

THE ASIAN SCHOOL, DEHRADUN

CHAPTER WISE PRACTICE PAPER FOR CLASS XII SESSION 2016-17

CLASS 12

SUBJECT –BIOLOGY

CHAPTER 1 – REPRODUCTION IN ORGANISMS

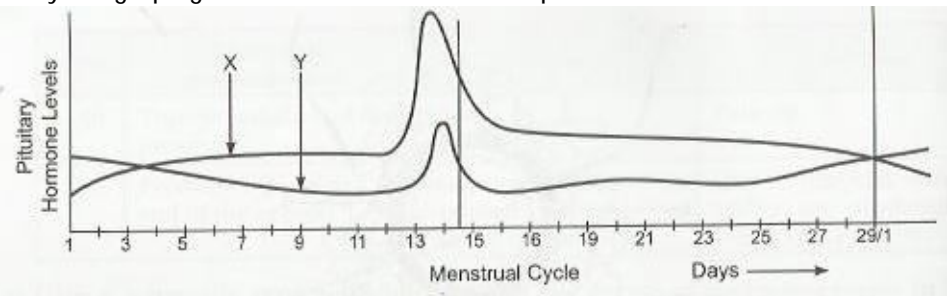
MM-30

Q1.	Name the type of cell division that takes place in the zygote of an organism exhibiting haplontic life cycle.	1
Q2.	In a developing embryo, analyze the consequences if cell divisions are not followed by cell differentiation.	1
Q3.	Give a scientific name of a plant that flowers once in twelve years.	1
Q4.	Name the phase all organisms have to pass through before they can reproduce sexually.	1
Q5.	Honey bees produce their young ones only by sexual reproduction. In spite of this, in a colony of bees we find both haploid and diploid individuals. Name the haploid and diploid individuals in the colony and analyse the reason behind their formation.	2
Q6.	A moss plant produces a large number of antherozoids but relatively only a few egg cells. Why?	2
Q7.	Cucurbits and Papaya plants bear staminate and pistillate flowers. Mention and explain the categories they are put under separately on the basis of the type of flowers they bear.	2
Q8. a) b)	State the difference between meiocyte and gamete with respect to chromosome number. Why is a whiptail lizard referred to as parthenogenetic?	2
Q9.	Which is a better method of reproduction - sexual or asexual. Why?	2
Q10. a) b)	The cell division involved in gamete formation is not of the same type in different organisms. Justify. Name two groups of organisms in which cell division itself is a mode of reproduction.	3
Q11. a) b)	Why are offsprings of oviparous animals at a greater risk as compared to offsprings of viviparous animals? What are vegetative propagules? Give two examples.	3
Q12. a) b) c)	Name the asexual reproductive structures formed in the Chlamydomonas, Penicillium, Sponge and Hydra. Differentiate between a zoospore and a zygote. Mention two organisms where male and female gametes are motile.	5
Q13. a) b)	Mention the site where syngamy occurs in bony fishes. Give its advantages and disadvantages. Differentiate between : i) Oestrous and Menstrual Cycle ii) Seasonal and Continuous Breeders	5

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CLASS 12 SUBJECT –BIOLOGY CHAPTER 2 – Sexual Reproduction In Flowering Plants MM-30

Q1.	Banana is a true fruit but is also a parthenocarpic fruit. Give reason.	1
Q2.	How do the pollen grains of Vallisneria protect themselves?	1
Q3.	The flower of brinjal is referred to as Chasmogamous while that of beans is Cleistogamous. How are they different from each other?	2
Q4.	Draw a well-labelled diagram of a typical anatropous ovule of an angiosperm.	3
Q5.	Fertilisation is essential for production of seed, but in some angiosperms, seeds develop without fertilization. a) Give an example of an angiosperm that produces seeds without fertilization. Name the process. b) Explain the two ways by which seeds develop without fertilization.	3
Q6. a) b) c)	Why is the process of fertilization in angiosperms termed as double fertilization? Explain. Draw a diagram of an angiospermic embryo sac where fertilisation is just completed. Label the following parts : a) Micropylar end of the embryo sac. b) The part that develops into an endosperm. c) The part that develops into an embryo. d) The degenerating cells at the chalazal end. Draw a labelled diagram of a globular embryonic stage of an angiosperm.	5
Q7.	Give reason for the following : a) Micropyle remains as a small pore in the seed coat of a seed. b) Most zygotes in angiosperms divide only after certain amount of endosperm is formed. c) Apple and Cashew are not called true fruits. d) Integuments of an ovule harden and the water content is highly reduced, as the seed matures. e) Groundnut seeds are exalbuminous and castor seeds are albuminous.	5
Q8. a) b)	Draw a well labelled diagram of T.S of a young anther. Mention four strategies adopted by flowering plant to prevent self pollination.	5
Q9. a) b)	Trace the development of female gametophyte from megaspore mother cell in a dicot flower. Why should a bisexual flower be emasculated and bagged prior to artificial pollination.	5

