CLASS XII SUBJECT :- BIOLOGY

UNIT - VI (REPRODUCTION)

1. Reproduction in living Organisms

2. Sexual Reproduction in Flowering Plants

3. Human Reproduction

4. Reproductive Health

UNIT - VII (GENETICS AND EVOLUTION)

5. Principal of Inheritance and Variation

6. Molecular Basis of Inheritance

7. Evolution

UNIT – VIII (BIOLOGY IN HUMAN WELFARE)

8. Human Health and Disease

9. Strategies for Enhancement in Food Production

10. Microbes in Human Welfare

UNIT – IX (BIOTECHNOLOGY)

11. Biotechnology : - Principles and Process

12. Biotechnology and its applications

UNIT – X (ECOLOGY)

13. Organisms and Populations

14. Ecosystem

15. Biodiversity and conservation

16. Environmental Issues

CHAPTER NO :- 1 REPRODUCTION IN LIVING ORGANISMS

Worksheet (Home assignment)

ASEXUAL REPRODUCTION : -

Q.1 Is reproduction essential for an organism or the species ?

Q.2 What is reproduction ?

Q. 3 list one most important difference between asexual and sexual reproduction .

Q,4 Why is reproduction essential for organisms ?

Q. 5 (a)Explain the term 'Life Span '. List the life span of different plants and animals .

(b) Name an animals having the longest life span and shortest life span .

Q. 6 Mention the life span of the following organisms : -

Fruit fly , butter fly , crow , crocodile , parrot , rice plant , rose bush, cow , and banana tree .

Q. 7 Describe briefly the various types of asexual reproduction .

Q. 8 How is Bryophyllum cultivated ?

Q.9 what is the site of origin of the new plantlets in potato, sugarcane ,banana, ginger , dahlia and bryophyllum ?

Q. 10 What kind of stem does banana have ? How do you recognize it ?

Q.11 What is terror of Bengal ?

Q.12 Why is the offspring formed by asexual reproduction referred to as clone ?

Q. 13 What is vegetative propagation ? Give two suitable examples.

Q.14 How do the following animals reproduce ? Yeast , Hydra , Amoeba , Algae , Penicillium , Sponge.

SEXUAL REPRODUCTION :-

Q. 15 Define the following :- (a) sexual reproduction (b) juvenile phase .

Q. 16 List the changes in the human beings that are indicative of reproductive maturity .

Q.17 What are the differences between oestrous cycle and menstrual cycles ?

Q.18 What are the seasonal and continuous breeders ? Give two examples of each .

Q.19 What is ageing ? List few morphological symptoms of aging in human body .

Q,20 What are the annual growth rings ?

Q.21 What is gametogenesis ? State the difference between homogamete and heterogamete .

Q.22 Define the following by giving one examples of each : -

(i) Monoecious ,(ii) Dioecious ,(iii)Hermaphrodite.

Q.23 The chromosome numbers in meiocytes (diploid , 2n) and gametes (haploid , n)of some organisms are given . Fill in the blank spaces .

Q.24 Write a short note on gamete transfer in plants .

Q, 25 Higher organisms have resorted to sexual reproduction in spite of its complexity . Why ?

Q.26 What is syngamy ? How does it differ from fertilization ?

Q. 27 What are the difference between external fertilization and internal fertilization ?

Q. 28 Define parthenogenesis .

Q.29 What is the significance of parthenogenesis ?

Q. 30 In a population of certain diploid insects , there are normal haploid ones also . Give one example of each haploid cases . How are they produced ?

Q. 31 How is sex determined in honey bees ?

Q. 32 Which is a better method of reproduction ? why ? will your opinion be affected by the environment factors present ?

Q. 33 Offspring formed due to sexual reproduction have better chances of survival . why ?

Q. 34 How does the progeny formed from asexual reproduction are different from those formed by sexual reproduction ?

Q. 35 Explain the meaning of term – oviparous and viviparous .

CHAPTER NO :- 02

SEXUAL REPRODUCTION IN FLOWERING PLANTS

PRE – FERTILIZATION : STRUCTURE AND EVENTS :-

Q.1 What are the essential and non essential parts of the flowers ? What are their uses ?

Q. 2 Name the part of an angiosperm flower in which development of male and female gametophyte takes place .

Q. 3. Differentiate between monoecious and dioecious plants . Give one example each .

STAMEN , MICROSPORANGIUM AND POLLEN GRAIN :-

Q. 4 What develops into a microspore mother cell in a flower ? Trace the development of this cell into a pollen grain which is ready for germination . Draw a fossil figure of mature pollen grain ?

Q. 5 What is the significance of sporopollenin ?

Q. 6 Why do scientists developing pollen banks these days ?

Q. 7. What is the significance of pollen grain ?

Q. 8. How long the pollen grains retain their viability ?

THE PISTIL , MEGASPORANGIUM (OVULE) AND EMBRYO SAC : -

Q. 9. Explain the process of development of ovule and the female gametophyte .

Or

Trace the development of megaspore mother cell of a flower into a mature ovule . or

Trace the development of megasporocyte in the ovary of a mature ovule

Q. 10. Draw a diagram of the longitudinal section of an angiosperm ovule and label the following two parts in it – (i) Synergids and (ii) Antipodal cells .

POLLINATION : -

Q.11 What is pollination ? Give the difference between pollination and cross pollination .

Q.12. Differentiate between geitonogamy and allogamy .

Q. 13 Why is cross – pollination considered to be superior than the self – pollination ?

Q. 14 What are the disadvantages of cross – pollination ?

Q. 15 . What are the merits and demerits of self pollination ?

Q.16. Describe briefly the various adaptations that promote self – pollination .

Q.17. What are chasmogamous flowers ? Can cross – pollination occur in cleistogamous flowers ?

Q.18 . Describe briefly some important adaptations that promote cross – pollination in angiosperms.

Q.19 Briefly describe the characteristics of flowers pollinated by wind , water , insects , birds and bats .

Q.20. What is meant by emasculation ? When and why does a plant breeder employ this technique ?

Q.21. Why the flower of some plants are bright and showy and the other are small and inconspicuous ?

Q.22. Give reason why :-

(i) Cleistogamy is considered to be most effective device for self-pollination .

(ii)In some flowers , the reproductive organs are arranged at different heights or in directions.

(iii) Some people suffer from asthma in certain seasons of the year only ?

Q.23. Name the pollinating agent of flowers like salvia , nasturtium and sun flower . Give two favourable feature of such a flower for pollination .

Q.24. Name the pollinating agent of flowers like maize and wheat . Give any favourable feature of such flowers .

Q.25. What are the physiological advantages of pollination in angiosperms ?

Q.26. List various outbreeding devices in a flowering plants .

OR

Q.27. The occurrence of continued self – pollination results in inbreeding depression . What are the various devices which the flowering plants develop to discourage self – pollination ?

POLLEN – PISTIL INTERACTION :-

Q.28. Draw a longitudinal section of a pistal showing pollen germination . Explain the events on the embryo – sac during the process of fertilization . Which resulting stages give rise to the embryo and the endosperms respectively ?

Q.29. What is the process of double fertilization ? Give its significance .

Q.30. Define tripple fusion . What is the product of this process ? What does the product develop into ?

Q.31. Define the following : -

(i) Porogamy (ii) Chalazogamy (iii) Mesogamy .

Q.32. What do the following parts form in a fruit ? Ovary wall, Outer integument , inner integument , zygote , primary endosperm, nucleus , ovule .

Q.33. How many chromosomes would you expect in the following , the diploid number of chromosomes in an angiospermic plants is 18 ? (i) endosperm (ii) embryo (iii) antipodal cell (iii) integument and nucleus .

ENDOSPERM & EMBRYO : -

Q.34. What is endosperm ? Give an illustrated account of the development of endosperm . mention the types with examples.

Q.35. What do you understand by the development of an embryo ? Support the answer with suitable diagrams .

Q.36. Why do you think the zygote is dominant for some time in a fertilized ovule ?

SEED :-

Q.37. What is a seed ? differentiate between endospermic and non endospermic seeds .

Q.38. Describe briefly the structure of dicotyledonous exalbuminous (bean) seed.

Q. 39. Describe briefly the structure of monocotyledonous albuminous seed .

Q. 40. In what sense seeds are a physiological enigma ?

Q.41. What is the significance of seeds ?

Q.42. Tabulate the essential differences in the structure of a dicotyledonous and a monocotyledonous seed .

Q.43. What are the parthenocarpic fruits ? Name few chemicals and hormones which induce the parthenocarpy.

Q.44. What is the difference between albuminous and non albuminous seeds ?

Q.45. Differentiate between :- (a) Hypocoty and epicotyls (b) coleoptiles and coleorrhiza (c) Integument and testa (d) Perisperm and pericarp .

Q.46. What is a fruit ? Describe various zones of fruit by taking any example of succulent fruit .

Q.47. Draw a labelled diagram of V.S. of apple. Justify 'An apple is a false fruit' .

Q.48. Explain the biological and economic importance of fruits.

INCOMPATIBILITY : -

Q.49. What do you understand by term 'incompatibility'?

Q.50. "Incompatibility is a natural barrier in the fusion of gametes". Justify the statement.

SPECIAL MODES OF REPRODUCTION :-

Q. 51. Describe in brief the various special modes of reproduction. Mention their economic significance.

Q.52. what are the problem that the plant breeder has to face in using hybrid varieties of seeds ?

Q. 53 . what is the importance of apomixes in hybrid seed industry ?

CHAPTER 3

HUMAN REPRODUCTION

THE MALE REPRODUCTIVE SYSTEM : -

Q.1. With the help of neat and well labelled diagram , describe briefly the human male reproductive system .

Q.2. Draw a diagram of T.S of a part of seminiferous tubules of testis of an adult human male and label any six parts in it ./ Describe briefly the internal structure of human testis .

Q.3 what is rete – testis ?

Q.4 What is semen ?

Q.5 What is puberty ? what changes occurs in the male human during puberty ?

Q.6 Name the hormones responsible for the descent of testes into the scrotum . Why does the future of this process result in sterility ?

