SURE SHOT LONG TYPE QUESTIONS FOR CLASS XII

SUBJECT – BIOLOGY

Q.1 Tarun was one of the best boys in the class. In spite of his efforts he was not doing well in class XI. His father wanted him to qualify for medical sciences. He got frustrated with his results and resorted to drugs. He started misbehaving with parents and friends in school.His friends started neglecting him. The school authorities counselled Tarun but to no effect. His parents were upset and took him to a rehabilitation centre. After a few months
he came back recovered.
a) What values did the Principal reflect through his initiative?
b) What is drug abuse?
c) Name some commonly abused drugs and their source.
d) What should be the attitude of his parents after his return? 1+1+2+1

Q.2 Joy loves to play football and was selected as captain of the school team for the district level tournament. He also does social work. He attended a blood donation camp to donate blood and came to know that he was HIV positive. He lost interest in games and refused to play or study. He started counting his days. He remained absent from school for a long time. The Biology teacher visited his house and counselled him. Joy was back at school and also played the tournament.
a) What sense of responsibility did the Biology teacher exhibit?
b) A person detected to be HIV positive should be isolated in the society? Do you agree? Why/ Why not?
c) How is AIDS not spread? 1+1+2

Q.3 Ratan lives in a remote village. Suddenly he comes to know that his father has arranged the marriage of his younger sister, who is only 14 years old, to a well- to –do middle aged man living in a nearby village. Ratan objected to his father's act. Ratan was not convinced by his father's idea that a better groom might not be available later. Ratan complained to the village head and got the problem solved.

a) Did Ratan act properly by approaching the village head? Why/ Why not?

b) What biological considerations made Ratan object to his father's decision?

c) What values and responsibilities did Ratan show? 1+1+2

Q.4 During a visit to Kedarnath, Mohun came across a young couple staying in the adjacent room in the hotel. He learnt that the couple had been visiting different temples and performing rituals to get a child. Mohun was astonished and explained to them about ART which he had recently studied in Biology. The couple were happy and understood their wrong approach and thanked Mohun.

a) Identify the values which Mohun has shown.

b) What is ART? What are the various method included in ART?

c) What are the limitations for which ART is not commonly accepted? 1+1+2

Q.5 A teenage girl accidently became pregnant. She stopped coming to college and also preferred to remain isolated. She was scared to inform her parents. One of her friends Sweta met her and came to know about the problem. She took her to a doctor and got her aborted. She convinced the parents and kept the matter concealed.

a) Did Sweta take the correct decision? What values did she show?

b) What is the medical term for abortion? What is the period which is considered safe for abortion?

c) What prevention may be taken to avoid pregnancy? 1+1+2

Q.6 On world population day Rohit and his friends arranged an awareness campaign
programme in their locality. Some elderly people rebuked the children and asked them not to talk on such things in public. The children convinced the elders about the need for the programme and on understanding their point of view, they also joined the campaign.
a) What values did the elderly people and Rohit show on the occasion?
b) Why is such awareness programme necessary?
c) What role has the government played in controlling population explosion?

1+1+2

Q.7 Some parents wrote a complaint letter to the local municipality to remove all hoardings in the city advertising the use of condoms and matters relating to AIDS prevention. The children of these parents came to know about the matter and raised their voice against removal of those hoardings. The parents were convinced by the awareness level of their
children and withdrew the complaint.
a) Parents considered the hoarding as sight pollution. Why do you disagree?
b) What value is promoted by the children protesting against their parents?
c) What are the methods by which AIDS spreads? 1+1+2

Q.8 Rita and her parents were watching a TV serial in the evening. During a commercial break, an advertisement flashed on the screen which was promoting use of sanitary napkins. Rita was still watching the TV. The parents got embarrassed and changed the channel. Rita objected to her parents' behaviour and explained the need for these advertisements.
a) What values did the parents show?
b) Briefly describe the phases of a menstrual cycle.

1+1+2

Q.9 Anita was happy when she gave birth to her first child. Her in- laws were dissatisfied at her not giving birth to a male child and blamed Anita.