Q1.	How many sperms will be produced from 50 primary spermatocytes?	1
Q2.	Spermatogenesis in human male is a hormone regulated process . Justify.	2
Q3.	What stimulates pituitary to release the hormone responsible for parturition. Name the hormone. Explain how it leads to parturition.	3
Q4.	A sperm has just fertilized a human egg in the fallopian tube. Trace the events that the fertilized egg will undergo up to the implantation of the blastocyst in the uterus.	3
Q5.a) b) c)	When and how does Placenta develop in human female? How is the Placenta connected to the embryo? Placenta acts as an endocrine gland. Explain.	3
Q6.	Draw a labelled diagram of the microscopic structure of a human sperm.	3
Q7.	Study the graph given below and answer the questions that follow : 	5
Q8. a) b)	Give a diagrammatic sectional view of human ovary showing different stages of oogenesis along with corpus luteum. Give a schematic representation of oogenesis in humans. Mention the number of chromosomes at each stage. Correlate the life phases of the individual with the stages of the process.	5
Q9 a) b)	Describe in sequence the process of Spermatogenesis in human. Give a diagrammatic sectional view of a seminiferous tubule of a human.	5

- Name the hormones 'X' and 'Y'.
- Identify the ovarian phases during a menstrual cycle :
 - 5th day to 12th day of the cycle.
 - 14th day of the cycle.
 - 16th day to 25th day of the cycle
- Explain the ovarian events (i), (ii) and (iii) under the influence of hormones 'X' and 'Y'.

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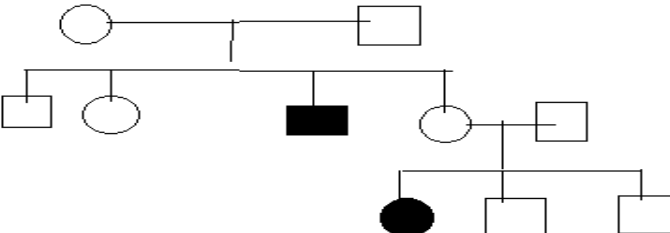
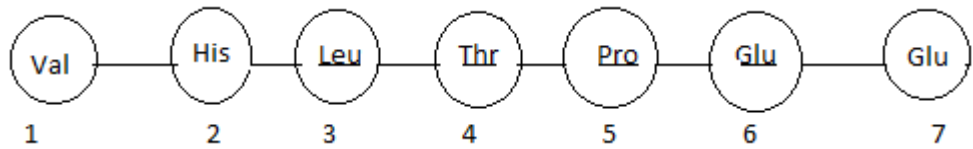
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SUBJECT –BIOLOGY

CHAPTER- 4 Reproductive Health

MM-30

Q1.	What is lactational amenorrhea method of birth control.	1
Q2.	Why is 'Saheli' considered to be an improved form of oral contraceptive for human females?	2
Q3.	How do copper and hormone releasing IUD's act as contraceptives. Explain.	2
Q4.	Name the hormonal composition of the oral contraceptive used by human female. Explain how it acts as a contraceptive.	2
Q5.	Mention any four characteristics that an ideal contraceptive should have.	2
Q6.	What are the conditions in which medical termination of pregnancy is advised?	2
Q7.	How do surgical procedures prevent conception in humans? Explain the method achieved in human males.	2
Q8.	Amit went to watch a movie with his friends. In it, the hero was a sperm donor. One of his friends Shekhar said that sperm donation is a means to only earn money. But Amit contradicted him saying that sperm donation can help infertile couples. Answer the following questions based on the above information : a) Which of them is right? Give reason. b) In which type of infertility cases is sperm donation helpful. c) What values are being depicted in the movie?	3
Q9.	Suggest the aspects of reproductive health which need to be given special attention in the present scenario.	3
Q10.	What are the measures one has to take to prevent from contracting STD's.	3
Q11.	What is amniocentesis? Give its advantage and disadvantage.	3
Q12.	Describe five methods to assist infertile couples to have children.	5