Q.7 Why do testes ascend into the abdomen in response to fear or cold ? / What is cremasteric reflex ?

Q.8 Explain the significance of the condition in human in which the testes remain suspended in scrotum outside the abdominal cavity .

Q.9 One sperm is sufficient to fertilize the ovum . Then , why does human ejaculate carry sufficient number of sperms ?

Q.10 What would happen if the testes are retained inside the abdomen and not in scrotum ?

Q. 11 What are the major components of seminal plasma ?

Q.12 Distinguish between :-

(i) Seminiferous tubules and leydig cells

(ii) Vas deferens and vas efferentia .

Q.13 Why are human male reproductivity active throughout their life span and not the human female ?

Q.14 What are the major functions of male accessory ducts and glands ?

THE FEMALE REPRODUCTIVE SYSTEM :-

Q.15 Describe briefly human female reproductive system with the help of neat and well

labelled diagram?

Q.16 Describe briefly the internal structure of human ovary?

Q.17 What are the differences between primary and secondary sex organs?

Q.18 What is mesovarium ?

Q.19 What is cumulus oophorus ?

Q.20 What is fullicular atresia ?

Q.21 What general changes in the body of female occur during puberty?

Q.22 Describe briefly the structure of a mammary gland?

GAMETOGENESIS :-

Q.23 What is spermatogenesis ? Where does it occur ? Describe the stages of this process ?

Q.24 What is spermiogenesis ? Write down various changes that occur during this process ?

Q.25 What are the differences between spermiogenesis and spermiation ?

Q.26. How do leydig cells help in spermatogenesis ?

Q.27 What is the significance of spermatogenesis ?

Q.28 Spermatids possess haploid chromosome number . Why ?

Q.29 Describe briefly the structure of human sperm .

Q.30 What is the utility of mitrochondria in the middle piece of sperm ?

Q.31 How would it affect the fertilization when the acrosome of a mammalian sperm does not function normally ?

Q.32 Describe briefly about the various endocrine glands that control the process of spermatogenesis .

Q.33 Where does oogenesis take place ? Describe the stages of this process . OR

Q.33 Describe oogenesis in human female. What promotes completion of second meiotic division in oogenesis?

Q.34 What is the significance of oogenesis ?

Q.35 What is ovulation? Name the hormones which facilitate this process .

Q.36 Describe briefly the structure of human ovum .

Q.37 What are the main differences and similarities between spermatogenesis and oogenesis ?

Q.38 What forms corpus luteum ? What is its function ?

Q.39 Tabulate the main differences between human sperm and ovum .

Q.40. Differentiate between :-

(i) Spermatocytes and oocytes (ii) Graafian follicles and corpus luteum . (iii)Oogenesis and ovulation .

MENSTRUAL CYCLE :-

Q.41 Describe various phases of menstrual cycles emphasizing the role of hormones . What is the period when there is maximum chance of conception ?

Q.42 Why is there no menstrual cycles during pregnancy ?

Q.43 What is the proliferative phase in the menstrual cycles ? For how many days does it last ?

Q.44 The first half of the menstrual cycles is called the proliferative phase as well as the follicular phase . Explain .

Q.45 What changes occur in the uterus during :- (i) Menstruation (ii) Proliferative phase (iii) Secretory phase ?

Q. 46 What is ovulation ? What happens to the graafian follicles after ovulation ?

Q.47 What is the role of FSH , LH and estrogen in the female reproductive system ?

Q.48 The second half of the menstrual cycles is called as the luteal phase as well as the secretory phase . Explain .

Q.49 What is menopause ?

Q.50 Distinguish between proliferative and secretory phases of menstrual cycle .

Q.51 What is menstrual cycle ?

Q.52 Write functions of the following :- (a)Corpus luteum ,(b) Endometrium , (c) Fimbriae .

FERTILIZATION : -

Q.53 Write the essential points about the mechanism of fertilization .

Q.54 How is the entry of more than one sperm into the ovum prevented in human ?

OR How is polyspermy prevented ?

Q.55 What is the significance of fertilization ?

Q.56 Name the sperm lysin . Which organelle secretes it ? What is its function ?

Q.57 Write an explanatory note on " Invitro fertilization" .

Q.58 Why does human egg carry small amount of yolk ?

Q59 A fertilized egg is a blue print of future development. Explain it .

Q.60 What are the differences between spermatogenesis and spermiogenesis ?

Q.61 What develops the mammalian ovum preventing the entry of sperm into it easily ? How does the sperm gain the entry eventually ? What is the significance of entry of the sperm ? OR Describe the chemical & physical events of fertilization in mammals .

Q.62 Differentiate between :-

(a)Corona radiata and Zona pellucida (b) Insemination and Capacitation (c) External fertilization and Internal fertilization .

PREGNANCY AND EMBRYONIC DEVELOPMENT :-

Q.63 Write briefly about various types of foetal membranes .

Q.64 What is placenta ? Write briefly about it .

Q.65 What are the functions of placenta ?

PARTURITION AND LACTATION :-

Q.66 What is parturition ? Write briefly about positive feed back mechanism responsible for parturition .

Q.66 Why is the human placenta referred to as haemochorial type ? Name the hormone it secretes to facilitate parturition .

Q.67 A woman has conceived and implantation has occurred within her uterus . Discuss the sequence of changes upto the parturition which will take place within her body under the influence of various hormones .

Q.68 List the various structures which appear in the embryo / foetus starting from the implantation upto the 26^{th} week of pregnancy .

Q.69 What changes occur in the newly born baby in human ?

Q.70 What is parturition ? Write a short note on milk secretion in the mother's body after the birth of the baby./what is colostrums ? How is milk production hormonally regulated .

CHAPTER NO :- 04

REPRODUCTIVE HEALTH

REPRODUCTIVE HEALTH – PROBLEMS AND STRATEGIES :-

Q.1 Define the term Reproductive health .

Q.2 What is amniocentesis ? Under what conditions is this a useful technique ?

Q.3 Amniocentesis , the fetal sex determination test is banned in our country . Is it necessary? comment .

POPULATION EXPLOSION AND BIRTH CONTROL :-

Q.4 What do you understand by the term 'population explosion'?

Q.5 What are the suggestive reasons for population explosion?

Q.6 Mention any two factors by which the environment or the nature checks the population size .

Q.7 Why is human population increasing to unmanageable proportions ?

Q.8 Why is increasing food production considered only a temporary solution for a growing population ?

Q.9 The population growth exceeds the productive capacity of a country . What programmes would you suggest to solve the problems arising out of this situation?

Q.10. Is the use of contraceptives justified ? Give reasons .

Q.11 List the various categories of contraceptives that are presently available.

Q.12 Give the characteristics of ideal contraceptives .

Q.13 On what principle, the natural or traditional contraceptive works ? Explain briefly.

Q.14 How does barrier method work in preventing conception ?

Q.15 Write the full form of IUDs . Give various examples under this category . How do they work ?

Q.16 What is the mechanism of the action of contraceptive pills ?

Q.16 How are injectables or implants useful in preventing conception ?

Q.17 What are the surgical methods of contraceptives ?

Q.18 Differentiate between tubectomy and vasectomy .

Q.19 list any four ways of preventing fertilization of ovum in humans as a measure of birth control .

Q.20 Expand MTP. Why it is so done ?

SEXUALLY TRANSMITTED DISEASES :-

Q.21 What are the sexually transmitted diseases ? Name such diseases with their causative agents .

Q.22 Are all the sexually transmitted diseases completely curable ? List some symptoms of these diseases. what are the measures, one has to take to prevent from contracting STDs ?

Q.23 STDs are the major threat to a healthy society . comment .

INFERTILITY :-

Q.24 What is infertility ? What are the suggestive reasons for this infertility ?

Q.25 Suggest some methods to assist infertile couple to have children .

Q.26 Even though various techniques are available to assist infertile couples yet its benefits are available to few people. why ?

Q.27 What are test – tube babies ?

Q.28 How are test tube babies different from normally produced babies ?

CHAPTER NO. 05

PRINCIPLES OF INHERITANCE AND VARIATION

MEDEL'S LAWS OF HEREDITY :-

Q1. What is meant by heredity?

Q2. Define the term-Genetics and Inheritence.

Q3. (a) On which plants, Mendel's performed his experiments?

(b) Why Mendel selected above plants for his experimentation?

Q4. How did Mendel make sure that the pea plants were true breeding?

Q5. List the traits in garden pea which Mendel studied in his breeding experiments.

Q6. What is emasculation technique?

Q7. What are the reasons for success of Mendel experiments on pea plants?

Q8. Define the following terms:

(a) Homozygous (b) Heterozygous (c)Dominant gene

(d) Recessive gene (e) Genotype (f) Phenotype

Q9. What is monohybrid cross? How did Mendel carry out this cross?

Q10. T is used for tall trait and t for the dwarf. What then would be phenotype of a plant that had a genotype Tt?

Q11. What is Punnett Square?

Q12. A pea plant with purple flowers was crossed with a plant with white flowers producing 40 plants with only purple flowers. On selfing, these plants produce 470 plants with purple flowers and 162 with white flowers. What genetic mechanisms account for these results?

Q13. What kinds of gametes would be produced by the organisms having the following genotypes: (i) AaBB (ii) aaBB (iii) Aabb (iv) AaBBCc.

Q14. How many different gametes could result from the following. In each case, what will be their genotype?

(a) Aa; (b) AA BB; (c)Aa Bb; (d) DD Ee Ce.

Q15. In peas the pods may be inflated or constricted. What proportion of the offspring in the following crosses would be expected to be inflated?

(a) II x ii (b) Ii x ii (c) II x II (d) Ii x Ii

Q16. What will be the genotype of the parents if the offspring had phenotypes in the following proportion? (a) 9:3:3:1 (b) 1:1:1:1

Q17. In a cross between a black and a white guinea pig, all F1 members are black. But F2 generation raised by crossing two such F1 consists of approximately ¾ black and ¼ white guinea pigs.

(a) What are the possible genotypes at each level?
(b) What will be offspring be like if two F2 whites are mated?

