferred from the heat-killed S strain, had enabled the R strain to synthesise a smooth polysaccharide coat and become virulent. This must be due to the transfer of the genetic material. However, the biochemical nature of genetic material was not defined from his experiments.

2

A



1

1

1

1

1

1

S strain → Inject into mice → Mice die

R strain → Inject into mice → Mice live

Griffith was able to kill bacteria by heating them. He observed that heat-killed S strain bacteria injected into mice did not kill them. When he

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

S strain (heat-killed) + R strain (live) → Inject into mice → Mice die

Injected a mixture of heat killed S & live R bacteria, the mice died and he recovered living S bacteria from the dead mice.

1

1

1

1

1