Q1.	In a dihybrid cross, when would the proportion of parental gene combinations be much higher than non-parental types, as experimentally shown by Morgan and his group?	1
Q2.	Name the event during cell division cycle that results in the gain or loss of chromosome.	1
Q3.	The male fruit fly and female fowls are heterogametic while the female fruit fly and the male fowl are homogametic. Why are they called so?	2
Q4.	Study the given pedigree chart and answer the questions that follow :  <p>a) Is the trait recessive or dominant? b) Is the trait sex-linked or autosomal? c) Give the genotypes of the third and fourth child of generation II.</p>	2
Q5.	A relevant portion of B-chain of haemoglobin of a normal human is given below :  <p>The codon for the sixth amino acid is GAG. The sixth codon GAG mutates to GAA as a result of mutation 'A' and into GUG as a result of mutation 'B'. Haemoglobin structure did not change as a result of mutation 'A' whereas haemoglobin structure changed because of mutation 'B' leading to sickle shaped RBCs. Explain giving reasons how could mutation 'B' change the haemoglobin structure and not mutation 'A'.</p>	2
Q6.	Who proposed chromosomal theory of inheritance? Point out any three similarities in the behaviour of chromosomes and genes.	2
Q7.	For flower colour in pea, the allele for purple flower (P) is dominant to the allele for white flower (p). A purple flowered plant therefore could be of genotype PP or Pp. What genetic cross would you make to determine the genotype of a purple flowered plant? Explain how your cross gives you the correct genotype of the purple flowered plant?	3
Q8.	Snapdragon (<i>Antirrhinum majus</i>) shows incomplete dominance for flower colour. Work out a cross and explain the phenomenon. How is this inheritance different from Mendelian pattern of inheritance? Explain.	3
Q9.	a) Four children with four different blood groups are born to parents where the mother has blood group 'A' and the father has blood group 'B'. Work out the cross to show the genotypes of the parents and all four children. b) Explain the contribution of Alfred Strutevant in chromosome mapping.	3
Q10.	A non-haemophilic couple was informed by their doctor that there is possibility of a haemophilic child be born to them. Explain the basis on which the doctor conveyed this information. Give the genotypes and the phenotypes of all the possible children who could be born to them?	3
Q11.	A pregnant human female was advised to undergo MTP. It was diagnosed by her doctor that the foetus she is carrying had developed from a zygote formed by an XX egg fertilized by Y – carrying sperms. Why was she advised to undergo MTP?	3
Q12.	A homozygous tall pea plant with green seeds is crossed with a dwarf pea plant with yellow seeds : a) What would be the phenotype and genotype of F ₁ ? b) Work out the phenotypic ratio of F ₂ generation with the help of a Punnet square.	5

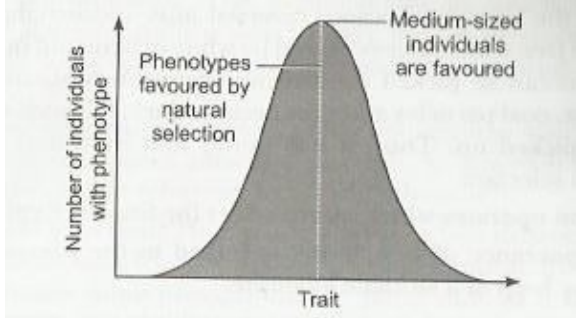
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CHAPTER- 6 Molecular Basis of Inheritance