Q18. Among the following genotypes: AA, I^AI^B, aa, Bb, I^Bi, Aa, rr, BB, ii

(a) Which ones are heterozygous and which are homozygous?
(b) Which of the genotypes have the same phenotype(the capital letter stands for dominance).

Q19. A pair of white sheep is mated and the offspring is black. What must be the genotype of the parents? What is the probability for the next offspring being black?

Q20. In human beings, blue eye colour is recessive to brown eye colour. A brown-eyed man has a blue-eyed mother.

(a) What is the genotype of the man and his mother?
(b) What are the possible genotypes of his father?
(c) If a man marries a blue-eyed woman, what are the possible genotypes of their offspring's?

Q21. Define the law of segregation?

TEST CROSS :-

Q22. What is test cross? Give its utility.

Q23. In dogs black coat colour is dominant over white. What coloured dog will you choose to breed a given black dog to find its genotype? What is this type of cross known as?

Q24. Define and design a test cross.

Q25. What is back cross?

Q26. What are the differences between:

(a) Monohybrid cross and reciprocal cross
(b) Genotype and phenotype
(c) Monohybrid and dihybrid.

Q27. What is a test cross? How does it differ from reciprocal cross?

Q28. Differentiate between back cross and reciprocal cross in terms of genetics.

INCOMPLETE DOMINANCE:-

Q29. (i) what is incomplete dominance?

(ii) Describe one example of incomplete dominance.

Q30. A plant with red flowers was crossed with another plant of same species with white flowers. The offspring, thus, produced comprised of 60 plants, all of which had pink flowers. On selfing, these plants produced 240plants, of which 60 had red flowers, 120 had pink flowers and 60 had white flowers. Explain the principle of genetics behind these results.

Q31. In snapdragons, tall(DD) is dominant over dwarf(dd) and red flowers(RR) are incompletely dominant over white(rr), the hybrid being pink.a pure tall white is crossed to a pure dwarf red and F1 are self-fertilized. Give the expected genotype and phenotype in F1 & F2 generations.

Q32. A black coloured cock when bred with a white coloured hen produced steel-blue coloured offspring, called Andulasian(chicken). When the steel-blue coloured offspring were inbred, black, white and steel-blue coloured progeny were obtained.

(a) This result is genetically explained as.....
(b) What will be the expected ratio of the black, steel-blue and white progeny?

Q33. Snapdragon shows incomplete dominance for flower colour. Workout the progeny from cross between plants with pink flowers and state their phenotype.

Q34. In the case of Snapdragon, a plant with red flowers was crossed with another plant with white flowers. Trace the inheritance of flowers colour upto the F2 generation indicating the genotypes and phenotypes at each level. What special feature do you note in the genotypic and phenotypic ratios in F2 generation?

Q35. In snapdragon a cross between varieties with red and white flowers produces an all pink F1 progeny. Explain how is it a case of incomplete dominance and not of blending inheritance.

Q36. Why are some alleles dominant and some recessive?

LAW OF INDEPENDENT ASSORTMENT:-

Q37. Describe briefly the dihybrid cross conducted by Mendel.

Q38. In dogs, the barking trait is dominant over the silent trait and erect ears are dominant over drooping ears. What is the expected phenotypic ratio of the offspring when dogs, heterozygous for both the traits, are crossed?

Q39. In qs.38, what would be the phenotypic ration if dogs heterozygous for both crossed with dogs homozygous for both traits?

Q40. In pea plant, tallness(T) is dominant over dwarfness(t) and red flower character(R) is dominant over white(r). If tall and red flower for both character is crossed with dwarf and white flower, then what will be the probability of offspring?

Q41. A man with blue eyes and black hair marries a woman with black eyes and red hair. Black eyes(E) are dominant over blue eye(e) and black hair(H) is dominant over red hair(h). Work out the probabilities of phenotype of the children of this couple using Punnet Square Method.

Q42. State the three Mendelian principles of heredity. Describe any one cross in which Mendel got the phenotypic ration 9:3:3:1.

Q43. When seeds from a cross between two plants of a certain species were germinated, they produced the following plants:

30 tall plants with red fruits

29 dwarf plants with yellow fruits

It was known that both tallness and red fruit colour in this plant were dominant characters, but the genotype of the parents of the cross were not known. Explain why this result was obtained?

Q44. In an experiment a phenotypic ration 3:3:3:1 was obtained in the offspring on crossing yellow seeded tall stem(YyTt) variety of pea plant with yellow seeded dwarf stem variety. Determine the accuracy of this data by Punnet square.

Q45. In a cross between a tall pea plant with yellow seeds (DdYy) and a tall pant with green seeds(Ddyy), what proportion of the offsprings could be expected to be:

(a) Tall and green ; (b) Dwarf and green?

Q46. When a cross is made between tall pant with yellow seeds(TtYy) and tall pant with green seed(Ttyy), what proportions of phenotype in the offspring could be expected to be (a) tall and green, (b) dwarf and green.

Q47. In cattle, hornless(H) is dominant over horned(h), black(B) is dominant over red(b). Consider that these two pairs of genes assor independently.(i) What proportion of the offspring from the cross BbHh x bbhh would be black and hornless. (ii) From the cross Bbhh-Bbhh, how many will be black and horned, red and horned and red and hornless.

Q48. In guinea pigs, assume that rough coat(S) is dominant over smooth coat(s) and the black(W) is dominant over white(w). Can the mating between two rough black guinea pigs produce offspring, which are rough, white and smooth, black?

Q49. Red fruit(R) is dominant to yellow(r) and tallness(T) is dominant to short(t) in tomato plants. What phenotype and genotype ratios would result if one of the parent is red homozygous and tall homozygous and other is red heterozygous and tall heterozygous?

Q50. In Mendel's breeding experiment on garden pea, the F2 generation yielded the offspring in a ratio of 25% which produced pure yellow pods, 50% which produced hybrid yellow seed pods and 25% pure green pods.

(a) Which of the two colours of pods is dominant?
(b) What are the phenotypes of the parents of the F1 generation?

Q51. A dihybrid heterozygous and round yellow seeded garden peas offspring was crossed with a double recessive parent.

(a) What type of cross is this?
(b) Work out the genotype and phenotype of the progeny.

(c) What principle of Mendel is illustrated through the result of this cross?

Q52. Who are the universal recipient and universal donor people? Write down their genotypes.

Q53. A man with AB blood group has married with O group. Show all the possible genotypes and phenotypes of the progeny in a Punnet square. Explain the special aspects in the inheritance of this trait.

Q54. A man with type A blood has a wife with type B. They have a child with type O blood. Give the genotype of all the three. What other blood groups can be expected in the future offspring of this couple?

Q55. A couple believed that they have brought the wrong baby from the hospital. The wife is group O, her husband is group B and child is group O. Could the baby be their?

Q56. It is not possible to study the inheritance of traits in humans in the same way as in peas. Give two main reasons for it and name the alternative method employed for such study.

MULTIPLE ALLELISM & CODOMINANCE:-

Q57. What is multiple allelism? Give its suitable example.

Q58. Explain the term codominance with suitable examples.

Q59. In man, four types of blood group A,B,AB and O are controlled by three alleles of a gene. What is the mechanism of inheritance of blood groups?

Q60. What is codominance? How is it different from incomplete dominance?

Q61. Describe the mechanism of inheritance of ABO system of blood groups, highlighting the principles of genetics involved in it.

Q62. Explain the phenomenon of multiple alleles and co-dominance taking the example of ABO blood group in human.

Q63. Describe the nature of inheritance of the ABO types of blood groups in humans. In which way does this inheritance differ from that of the plants in garden pea.

LINKAGE AND RECOMBINATION :-

Q64. What is linkage? Describe briefly the two types of linkage.

Q65. Describe the two situations in which independent assortment of genes results in 50% recombination.

Q66. State the relationship between linkage and crossing over.

Q67. State the main points of chromosome theory of linkage.

Q68. Differentiate between:

(a) Complete linkage and incomplete linkage
(b) Crossing over cross over gametes

Q69. In a test cross AaBb x aabb, 90 per cent of the progeny are like parents. Determine:

(a) The progeny type for the rest of the population?
(b) Are the genes linked?
(c) Is there any crossing over between the genes?

CHROMOSOMAL THEORY OF INHERITENCE:-

Q70. Who proposed the chromosome theory of inheritance? Give the salient features of this theory.

Q71. How would you correlate the behaviour of chromosomes at meiosis to:

(a) Segregation of an allele pair.
(b) Independent assortment of two genes?

Q72. Explain how a close parallelism occur between the transmission of Mendel's hypothetical factors and behaviour of chromosomes in reproduction.

Q73. List the similarities between the behaviour of genes during inheritance and chromosomes during cell division.

Q74. State the reasons for which the published work of Mendel remained unrecognized for several years.

SEX DETERMINATION:-

Q75. Describe briefly about the types of chromosomes present in fruit fly.

Q76. Describe briefly about the chromosomal basis of sex determination in some organisms.

Q77. How is the sex determined in honeybees?

Q78. Why is Drosophila male fly referred to as heterogametic?

SEX DETERMINATION IN HUMANS:-

Q79. Explain how an XXY individual can arise in humans?

Q80. Why a man is unable to pass on a sex-linked gene to his son?

Q81. A mother is usually blamed for begetting a female child. Is it true? Explain it scientifically.

Q82. A couple got five sons and a daughter. The husband thinks that he produces more of Y-bearing sperms. Give your views giving scientific reasons.

MUTATION:-

Q83. Define mutation. Illustrate the types of mutation that can arise by change in chromosome structure.

Q84. What will happen:

(a) When complete sets of chromosomes are added to diploid genome?
(b) When individual chromosomes are added to or deleted from the diploid genome?
(c) When a part of the chromosome is lost?
(d) When a part of the chromosome breaks and attaches to another non-homologous chromosome.
(e) When a part of the chromosome breaks and attaches to its homologue?

Q85. How do mutations arise due to abnormalities in chromosome number?

Q86. What is point mutation? Give one example.

Q87. What is frame shift mutation?

GENETIC DISORDERS:-

Q88. What are the Mendelian disorders? Name such disorders.

Q89. What is pedigree analysis? What are the symbols used in such an analysis?

Q90. What is the utility of study pedigree analysis?

Q91. Write a short note on haemophilia.

Q92. What is sex-linked inheritance?

Q93. What will be the offspring if a normal female marries to a haemophilic male?

Q94. Why does the son of a carrier mother and a normal father suffer haemophilia whereas the son of a haemophilic father and normal mother would not?

Q95. Why do generally only human males suffer from haemophilia? Can woman also suffer from it? Explain.

Q96. What will be kind of children born to a normal father and carrier mother for the trait of haemophilia? Show it with the help of Punnet's square.

Q97. A man suffering from haemophilia marries a carrier woman. Workout the chances of their progeny suffering from the disease. Use a Punnette square.

Q98. What is cystic fibrous? How is it caused? Give its symptoms.

Q99. How does sickle cell anaemia is caused? What are its symptoms?

Q100. A lethal gene disturbs the expected phenotypic ration. Justify this statement by giving suitable example.

Q101. Write a short note on Phenylketonuria.

CHROMOSOMAL DISORDERS:-

Q102. What is aneuploidy? Differentiate between trisomic and haploid conditions. Name any trisomic condition found in humans.

Q103. A diploid egg mother cell having 46 chromosomes produces two types of gametes-on with XX chromosomes plus 22 autosomes and the other with 22 autosomes only. What phenomenon led to this situation? Explain briefly.

Q104. A girl of subnormal intelligence has defective speech and protruding tongue also. What type of genetic disorder is it? Explain the cause for it. How can the basis for this disorder be detected?

Q105. List any four symptoms shown by a Down's syndrome afflicted child. Explain the cause of this disorder.

Q106. Differentiate between Down's syndrome and Turner's syndrome with reference to the following: (a) Cause, (b) sex.

Q107. What is the cytological basis of Down's syndrome? Give two physical symptoms of this disorder. Explain why the children borne to young women seldom show this abnormality.

Q108. If you do not know the sex determination mechanism in humans, but you do come across cases with klinefelter and Turner syndromes, what will you say about the role of X and Y chromosomes?

Q109. A child is born having XXY chromosomes. What will be its sex? Mention any three such symptoms of this condition that may develop in such a child when he grows into an adult.

Q110. Name a few human disorders that are caused by recessive genes present on autosomes and recessive genes present on X-chromosomes.

CHAPTER NO.6

MOLECULAR BASIS OF INHERITANCE

STRUCTURE OF DNA:-

Q1. Describe the structure of DNA molecule.

Q2. Why is the DNA molecule compared to a spiralling staircase? Which three components make up the nucleotide?

Q3. The base sequence on one of the strands of DNA is TAG CAT GAT:

(a) Give the base sequence of its complementary strand.
(b) Categorise these bases using their full names.
(c) Who holds these base pairs together?

Q4. What are the Chargaff's rules of base pairing?

Q5. With the help of labelled diagram, describe the model of DNA as given by Watson and Crick.

Q6. Give the salient features of the Double-helix structure of DNA.

Q7. What are the differences between nucleotide and nucleoside?

Q8. The base sequence on one of the strands of DNA is TAG CAT GAT:

(a) Give the base sequence of its complementary strand.
(b) What is the distance maintained between the two consecutive paired bases in the DNA molecule?
(c) Who contributed the base complementary rule?

Q9. Does each of the two complementary strands of DNA carry same biological message? Explain.

Q10. What are the differences between DNA and RNA?

Q11. If the base sequence of one strand of DNA is CAT, TAG, TAC, GAC, what will be the base sequence

(a) Of complementary DNA strand, and
(b) Of its complementary RNA strand?

Q12. What is the central dogma in molecular biology?

Q13. What is reverse transcription? Mention the term used for the group of viruses which show this kind of transcription.

Q14. Name the category of virus that carries Reverse Transcriptase. What is the purpose of this enzyme?

Q15. What are retroviruses? How can they modify the 'central dogma' in molecular biology?

Q16. Explain the idea expressed in the following representation: DNA<:::::::>RNA-----Protien.

Q17. A length of DNA helix is far greater than the dimension of a typical nucleus. Then how is long DNA polymer packaged in a cell?

Q18. List two important differences between euchromatin and heterochromatin.

THE SEARCH FOR GENETIC MATERIAL:-

Q19. Describe an experiment to prove that one factor responsible for transformation of the non-virulent R type pneumonococcus bacteria to the virulent S-type OR

Define bacterial transformation. Who demonstrated it experimentally and how? OR

What is transformation? Describe Griffith's transformation experiment.

Q20. Ho do McCarty and Macleod interpret the result of Griffith's experiment?

Q21. Give an account of Hershey-Chase experiment proving that DNA and not the protein coat of virus is the infecting agent. OR

What did Hershey and Chase prove by their blender experiment? Explain how they did the experiment to prove it. OR

How did Hershey and Chase prove that DNA is the genetic material?

Q22. what is meant by R cells and S cells with Frederick Griffith carried out his experiments on *Diplococcus pneumonia*? What did he prove from these experiments?

Q23. A microbiologist found that some bacteria infected by phages, had developed the ability to make a particular amino acid that they could not make earlier. What was this ability probably because of? Explain this phenomenon briefly.

Q24. What are the essential requirements of the genetic material?

Q25. How is the DNA better genetic material than RNA?

RNA WORLD:-

Q26. RNA is the first genetic material. Highlight some of the facts and points about RNA.

Q27. Why is DNA more stable than RNA?

REPLICATION:-

Q28. Draw a schematic diagram to show the continuous and discontinuous synthesis of DNA and label it. OR

Describe briefly the mechanism of DNA and label it.

Q29. What is the purpose of proof reading in DNA synthesis?

Q30. DNA polymerase and RNA polymerase differ in their requirements while functioning. Explain.

Q31. DNA is unzipped twice in a cell. Mention the two events and the enzymes responsible for it.

Q32. What are the two functions of DNA polymerase?

Q33. Distinguish between:

(a) A leading strand and a lagging strand.
(b) Unidirectional and bi-directional DNA synthesis.

Q34. What are the differences between function of primase and DNA polymerase?

Q35. (a) What is meant by semi conservative replication of DNA?

(b) Describe the main aspects on the experiment conducted by Meselson and Stahl to show that DNA replication is indeed semi conservative.

Q36. Differentiate between transcription and translation as applicable to genetic material. In which part of the cell does translation occur?

Q37. Describe in brief the process of transcription OR How is m-RNA synthesized?

Q38. Given below is the transcribed strand of the DNA duplex:

3' – TAC CGA TCC GAG CTG – 5'

(a) Draw the complementary DNA polynucleotide chain.
(b) Construct the RNA molecule, which will be transcribed.

Q39. From the following DNA sequence representing a part of the gene, derive:

(a) The RNA transcript;
(b) The processed mRNA
(c) The number of amino acids it can code for: TACCCCCAC GAGTTATATATACGG GGGCATCATATG.

Q40. What are exons and introns? What process removes the unwanted RNA regions and joins these code for amino acids?

Q41. What is Cisteron?

GENTIC CODE:-

Q42. What are the main characteristics of genetic code?

Q43. How do a code, codon and anticodon differ?

Q44. In genetics, a reference is made to an abbreviated expression 'AUG'. Write any three points of scientific information embodied in this combination of three letters.

Q45. Give the two terms used to describe the base triplets on RNA molecules.

Q46. What is Frame Shift Mutation?

Q47. What is point mutation?

Q48. Write the full names of different types of RNA. State only how each type is involved in protein synthesis.

Q49. Describe in brief the structure of transfer RNA.

Q50. What are the function of t-RNA in the protein synthesis?

Q51. Describe in brief the process of translation. OR Briefly describe the process of protein synthesis.

Q52. What is peptide bond? How is it formed?

Q53. How is protein synthesis initiated in a cell?

Q54. What is a codon? How many codons serve as STOP codons and how many as INITIATING codons?

Q55. A segment of DNA, GCCAGGGGGATG was translated into the oligopeptide arginine-serine-proline-tyrosine.

(a) What was the base sequence in the m-RNA transcribed from the DNA segment?
(b) What are the codons for the four amino acids?
(c) If the first adenine acids in the DNA segment gets substituted by guanine, what will be the : (i) m-RNA transcript.
(ii) sequence of amino acids in the new oligopeptide.
(iii) anticodons on t-RNA for the amino acids.

Q56. A hypothetical m-RNA, AUG CGU CUA AAG AGG codes for five amino acids. What will happen if you delete the first 'C'? Will five amino acids still be coded for? Give Reasons.

Q57. How is elongation carried on during protein synthesis in a cell?

Q58. What is the role of non-sense codons in protein synthesis?

Q59. Write the transcribed m-RNA of DNA strand with the base sequence GAT CAT ACT. What is the name and the specify role of the last codon of the transcribed m-RNA in this case?

Q60. t-RNA is charged with amino acid phenylalanine:

(a) At what end of t-RNA is this amino acid attached?
(b) What is the mRNA codon that coded for phenylalanine?
(c) What is its anticodon?
(d) Name the enzyme responsible for this attachment.

Q61. An m-RNA strand has a series of codons out which three are mentioned below:

(i)AUG, (ii) UUU, (iii) UAG.

(a) What will these codons be translated into?

(b) What are the DNA codons that would have transcribed these RNA codons?

Q62. AUG GAC CUG AUA UUU UGA is the base sequence in a strand of m-RNA:

(a) Write the base sequence of the DNA strand from which it has been transcribed.
(b) Upon translation, how many amino acids will the resulting peptide have?

Q63. A t-RNA is charged with the amino acid methionine:

(a) At what site in the ribosome will this t-RNA binds?
(b) Give the codon at the anticodon site of this t-RNA.
(c) What is the mRNA codon for methionine?
(d) Name the enzyme responsible for this binding.