MM-30

Q1.	If a double stranded DNA has 20% of cytosine, calculate the % of adenine in the DNA.	1
Q2.	Draw a schematic representation of dinucleotide. Label the following : a) The components of a nucleotide b) 5'end b) N-glycosidic linkage d) Phosphodiester linkage	2
Q3.	Answer the following questions based on Meselson and Stahl's experiment : a) Write the name of the chemical substance used as a source of nitrogen in the experiment. b) Why did the scientists synthesize the light and the heavy DNA molecules in the organism used in the experiment? c) How did the scientists make it possible to distinguish the heavy DNA molecule from the light DNA molecule? Explain. d) Write the observations made by them from the samples taken at the end. e) Write the conclusion the scientists arrived at after completing the experiment.	3
Q4.	a) Name the enzyme that catalyses the transcription of hnRNA. b) Why does the hnRNA need to undergo changes? List the changes that hnRNA undergoes and where in the cell such changes take place.	3
Q5.	Unambiguous, universal and degenerate are some of the terms used for the genetic code. Explain the salient features of each one of them.	3
Q6.	The police department could obtain a bunch of hair from the gripped hand of a murdered man. There were two persons arrested in this criminal case. Explain the technique by which the forensic department gives a clue to the criminal.	3
Q7.	a) How did Griffith explain the transformation of R-strain (non-virulent) bacteria into S-strain (virulent)? b) Explain how MacLeod, McCarty and Avery determined the biochemical nature of the molecule responsible for transforming R-strain bacteria into S-strain bacteria.	5
Q8.	Describes Hershey – Chase experiment. Write the conclusion they arrived at after the experiment.	5
Q9.	What does the lac operon consist of? How is the operator switch on and off in the expression of gene in this operon? Explain.	5

Q1.	Give the scientific term to the fish-like reptiles.	1
Q2.	Why are the wings of butterfly and birds said to be analogous organs? Name the type of evolution of which the analogous organs are a result of.	2
Q3.	Discovery of lobefins is considered very significant by evolutionary biologists. Explain.	2
Q4.	How do Darwin's finches illustrate adaptive radiation?	2
Q5.	Explain the three different ways in which natural selection can affect the frequency of a heritable trait in a population shown in the graph given below : 	3
Q6.	Branching descent and natural selection are the two key concepts of Darwinian theory of evolution. Explain each concept with the help of a suitable example.	3
Q7.	In England, during the post-industrialized period, the count of melanic moths increased in urban areas but remained low in rural areas. Explain.	3
Q8.	<ul style="list-style-type: none"> a) State Hardy-Weinberg Principle. b) How does the Hardy Weinberg's expression ($P^2 + 2pq + q^2 = 1$) explain that genetic equilibrium is maintained in a population? c) How do you interpret the change of frequency of alleles in a population? 	3
Q9.	<ul style="list-style-type: none"> a) What is adaptive radiation? b) Explain with the help of a suitable example where adaptive radiation has occurred to represent convergent evolution. 	3
Q10.	<ul style="list-style-type: none"> a) Rearrange the following in an ascending order of evolutionary tree : reptiles, salamander, lobefins, frogs b) Name the ancestor of modern amphibians. c) What were the first mammals like? d) Name two reproductive characters that probably make reptiles more successful than amphibians. 	3
Q11.	Explain the salient features of Hugo de Vries theory of mutation. How is Darwin's theory of natural selection different from it? Explain.	5

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CHAPTER- 8 Human Health and Disease