Q64. Given below is sequence evidence of the processed mRNA ready for translation:

5'-AUG CUA UAC CUC CUU UAU CUG UGA-3'

(a) How many amino acid residues will make up the polypeptide corresponding to this m-RNA ?
(b) How many different t-RNA molecules would be necessary to translate this m-RNA?

Q65. Consider the short message: AUGGCAGUGCCA

Answer the following questions, assuming first that the code is overlapping and then it is non-overlapping:

(a) How many codons would be represented in this oligonucleotide?
(b) If the second G were changed to a C, how many codons will be changed?

Q66. In genetics, a reference is made to an abbreviated expression AUG. Write any three points of scientific information embodied in the combination of three letter.

Q67. Depending upon the chemical nature of the template and the nature of nucleic acids synthesised from it, list the types of nucleic acid polymerase.

Q68. The following is the sequence of nucleotides in m-RNA, predict the sequence of amino acid coded by it:

(a) Repetitive DNA and Satellite DNA
(b) M-RNA and t-RNA.

Q69. List two essential roles of ribosomes during translation.

REGULATION OF GENE EXPRESSION:-

Q70. Define the following:

(a) Inducible enzymes, (b) Constitutive enzymes, (c) Repressible.

Q71. What are the components of an operon? State their function. OR Explain the phenomenon of induction in E.coli.

Q72. Distinguish between structural gene, regulator gene and operator gene.

Q73. What acts as an inducer in lac operon? How does it switch on the operon? OR Explain how operator switch is turned on for lactose synthesis is E.coli.

Q74. In E.coli, three enzymes *B*-galactosidase, permease and transacetylase began to be produced ass lactose was added. Explain why the enzymes were not forming in the absence of lactose.

Q75. What is the biological significance of E.coli in the intestine of man?

Q76. Distinguish between : Induction and Repression.

Q77. What are Variable Number Tandeem Repeats or VNTRs? OR What is the principle of DNA fingerprinting?

Q78. Describe briefly the process of DNA fingerprinting. How does this process help in identifying criminals?

Q79. State different applications of DNA fingerprinting.

Q80. Define the term genome.

Q81. What are the goals of human genome project?

Q82. List few important uses of Human Genome Project.

Q83. Describe two major approaches used in the methodologies of human genome project.

Q84. Describe briefly the following:

(a) Transcription (b) Polymorphism (c) Translation (d) Bioinformatics.

CHAPTER NO.-7

EVOLUTION

ORIGIN OF LIFE:-

Q1. What is the main concept of theory of biogenesis?

Q2. What is the theory of spontaneous generation?

Q3. What does Oparin-Haldane theory suggest about the origin of life?

Q4. Name the two major events of the history of life. Briefly state major theories of origin of life. Which one of them has scientific basis?

Q5. State the hypothesis of Oparin and Haldane about the primeval Earth condition. What do you understand by Haldane's hot dilute soup? State its significance.

Q6. What is cosmology? Name the major theories of origin of the universe. Briefly narrate the mostly accepted one.

Q7. Who proposed the theory of origin of life? What were the conditions prevailing about 3.6 billion years ago, to create life on primitive earth?

Q8. If abiotic origin of life is in progress on a planet other than the earth, what should be the conditions there? Explain them.

Q9. How did Urey and Miller provide the conditions of primitive earth to prove the origin of life in their experiments?

Q10. Why did Urey and Miller not use oxygen as one of the gases in their experiments?

Q11. Name the gases and the form of energy used in Urey and Miller's experiments.

Q12. On the primitive earth, lightning and cosmic rays provided energy for the abiotic origin of life. How did Urey and Miller provided energy for the same process in their experiment? Name any one amino acid produced in the experiment.

Q13. How did Urey-Miller test Oparin-Haldone's theory on origin of life?

Q14. What would have happen if the primordial earth's atmosphere at that time were no reducing but oxidising?

Q15. Life is believed to have originated on earth abiotically. Can it also orginate now? Give reasons.

Q16. Write a theory about evolution of life forms.

EVIDENCES FOR EVOLUTION:-

Q17. Explain any two palaeontological evidences in favour of organic evolution.

Q18. Discuss the significance of palaeontological evidence in the study of organic evolution.

Q19. 'Birds have evolved from reptiles'. How does palaeontology provide in support of the above statement?

Q20. Define homologous organs. Give examples.

Q21. Name any three organs homologous to human hand. Why they are considered homologous?

Q22. What is meant by analogous organs? Give one example from animals and one from plants?

Q23. Name one organ analogous to the wings of bird. Why are they both analogous? Can you include the wing of bat also with them under the category? Give reasons.

Q24. Mention two examples of analogous organs in plants.

Q25. Amongst pea tendrils, opuntia spines, lemon thorns and cucurbit tendrils, which one are homologous structures? Why do you call them homologous?

Q26. Given below are the names of two pairs of limbs. Categorize them into homologous and analogous organs, giving reasons:

(a) Human arm and foreleg of cow.
(b) Bat's wing and grasshopper's wing.

Q27. How do morphological and anatomical evidences support organic evolution. Explain with examples.

Q28. Industrial melanism in peppered moth is an excellent example of natural selection in the recent history. Justify this statement.

Q29. A groups of pesticide sprayers were worried about their profession when all the mosquitoes got exterminated. How can you explain that such an anxiety was based on ignorance?

Q30. Why are most mosquitoes now found to be DDT resistant although DDT was known to be highly effective insecticide in the past?

Q31. What is natural selection in modern terms? Elucidate the three different effects of natural selection on variation.

ADAPTIVE RADIATION:-

Q32. What is adaptive radiation? Explain it by taking any example.

Q33. Explain biogeography. How do Darwin's Finches provide the biogeographical evidence in favour of evolution?

Q34. Explain the convergent evolution with a suitable example.

Q35. Give two instances of similarity in the pattern of distribution of plants and animals between two lands masses.

BIOLOGICAL EVOLUTION:-

Q36. How does Lederberg's replica plating experiment illustrate the principle of natural selection?

Q37. How did the work of Thomas Malthus influence Darwin?

Q38. Explain the principles of Lamarckism by taking the example of giraffes.

Q39. Who gave the theory of inheritance of acquired characters? Give its salient features.

Q40. How can the long neck of giraffe be explained through the principle of natural selection? How does it differ from the Lamarckian interpretation?

MECHANISM OF EVOLUTION :-

Q41. Mention the salient features of de Varies's theory of mutation. Comment on the generalisation made by him on evolution.

Q42. State the Hardy-Weinberg principles.

Q43. Explain the various factors which are known to affect Hardy Weinberg equilibrium.

Q44. List three mechanisms by which variant genotypes can be produced in nature.

Q45. Discuss the role of variation in nature.

Q46. What is variation? Name the processes that cause variation among organisms. Discuss the role of migration in evolution.

Q47. Define genetic drift. How does it produce founder effect and genetic bottleneck?

Q48. Write a brief account on evolution.

ORIGIN AND EVOLUTION OF MAN ::-

Q49. Give in a chronological order the names of the different species in the evolution of the genus *Homo.*

Q50. State the differences between Human and Apes.

Q51. Tool use was the fundamental to all hominid behaviour. State whether tool-use pre-dated bipedal walking or its vice-versa.

CHAPTER NO.8

HUMAN HEALTH AND DISEASE

COMMON DISEASES IN MAN:-

Q1. Define the term disease. Differentiate between infectious and non-infectious diseases.

Q2. Give the pathogen, mode of transmission, symptoms and prevention of diseases typhoid and pneumonia.

Q3. Give the pathogen, mode of transmission, symptoms and prevention of disease common cold.

Q4. A disease caused by a protozoan parasite and spread through mosquitoes is prevalent in the tropics. Give its name, symptoms, treatment and its control measures.

Q5. Give the scientific name of the pathogen as well as the name of its infective stage, which causes amoebiasis. Mention any two symptoms of the disease.

Q6. Name the pathogen, vector and symptoms of disease-Elephantiasis.

Q7. Give the pathogen, mode of transmission and symptoms of disease-ascariasis.

Q8. Briefly describe the life cycle of *Plasmodium.*

Q9. Name the infective stage of Plasmodium. Give any two symptoms of the disease caused by this pathogen.

Q10. Give the pathogen, mode of transmission, symptoms and prevention of disease-amoebiasis.

Q11. Name the pathogen, mode of transmission, symptoms and prevention of disease-taeniasis.

Q12. What measures would you take to prevent water-borne diseases?

INNATE AND ACQUIRED IMMUNITY:-

Q13. Define the terms: (a) Immune system (b) Immunology.

INNATE (NON-SPECIFIC) IMMUNITY:-

Q14. What is non-specific defence mechanism? Describe briefly the different lines of non-specific defence mechanism of our body.

Q15. How does human skin act as a chemical barrier against bacterial attacks?

Q16. How do lysozymes help in preventing bacterial infections?

Q17. Give the chemical nature and chief functions of interferons.

Q18. Explain any three chemical barriers that offer non-specific defense mechanism.

Q19. What is inflammation? What is the cause of swelling at such sites?

Q20. “Fever is a natural defence mechanism”. Elaborate this statement.

Q21. What are the two causes of fever? How does moderate fever helps in defece mechanism of the body?

Q22. Give the reason why lysozyme is considered an enzyme and not a hormone. How does it defend the body? Name two secretions in human body which contain lysozyme.

ACQUIRED IMMUNITY :-

Q23. What is acquired immunity? Give the unique features of this immunity.

Q24. With reference to immune system, there are two types of lymphocytes T-cells and B-cells. Why are these two so named and what is their respective function?

Q25. Distinguish between:

(a) B-cells and T-cells
(b) Antigen and Antibody.

Q26. Describe the structure of immunoglobin Ig/antibody. Draw a diagram showing the formation of antigen-antibody complex and label the parts.

Q27. What is the difference between humoral immune cell- mediated immune system?

Q28. Describe briefly the mode of action of B-cells to antigens.

Q29. Describe briefly the mode of action of cellular immune response. OR how do T-cells respond to antigens? OR What are T-cells? How do they help in body defence.