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Q1.	Name two chemical alarm signals, which cause inflammatory response.	1																								
Q2.	Why does a doctor administer tetanus antitoxin and not a tetanus vaccine to a child injured in a roadside accident with a bleeding wound. Explain.	2																								
Q3.	a) Name the lymphoid organ in humans where all the blood cells are produced. b) Where do the lymphocytes produced by the lymphoid organ mentioned above migrate and how do they affect immunity?	2																								
Q4.	How do cellular barriers and cytokine barriers provide innate immunity in humans?	2																								
Q5.	a) Write the scientific names of the two species of filarial worms causing filariasis. b) How do they affect the body of infected person(s)? c) How does the disease spread?	2																								
Q6.	Differentiate between Benign and Malignant tumours.	2																								
Q7.	a) Why is an immunosuppressive agent taken after an organ transplant? b) Which immunity is responsible for graft rejection.	2																								
Q8.	a) Explain the property that prevents normal cells from becoming cancerous. b) All normal cells have inherent characteristic of becoming cancerous. Explain.	3																								
Q9.	Write the source and the effect on the human body of the following drugs : a) Morphine b) Cocaine c) Marijuana	3																								
Q10.	Name the type of cells the AIDS virus first enters into after getting inside the human body. Explain the sequence of events that the virus undergoes within these cells to increase their progeny.	3																								
Q11.	a) Name the infective stage of <i>Plasmodium</i> which Anopheles mosquito takes in along with the blood meal from an infected human. b) Why does the infection cause fever in humans? c) Give a flow chart of the life-cycle of this parasite passed in the insect.	3																								
Q12.	The following table shows certain diseases, their causative organisms and symptoms. Fill the gaps.	5																								
	<table border="1"> <thead> <tr> <th>S.NO</th> <th>NAME OF THE DISEASE</th> <th>CAUSATIVE ORGANISM</th> <th>SYMPTOMS</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Ascariasis</td> <td>Ascaris</td> <td>a</td> </tr> <tr> <td>2</td> <td>Ringworm</td> <td>b</td> <td>Appearance of dry, scaly lesions on various parts of the body</td> </tr> <tr> <td>3</td> <td>Typhoid</td> <td>c</td> <td>d</td> </tr> <tr> <td>4</td> <td>Pneumonia</td> <td>e</td> <td>f</td> </tr> <tr> <td>5</td> <td>Amoebiasis</td> <td>g</td> <td>Inflammation in lower limbs</td> </tr> </tbody> </table>	S.NO	NAME OF THE DISEASE	CAUSATIVE ORGANISM	SYMPTOMS	1	Ascariasis	Ascaris	a	2	Ringworm	b	Appearance of dry, scaly lesions on various parts of the body	3	Typhoid	c	d	4	Pneumonia	e	f	5	Amoebiasis	g	Inflammation in lower limbs	
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Q1.	What is the economic value of <i>Spirulina</i> ?	1																		
Q2.	Name the blank spaces a, b, c and d in the table given below :	2																		
	<table border="1"> <thead> <tr> <th>CROP</th> <th>VARIETY</th> <th>INSECT PEST</th> </tr> </thead> <tbody> <tr> <td><i>Brassica</i></td> <td>a</td> <td>b</td> </tr> <tr> <td><i>Okra</i> (Bhindi)</td> <td>c</td> <td>d</td> </tr> </tbody> </table>	CROP	VARIETY	INSECT PEST	<i>Brassica</i>	a	b	<i>Okra</i> (Bhindi)	c	d										
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Q3.	Give the scientific name of the most common species of honey bee reared in India. Why is it advantageous to keep beehives in crop-fields during flowering periods?	2																		
Q4.	What is interspecific hybridisation in animals ? Give one example.	2																		
Q5.	Enumerate, in sequential order, the four steps that a plant breeder should follow to obtain a disease- resistant crop.	2																		
Q6.	Scientists have succeeded in recovering healthy sugarcane plants from a diseased one. a) Name the part of the plant used as explants by the scientists. b) Describe the procedure that the scientists followed to recover the healthy plants. c) Name this technology used for crop improvement.	2																		
Q7.	What is biofortification? How are biofortified maize and wheat considered nutritionally improved?	2																		
Q8.	Write the scientific names of sugarcane grown in North India and South India respectively. Mention their characteristics.	3																		
Q9.	Explain the process of artificial hybridization to get improved crop variety in (a) plants bearing bisexual flowers (b) female parent producing unisexual flowers.	3																		
Q10.	MOET programme has helped in increasing the herd size of the desired variety of cattle. List the steps involved in conducting the programme.	3																		
Q11.	Mention the cause and effect of inbreeding depression in cattle. Write any two advantages of inbreeding. How can it be overcome? Explain.	3																		
Q12.	Name the blank spaces a, b, c ,d, e, f, g, h , l and j, k and l in the table give below :	5																		
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Q1.	Milk starts to coagulate when Lactic Acid Bacteria (LAB) is added to warm milk as a starter. Mention any other two benefits that LAB provides.	1												
Q2.	Name the group of organisms and the substrate they act on to produce biogas.	1												
Q3.	Name a microbe used for statin production. How do statins lower blood cholesterol level.	1												
Q4.	Name the pests that Ladybird, beetle and Dragonflies help to get rid of.	1												
Q5.	Name the source of streptokinase. How does this bioactive molecule function in our body.	1												
Q6.	Name the source of cyclosporin A. How does does this bioactive molecule function in our body.	1												
Q7.	Name a genus of fungi that forms a mycorrhizal association with plants.	1												
Q8.	What are methanogens? Mention one example.	2												
Q9.	What is the role of baker's yeast in the production of bread.	2												
Q10.	What is BOD? What does it mean if a water sample has more BOD.	2												
Q11.	Why are some molecules called bioactive molecules? Give two examples of such molecules.	2												
Q12.	Name the blank spaces a, b, c and d in the table give below :	2												
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Bacterium	<i>Acetobacter aceti</i>	a												
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Bacterium	d	Butyric acid												
Q13 .	What is the role of a bacterium in the production of 'Swiss Cheese'.	2												
Q14.	a) Why do farmers prefer biofertilisers to chemical fertilisers these days? Explain. b) How do Anabaena and Mycorrhiza act as biofertilisers.	3												
Q15.	Name the genus to which baculoviruses belong. Describe their role in the integrated pest management programme.	3												
Q16.	Explain the different steps involved in sewage treatment before it can be released into natural water bodies.	5												