Q30. Differentiate between non-specific and specific defence mechanisms. How do lymphocytes contribute in the body’s specific defence mechanism?

Q31. ‘Write a short note on ‘adaptive immunity’?

Q32. How does the cell mediated immune system work when our body is infected?

Q33. How does antibody-mediated immunity work?

Q34. Give the functions of different classes of immunoglobulin.

Q35. What is primary and secondary immune response?

ACTIVE AND PASSIVE IMMUNITY :-

Q36. Differentiate between active and passive immunity by giving one example of each.

VACCINATION AND IMMUNISATION :-

Q37. Distinguish between active immunization and passive immunization.

Q38.(i) How is active immunity achieved in the body?

(ii) name two diseases for which active immunization is required.

Q39. How does vaccination protect a person from a disease?

Q40. What is vaccine? Describe briefly the several types of vaccines that are currently used.

Q41. What is passive immunization? Name three diseases for which passive immunization is highly effective.

Q42. Differentiate between vaccines and antisera. Which one of these is used in the case of snake bite?

Q43. List some important vaccines used for babies and children.

ALLERGY:-

Q44. What is allergy? How are allergies related to the body's immune system?

AUTO IMMUNITY:-

Q45. Explain briefly about the autoimmunity. OR Define autoimmune diseases. Give two examples.

Q46. Name some cells/tissues of our body that are attacked and affected in these diseases.

ORGAN TRANSPLANTS AND ANTIBODIES :-

Q47. Why are transplanted organs sometimes rejected? OR Why is it generally difficult to transplant organs from one person to another? How is this difficulty now overcome?

Q48. Why does a body reject a transplanted kidney? What happens in the case of skin transplanted onto burn wounds?

IMMUNE SYSTEM :-

Q49. Describe briefly about the various lymphoid organs.

AIDS :-

Q50. What does AIDS stand for? How is this disease transmitted? Suggest two methods for its prevention. List any three high-risk groups of people.

Q51. Give full name of the human disease in which body loses its immunity generally towards infection. Mention any two ways by which this disease is transmitted.

Q52. Write the full form of AIDS. What is ARC? Mention any two symptoms of ARC.

Q53. How does HIV cause the AIDS disease?

Q54. List few preventive measures of AIDS.

CANCER :-

Q55. What is cancer? Define tumor. Mention briefly about its two types.

Q56. What are the differences between benign and malignant tumor?

Q57. Define metastasis. Suggest three early diagnostic symptoms or danger signals of cancer.

Q58. What are carcinogens? Name a few. OR What general name is given to the cancer-producing agents? Give names of any two such agents.

Q59. How do cancer cells differ from normal cell?

Q60. What are the causes of cancer?

Q61. How is detection and diagnosis of cancer made?

Q62. Describe briefly the various common approaches that are adapted for the treatment of cancer.

DRUG AND ALCOHOL ABUSE :-

Q63. What is addiction?

Q64. What are the opioids? Describe briefly about the various products obtained from opioids.

Q65. Write self-explanatory notes on: (a) Cannabinoids (b) Coca Alkaloid.

Q66. Define drug addiction. Give sources and harmful effects of any three drugs derived from different plant sources.

Q67. Give the major effects of the following: (a) Opiates (b) Amphitamines (c) LSD.

Q68. List some symptoms of drug addicts.

Q69. Write a short note on 'Drug Abuse'.

Q70. What are the harmful effects of tobacco inhaling?

Q71. From where alcohol is obtained? List its two harmful effects.

Q72. What is adolescence? Why do youngsters persuade to alcohol and drug during abuse adolescence?

Q73. Write a short note on 'Withdrawal Symptoms'.

Q74. List some factors which compel the people to take drugs.

PREVENTION AND CONTROL OF DRUG/ALCOHOL ABUSE :-

Q75. List various preventive and control measures of alcohol and drugs abuse among adolescents.

Q76. Do you think that friends can influence one to take alcohol/drugs? If yes, how may one protect himself/herself from such an influence?

Q77. Why is that once a person starts taking alcohol or drugs, it is difficult to get rid of this habit?

CHAPTER NO.9

STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION

ANIMAL HUSBANDRY:-

Q1. Explain in brief the role of animal husbandry in human welfare.

Q2. Your family owned a diary farm, what measures would you undertake to improve the quality of milk production?

ANIMAL BREEDING;-

Q3. What are the main aim and objective of animal breeding?

Q4. Discuss the relevance of animal breeding to improve food production.

Q5. What is interspecific hybridization.?

Q6. Differentiate between intervarietal and interspecific hybridization by stating one example each.

Q7. What is meant by the term-breed? What are the objectives of animal breeding?

Q8. Define the term interbreeding. How is it done? Give the uses and disuses of interbreeding.

Q9. What should be done when inbreeding depression becomes a problem?

Q10. What is inbreeding depression?

Q11. Explain the 'cross-breeding' by citing an example.

Q12. What is artificial insemination? Give its important advantages.

Q13. Briefly describe the ovulation embryo transfer technology.

Q14. The majority of Indian cattle are on marginal inputs and are infertile and poor milk yielders. What is the main cause of it? Give the methods to improve the breeds of Indian cattle.

Q15. Mention two conditions to ensure high fertility by artificial insemination method.

Q16. What is poultry? What steps would you take for proper management of poultry?

Q17. In what essential ways is poultry-farming advantageous over raising cows and buffaloes?

Q18. Name few improved breeds of chickens.

Q19. What is apiculture? How is it important in our lives?

Q20. Where is bee-keeping practised? What are the main points for successful bee-keeping?

Q21. Where is bee-keeping practised? What are the main points for successful bee-keeping?

Q22. What is fishery? Name few common fresh water and marine edible fishes.

Q23. What are the new methods used for increasing fish production?

Q24. What are the advantages of fishery?

Q25. Discuss the role of fishery in enhancement of food production.

BREEDING :-

Q26. What is plant breeding? Briefly describe the various steps involved in pant breeding.

Q27. Define the term 'Selection'.

Q28. How is selection done in cross-pollinated crops?

Q29. How is evaluation and release of new varieties done?

Q30. Explain what is meant by bio fortification.

Q31. Write a self explanatory note on 'plant breeding for disease resistant'.

Q32. The insect resistance in host crop plants may be due to their characteristics features. Justify this by citing examples.

Q33. List the various semi-dwarf high yielding and disease resistant varieties of wheat and rice.

Q34. Name any five hybrid varieties of crop plants which have been developed in India.

Q35. What is green revolution? List two factors that have led to green revolution in India.

Q36. What are the achievements of green revolution in our country in the field of agricultural production?

Q37. Write a short note on mutation breeding.

Q38. Cite a few examples in which induced mutation has helped in crop production.

Q39. Describe briefly about plant breeding for improving food quality.

SINGLE CELL PROTIEN(SCP) :-

Q40. What is Single Cell Protein? How it can be produced?

Q41. What is the significance of SCP?

PLANT TISSUE CULTURE :-

Q42. What is plant tissue culture? Classify it.

Q43. Define the term explants. What types of essential precautions should be taken for initiating a culture?

Q44. What are the commonly used growth regulators in plant tissue culture? What for they are required?

Q45. What is somantic hybridisation? How it is done? Give its importance and example.

Q46. Define the term totipotency. How are plantlets obtained from cultured cells?

Q47. Write a brief note on micropropagation.

Q48. What are the advantages of using plant tissue culture for propagation?

Q49. Which part of the plant is best suited for making virus-free plants and why?

Q50. Find out what the various components of the medium used for propagation of an explants in *vitro* are?

CHAPTER N0. 10

MICROBES IN HUMAN WELFARE

MICROBES IN HOUSEHOLD PRODUCTS:-

Q1. Explain briefly the importance of microbes in household products.

Q2. Which gas gives the puffed appearance to the dough? Name the metabolic pathway taking place resulting in the formation of this gas.

Q3. In which food would you find lactic acid bacteria? Mention its importance.

Q4. List some beneficial activities of microbes in producing industrial products.

Q5. What are antibiotics? Name the classes of organisms that produce antibiotics.

Q6. Name the major enzymes used in industry and give their importance.

Q7. Name some traditional Indian foods made of wheat, rice and Bengal gram which involve use of microbes.

Q8. In which way have microbes played a major role in controlling diseases caused by harmful bacteria.

Q9. Name any two species of fungus which are used in the production of antibodies.

Q10. Give examples to prove that microbes release gases during metabolism.

Q11. Find out the role of microbes in single cell protein (SCP).

MICROBES IN SEWAGE TREATMENT :-

Q12. How is sewage treated in treatment plants?

Q13. What is the key difference between primary and secondary sewage treatment?

Q14. What is sewage? In which way can sewage be harmful to us?

Q15. Do you think microbes can also be used as source of energy? If yes, how?

MICROBES IN PRODUCTION OF BIOGAS :-

Q16. What is Biogas? Name the biomass and bacteria involved in the production of biogas.

Q17. Describe the structure of biogas plant. Give various steps involved in obtaining biogas.

Q18. State the advantages of obtaining biogas from animal dung and bio-wastes.

MICROBES AS BIOCONTROL AGENTS :-

Q19. What is biological control? Give examples.

Q20. What are the advantages of Biological control over chemical control?

Q21. Why are chemical pesticides nor preferred by the farmers in controlling pests?

Q22. Discuss the concept of IPM.

MICROBES AS BIOFERTILIZSERS :-

Q23. WHAT ARE BIOFERTILIZERS? GIVE ITS TWO EXAMPLES.

Q24. NAME FEW CYANOBACTERIA. HOW ARE THEY USEFUL TO FARMERS.

Q25. What is the advantages of 'Legume-Rhizobium' symbiosis?

Q26. How does Azolla leaves increase the yield of the farmers?

Q27. Microbes can be used to decrease the use of chemical fertilizers and pesticides . explain how?

Q28. What do you mean by the term- Mycorrhiza?

Q29. Name the water fern that is an excellent biofertilizer for rice cultivation. What helps the fern to do so?

CHAPTER-11

BIOTECHNOLOGY : PRINCIPLES AND PROCESSES

PRICIPLES OF BIOTECHNOLOGY :-

Q1. What is biotechnology?