Q1.	Why is essential to have a 'Selectable Marker' in a cloning vector.	1
Q2.	Write the convention used for naming EcoRI.	2
Q3.	What are recombinant proteins? How do bioreactors help in their production?	2
Q4.	How is DNA isolated in purified form from a bacterial cell?	2
Q5.	a) A recombinant vector with a gene of interest inserted within the gene of B- galactosidase enzyme is introduced into a bacterium. Explain the method that would help in selection of recombinant colonies from non-recombinant ones. b) Why is this method of selection referred to as 'insertional inactivation'?	3
Q6.	How is the amplification of a gene sample of interest carried out using PCR?	3
Q7.	Explain the method by which a bacterial cell can be made 'competent'. Why is it essential to make bacterial cells 'competent' in recombinant DNA technology?	3
Q8.	Why is <i>Agrobacterium tumifaciens</i> a good cloning vector? Explain.	3
Q9.	Draw a schematic sketch of pBR322 plasmid and label the following in it : a) Any two restriction sites b) Ori and rop genes c) An antibiotic resistant gene.	3
Q10.	How can DNA segments be separated, visualized and isolated.	3
Q11.	a) With the help of diagram show the different steps in the formation of recombinant DNA by action of restriction endonuclease enzyme EcoRI. b) How is the action of endonuclease different from that of exonuclease?	5

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Q1.	What was the speciality of milk produced by the transgenic cow Rosie?	1
Q2.	Name a cry gene that controls the cotton bollworms and corn borer respectively?	1
Q3.	What are transposons?	1
Q4.	What is the use of PCR in molecular diagnosis?	1
Q5.	What is a Plasmid?	1
Q6.	State the biological product made in transgenic animal to treat emphysema.	1
Q7.	Highlight any four advantages of genetically modified crops?	2
Q8.	Describe the responsibility of GEAC, set up by the Indian Government?	2
Q9.	Biopiracy should be prevented. State why and how?	2
Q10.	List the three molecular diagnostic techniques that help detect pathogens from suspected patients. Mention one advantage of these techniques over conventional methods.	2
Q11.	a) Mention the cause and the body system affected by ADA deficiency in humans. b) Name the vector used for transferring ADA- cDNA into the recipient cells in humans. Name the recipient cells?	5
Q12.	Why do the toxic insecticidal protein secreted by <i>Bacillus thuringiensis</i> kill the insect and not the bacterium itself.	3
Q13.	a) Name the nematode that infests and damages tobacco roots. b) How are transgenic tobacco plants produced to solve this problem.	5
Q14.	a) How is mature insulin different from proinsulin secreted by pancreas in humans? b) Explain how was human functional insulin produced using rDNA technology. c) Why is the functional insulin thus produced considered better than the one used earlier by diabetic patients?	5