Q2. Enlist two core techniques that have enabled birth of modern biotechnology.

Q3. How do multiple identical copies of DNA template take place?

Q4. Name at least three diseases against which genetically engineered vaccines are now available.

Q5. What is recombinant DNA technology? Explain it briefly.

Q6. How are restriction enzymes different from the topoisomerases functionally? What is the popular name for recombinant DNA technology? What does it involve overall? What two discoveries led to the development of this field? Give the most fundamental application of this technique.

TOOLS OF RECOMBINANT DNA TECHNOLOGY :-

Q7. Differentiate between exonucleases and endonucleases.

Q8. How do restriction endonucleases function in DNA recombination technology?

Q9. What is palindromic nucleotide sequences in DNA?

Q10. Do eukaryotic cells have restriction endonucleases? Justify you answer.

Q11. What are the sticky ends? Why are they named so?

Q12. Describe briefly a technique of gel electrophoresis.

Q13. What is recombinant DNA? List various stages of this technology.

Q14. What are the cloning vectors? Name the various types of vectors.

Q15. Describe briefly the various features that are required to facilitate cloning into a vector.

Q16. Briefly describe the insertional inactivation.

Q17. *Agrobacterium tumefaciens* is a natural genetic engineering of plants. How is it so?

Q18. What were the two main technology called popularly? Name the vectors and enzymes used in this technique.

Q19. What is recombinant DNA technology called popularly? Name the vectors and enzymes used in this technique.

Q20. What are the applications of Recombinant DNA Technology?

Q21. Describe briefly about 'origin of replication'.

Q22. Explain briefly: (a) Restriction enzymes and DNA. (b) Cloning Vectors.

Q23. What is genetic engineering? Give its few applications.

Q24. What is Gene gun? Give its utility.

Q25. Enlist methods of vectorless gene transfer.

Q26. Explain briefly about PCR.

PROCESSES OF RECOMBINANT DNA TECHNOLOGY :-

Q27. What is DNA recombination technology? How does isolation of the gentic material occur during this technology?

Q28. How does the process of cutting of DNA at specific locations perform during DNA recombination technology?

Q29. What is chitinase?

Q30. Distinguish between:

(a) Plasmid DNA and chromosomal DNA.
(b) RNA & DNA.

Q31. What is selectable marker? Explain it by taking any example.

Q32. What is recombinant protein?

Q33. Describe briefly the followings:

(a) Bioreactors (b) Downstream processing.

Q34. Besides better aeration and mixing properties, what other advantages do stirred bioreactors have over shake flasks?

CHAPTER-12

BIOTECHNOLOGY AND ITS APPLICATIONS

BIOTECHNOLOGICAL APPLICATIONS IN AGRICULTURE

Q1. Define the term biotechnology. Why has it become important lately?

Q2. Name few important products of biotechnology.

Q3. Describe briefly the three critical research areas of technology.

Q4. List the three options that can be considered for increasing food production.

Q5. Even though green revolution has succeeding in the production of food supply yet the farmers prefer to use genetically modified crops. Why?

Q6. What are the uses of genetically modified plants?

Q7. What is Recombinant DNA technology? Give the significance of this technique.

Q8. Bring out the salient features through which biotechnology can lead to higher food production.

Q9. What is transgenic crop? Give its two unique advantages.

Q10. How does transgenic crops technique differ from normal breeding activities?

Q11. List the various achievements of transgenic crops by quoting examples.

Q12. How can transgenic crops harm the environment?

Q13. What is genetically modified food? How does this food differ from the produce of conventionally developed varities?

Q14. It has been argued that consumption of GM leads to development of certain problems. Enlist these problems.

Q15. How can biotechnology contribute to sustainable agriculture?

Q16. What are the uses of biofertilizers?

Q17. What are biopesticides?

Q18. What are the transgenic plants?

Q19. What do you mean by ‘Genetically Modified Organisms’? give examples.

Q20. List the various steps that are involved in plant genetic engineering.

Q21. Give some examples of transgenic plants with their useful characters.

Q22. How does host generated ds RNA triggers protection against nematode infestation in tobacco plant?

Q23. Crystals of Bt toxin produced by some bacteria do not kill the bacteria themselves because:

(a) Bacteria are resistant to toxin
(b) Toxin is immature
(c) Toxin is inactive
(d) Bacteria encloses toxin in a special sac.

Q24. What are the advantages and disadvantages of of production of genetically modified crops.

Q25. What are cry proteins? Name an organism that produces it. How has man exploited this protein to his benefit?

Q26. What are transgenic bacteria? Illustrate using any one example.

Q27. *Bacillus thuringiensis* produce insecticidal protein. Why does this toxin not kill the Bacillus?

Q28. Describe briefly the structure of insulin. How is genetically engineered insulin synthesized?

Q29. What is gene therapy? Illustrate using example of adenosine deaminase(ADA) deficiency.

Q30. Name three diseases against which gene therapy has proved successful.

Q31. Briefly describe the applications of biotechnology in the field of medicine.

Q32. Name the three techniques which are used for the purpose of early diagnosis.

Q33. Expand PCR. List its two uses.

Q34. How is PCR technique used for detecting mutated gene?

Q35. How is the infection of HIV detected?

Q36. Expand ELISA? On what principle test is based?

Q37. What are the limitations of ELISA test?

TRANSGENIC ANIMALS :-

Q38. Define the term transgenic animals.

Q39. Why is human being interested in producing transgenic animals?

Q40. How is gene transfer in animals done? Give examples.

Q41. List some possible applications of cloned transgenic animals.

Q42. Give one example each of transgenic plant and transgenic animal.

ETHICAL ISSUES :-

Q43. Expand GEAC. What is the necessity of setting of GEAC by the Indian Government?

Q44. What is bioethics? List the major bioethical concerns pertaining to biotechnology.

Q45. 'Biotechnology can greatly promote human welfare, but it can also be misused to increase human sufferings'. Comment on the statement with the help of suitable examples.

Q46. What is biopiracy?

Q47. How are industrialized nations exploiting the bio resources? Give one example.

Q48. Name at least three therapeutically important products obtained through recombinant genetic engineering.

CHAPTER NO. 13

ORGANISMS AND POPULATION

ORGANISM AND ITS ENVIRONMENT :-

Q1. Name the major biomes by giving their approximate mean annual temperature and precipitation.

Q2. How does temperature bring variation in the physical and chemical conditions of habitat?

Q3. How does water influence the life of organisms?

Q4. What is the importance of light for living organisms?

Q5. How are red algae more successful to live in deep water?

Q6. How do nature and properties of soil affect the organisms?

Q7. List the various abiotic environmental factors.

Q8. What is homeostasis?

Q9. What are the regulators? Give two examples.

Q10. How do human maintain their body temperature constant in summer and winter?

Q11. What are the conformers?

Q12. Why are very small animals rarely found in polar regions?

Q13. How do plants and animals differ in their response to meet the stress conditions?

Q14. Define the term adaptation. Explain it by taking examples from animals and plants.

Q15. How do human brain solves the problem of 'Altitude Sickness'?

Q16. Many tribes live in the high altitude of Himalayas. How do these people solve the problem of altitude sickness?

Q17. How are microbes able to flourish in hot springs?

Q18. Name important defence mechanisms in plants against herbivory.

Q19. Why do animals migrate? Give example.

Q20. Why do seeds undergo dormancy?

Q21. Distinguish between:

(a) Hibernation and Aestivation
(b) Ectotherms and Endotherms

Q22. How are endotherm animals advantageous over the other organisms?

Q23. How do plants adapt to water scarcity and saline environments?

Q24. Briefly explain the adaptations of plants in aquatic environment.

Q25. Give an example for:

(a) An endothermic animal
(b) An ecotothermic animal
(c) An organism of benthic zone.

Q26. How do water animals adapt o tater scarcity in arid regions?

Q27. How do animals adapt to cold environment?

Q28. How is diapause different from hibernation?

Q29. Define phenotypic adaptation. Give one example.

Q30. Write a short note on:

(a) Adaptations of desert plants and animals.
(b) Adaptations of plants to water scarcity.
(c) Behavioural adaptations in animals.
(d) Importance of light to plants.
(e) Effect of temperature or water scarcity and the adaptations of animals.

POPULATIONS :-

Q31. Define the term population. What are the three criteria that are required to define population?

Q32. Define population density. Explain various factors that affect population density of an area.

Q33. What are the main characteristics of population?

Q34. List the attributes that populations but not individuals possess.

Q35. How is age ratio important in determining future population?

Q36. What is population growth?

Q37. Draw population growth curves and explain them.

Q38. When do population growth curve assume-“J” shape and sigmoid-“S” shape?

Q39. Distinguish between population and community.

POPULATION INTERACTIONS :-

Q40. Explain by taking an example that plants and animals are interdependent upon each other for reproduction.

Q41. What is population interaction? Name the various types of interactions.

Q42. Explain how predation is beneficial in the long run.

Q43. Why predators in nature are prudent?

Q44. Briefly explain the role of predation by eating examples.

Q45. Give the various defences adopted by prey species to lessen the impact of predation.

Q46. What is competition? State the difference between interspecific and intraspecific competition.

Q47. Will competition be more acute between individuals of the same species or those of different species? Explain.

Q48. Who gave the competitive exclusion principle? Describe it briefly.

Q49. Define the term-competition. Cite by an example that unrelated species also complete for the same resources.

Q50. What is interference competition?

Q51. How does competitive release affect the process of competition?

Q52. What is parasitism? Give few examples.

Q53. Distinguish between ectoparasite and endoparasite.

Q54. Define the term-ectoparasite by giving few examples.

Q55. Explain the phenomenon of 'Brood Parasitism'.

Q56. Write an explanatory note on commensalism.

Q57. Give three important examples of commensalism.

Q58. What is mutualism? Give its examples both from plants and animals.

Q59. What is the relationship between fig tree and wasp?

Q60. Briefly explain the process of pollination in orchid.

Q61. What is the ecological principle behind the biological control method of managing with pest insects?

Q62. Write:

(a) A species which is both a prey and a predator.
(b) Two examples of commensal species.
(c) Two examples of mimicry.

Q63. Define the terms and give one example for each:

(a) Commensalism (b) Parasitism (c) Camouflage (d) Mutualism (b) Interspecific competition.

CHAPTER NO. 14

ECOSYSTEM

ECOSYSTEM-STRUCTURE AND FUNCTION :-

Q1. Define ecosystem. Give few examples.

Q2. What are the two major components of an ecosystem?

Q3. What are producers, consumers and decomposers in an ecosystem? Explain their relationship with the help of a suitable example.

Q4. Differentiate between a consumer and a producer. Give example.

Q5. Define autotrophs. How do autotrophs differ from heterotrophs?

Q6. Why are plants called producers?

Q7. Explain with an example that ecosystems are integrated with each other.

Q8. Describe briefly the structure of ecosystem.

Q9. Give the various functions of an ecosystem.

PRODUCTIVITY:-

Q10. What is primary productivity. Explain briefly.

Q11. Define the following:

(a) Gross primary productivity
(b) Net primary productivity
(c) Secondary productivity

Q12. Distinguish between primary and secondary productivity.

DECOMPOSITION :-

Q13. What is decomposition? Give its utility.

Q14. Briefly describe the process and products of decomposition.

Q15. What is huminification and mineralization? Give their role also.

Q16. What do you mean by 'Nutrient Immobilzation'.

Q17. Define decomposition and describe the processes and products of decomposition.

Q18. Give an account of factors affecting the rate of decomposition.

Q19. What are the decomposers. Name one. How do bacteria and fungi act as decomposers?

Q20. Distinguish between production and decomposition.

Q21. Distinguish between litter and detritus.

ENERGY FLOW :-

Q22. Define the first and second laws of Thermodynamics.

Q23. Explain the pattern of flow of energy from sun to producers.

Q24. Define food chain and trophic level. State any two advantages of studying about food chains.

Q25. What is the difference between a food chain and a food web? How do food chain get shortened? How does the shortening of food chain affect the biosphere?

Q26. Differentiate between grazing food chain and detritus food chain.

Q27. Describe how the energy from producers flows through various levels.

Q28. Describe how life on earth depends on the sun.

Q29. Describe how the energy from the sun flows through various trophic levels.

Q30. Explain the flow of energy from sun to herbivorous animals.

Q31. Why we say energy flow in the biosphere is unidirectional?

Q32. Which food chains are advantageous in terms of energy? Give reasons with suitable examples.

Q33. In terms of energy, who is at an advantageous position: a vegetarian or a non-vegetarian. Why?

ECOLOGICAL PYRAMIDS :-

Q34. What are ecological pyramids?

Q35. Define ecological pyramids and describe with examples, pyramids of number and biomass.

Q36. Distinguish between upright and inverted pyramid.

ECOLOGICAL SUCCESSION :-

Q37. What is biotic succession? On what factors the nature and composition of a community depend?

Q38. What is ecological succession? Describe briefly about various types of succession.

Q39. List the stages of ecological succession. Which stage takes the largest time? Which stage will have the greatest diversity of species?

Q40. Where would you look for signs of secondary succession? When does secondary succession end?

Q41. What is the difference between pioneer community and climax community?

Q42. Describe the process of succession on a bare rock.

Q43. Describe briefly the process of succession in aquatic environment.

Q44. How does succession differ in terrestrial and aquatic systems? Give salient points.

Q45. Explain the differences between the seral stage and climax community during succession.

Q46. Explain the differences between the seral stage and climax community during succession.

Q47. Starting from a barren rock or site of volcanic eruption, trace the organisms that participate in the process of succession.

NUTRIENT CYCLING :-

Q48. What is biogeochemical cycle?

Q49. What is the difference between gaseous and sedimentary type of nutrient cycles?

Q50. The input and output of nutrients maintain balance in an ecosystem. How? List few

factors responsible for causing unbalanced nutrient cycle and ecosystem.

Q51. Describe the carbon cycle in nature.

Q52. Make a diagram of carbon-cycle. What is the role played by the organisms present in the carbon-cycle?

Q53. What is the importance of presence of carbon-dioxide in the atmosphere? What will happen if its concentration in the atmosphere increases?

Q54. What is meant by sedimentary cycle? Give diagram for phosphorous/sulphur cycle.

Q55. Write important features of a sedimentary cycle in an ecosystem.

CHAPTER NO.15

BIODIVERSITY AND CONSERVATION

BIODIVERSITY :-

Q1. Explain the term 'biodiversity'. Why has it become important recently?

Q2. Write self explanatory note on magnitude of biodiversity.

Q3. Name the three important components of biodiversity.

Q4. What is genetic diversity? What does it reflect?

Q5. What is speciation? Give its basis and role it plays.

Q6. Explain what is meant by species diversity?

Q7. India has rich diversity of the biogeographically distinct regions. Elucidate.

PATTERNS OF BIODIVERSITY :-

Q8. Enlist various gradients of biodiversity of species.

Q9. Give few facts showing that diversity of species is not uniform rather uneven.

Q10. Give three hypotheses for explaining why tropics show greatest levels of species richness.

Q11. How do ecologists estimate the total number of species present in the world?

Q12. Among the ecosystem services are control of Floods and soil erosion. How is this achieved by the biotic components of the ecosystem?

Q13. What is the significance of the slope of regression in a species area relationship?

Q14. The species diversity of plants is much less than that of animals. What could be the explanation to how animals achieved greater diversification?

THREATS TO BIODIVERSITY :-

Q15. What are the major causes of species losses in a geographical region?

Q16. Broadly classify the extinction processes.

Q17. Give the characteristics of species which are susceptible to extinction.

Q18. Write a short note on IUCN Red List.

BIODIVERSITY CONSERVATION :-

Q19. Why should we conserve biodiversity? What are the uses of biodiversity?

Q20. How is biodiversity important for ecosystem functioning?

Q21. List three consequences of loss of biodiversity.

CONSERVATION OF BIODIVERSITY

Q22. What are the two basic strategies of biodiversity conservation?

Q23. Write a short note on protected areas.

Q24. What are the main benefits of protected areas?

Q25. Define the terms- National Parks and Wildlife Sanctuaries.

Q26. List few national parks and sanctuaries in India.

Q27. What are sacred groves? What is their role in conservation?

Q28. What are the sacred forests and sacred lakes?

Q29. Write short note on hot spots of biodiversity.

Q30. What are the criteria for determining a hot spot?

Q31. Define the following : (a) Critically Endangered (b) Endangered (c) Vulnerable

Q32. Write a short note on Ex-situ conservation strategy.

Q33. Write an explanatory note on the efforts for conservation of biodiversity in India.

Q34. What are the main functions of biodiversity reserves?

CHAPTER NO.16

ENVIRONMENTAL ISSUES

AIR POLLUTION AND ITS CONTROL :-

Q1. Define the terms pollution and pollutants.

Q2. What measures do you suggest to control pollution from automobile exhausts?

Q3. What is air pollution?

Q4. How have urbanisation and industrialization increased the air pollution? How can air pollution be checked?

Q5. What are the various methods to control air pollution?

Q6. Suggest ways to minimise pollution in big cities.

Q7. In what manner is man affecting the characteristics of atmosphere?

Q8. List any three preventive strategies to control air pollution.

Q9. Describe briefly the various methods to control particulate matter in air pollution.

Q10. Describe various techniques used in control of gaseous pollutants.

Q11. Why is CNG better than diesel?

Q12. Discuss briefly the catalytic converter.

NOISE POLLUTION

Q13. What is noise pollution? What are its various sources? What are its effects on human beings? Give some methods to control it.

Q14. What is sound level? Give its unit also.

Q15. What are the various sources of water pollution? Name some important constituents of effluents.

Q16. Explain the main effects of water pollution.

Q17. How is water pollution prevented?

Q18. What are the various constituents of domestic sewage? Discuss effects of sewage discharge on a river.

Q19. Describe the biological magnification and eutrophication.

Q20. What is biological oxygen demand?

Q21. What is cultural eutrophication?

Q22. State the effects of sewage contamination of surface water. What steps should be taken to prevent sewage pollution?

Q23. Define the term-Biomagnification. Give one example.

SOLID WASTES :-

Q24. What are the solid wastes? Suggest some methods to control these wastes.

Q25. What are the various sources of soil pollution and their effects on the environment?

Q26. List the main factors which cause land degradation. How would you control it?

Q27. What ways do urbanisation and increase in population contribute to population problem?

Q28. How does following affect land resources :

(a) Deforestation (b) Irrigation.

Q29. How do the following affect land resources :

(a) Pesticides (b) Fertilizers.

RADIOACTIVE WASTES :-

Q30. Write briefly about the radioactive pollution.

Q31. How do nuclear power plants upset ecological balance?

GLOBAL ENVIRONMENTAL CHANGE :-

Q32. Name the various green house gases.

Q33. Account for the causes of green house effect. How does this effect us?

Q34. Enlist various approaches/ strategies to deal with global warming.

OZONE DEPLETION :-

Q35. What is Ozone Hole?

Q36. What is meant by Ozone shield? How the CFCs and ozone depleting substances affecting ozone shield?

Q37. What are the effects of Ultra Violet Radiation on humans?

Q38. What is the environmental significance of the increasing Antarctica ozone hole?

Q39. Discuss briefly the ultraviolet B.

DEGRADATION BY IMPROPER UTILISATION AND MAINTAINANCE :-

Q40. How does degradation of natural resources occur due to improper resource utilisation practices?

DEFORESTATION :-

Q41. List various factors that lead to deforestation.

Q42. What are the consequences of deforestation?

Q43. What is slash and burn agriculture?

Q44. Write critical note on ground water depletion and ways to replenish it.

Q45. Discuss the role of women and communities in protection and conservation of forests.

ENVIRONMENTAL LAWS FOR CONTROLLING POLLUTION:-

Q46. Enlist various legislations enforced by the Govt. Of India to protect the environment from pollution.