Anita tried to convince her in laws that she had no role in the child's gender. They understood the biological reason but were yet to be satisfied. Anita's husband took up the matter and convinced the parents.

a) What values did Anita's husband show in the above situation?

b) What governs sex determination in humans? How is it different from birds?

c) Why can't Anita be blamed for not giving birth to a male child? 1+1+2

Q.10 Mrs. Kavita was eager to know the sex of the foetus which her daughter- in- law was carrying. She was so anxious that she could pay any amount for that. The doctor refused to disclose the result of the test.

a) What value do you learn from the doctor's act?

b) How can one know the sex of the foetus? How is it done?

c) Why is disclosing the sex of the foetus banned in our country? 1+1+2

Q.11 Ravi was rushed to a nearby hospital after an accident which caused a lot of blood loss. The hospital failed to supply O negative blood for transfusion. Rahman who was attending a patient learned about the situation and agreed to donate blood being of the same blood group. Ravi's mother initially refused but was later convinced by her daughter.

a) What values do you find in Ravi's sister and Rahman?

b) Why can't O positive blood be transfused into Ravi's body?

c) What is the genetic basis of blood group inheritance? 1+1+2

Q.12 Sonam is a bright, fair girl. Her parents are dark complexioned. Her friends in college regularly passed remarks asking her how she was so fair or what treatment she had undergone to become fair. Sonam got irritated at their repeated embarrassing questions. Her friend Srijita came to her support and invited the friends to the Biology lab where she explained the inheritance of body colour. The friends realised their mistake and stopped teasing Sonam.

a) What good values did Srijita reflect from her deeds?
b) What is the name of the inheritance pattern discussed?
c) Which other characters in human follow the same pattern?
d) Explain how Sonam could be fairer than her parents.

1+1+1+1

Q.13 During Primary art classes the teacher asked Parthiv to mix green and yellow paint and report on the combined colour formed. Parthiv could not find green colour in his box and was scolded by the teacher who found it lying right in front. Suddenly Vijay realised that Parthiv was not able to identify red colour and reported the matter to the teacher who was of the opinion that he lacked colour concept. After school was over, Vijay reported this matter to Parthiv's parents.
a) What values did Vijay possess?
b) Did Parthiv lack knowledge of colours ? If not give the biological reason for the same.
c) Give the technical term for this type of inheritance. Explain with a typical example. 1+1+2

Q.14 A Couple quarrelled with the hospital authority on suspicion that their child had been exchanged after birth. The couple based their argument on the fact that their child is O blood group whereas they are A and B blood groups respectively. The doctor smiled and explained.
a) What values of the doctor is reflected here?
b) How can the child be O blood group as explained by the doctor?
c) Which test method can be considered authentic to identify the biological parents of the child?
d) Name the other blood group(s) which the child could have inherited.

1+1+1+1

Q.15 Brijmohan angrily says to his daughter not to marry Rajiv since their family is known to
inherit Haemophilia. The daughter objected to her father's order. Brijmohan

was adamant
and threatened Rajiv also. Brijmohan's daughter explained the biological interpretation of
his fear and convinced her father.
a) Rajiv was not haemophilic. Why was Brijmohan so worried?
b) What values do you identify from the role played by Brijmohan's daughter?
c) What explanation must have convinced Brijmohan?
d) Is there any fear of haemophilia if Brijmohan's daughter marries Rajiv?

Q.16 The Biology teacher asked the students to verify the experiment on Transformation principle in bacteria to establish DNA as genetic material. The class was divided into two groups. The teacher asked them to submit the reports. Group 2 did not use mouse and did not repeat Griffith's experiment. The teacher praised them.
a) What values did Group 2 exhibit?

b) Which experiment did they perform? Explain in brief.

2+2

Q.17 Ratan was a known sportsman in his school. While returning home he found some unknown miscreants beating a young fellow. He tried to drive them off but by that time the fellow died of injury. The police arrested Ratan and he was put on trial. The judge being convinced by Ratan's plea, ordered for DNA finger printing reports.
a) Ratan's fingerprints on the dead body were sufficient to convict him but the judge asked
for authentic proof? What values can be observed?
b) What is the basis of DNA finger printing?
c) Explain the steps in DNA finger printing. 1+1+2

Q.18 During an excursion to a botanical garden, the teacher shows an old tree which was on the verge of extinction. As soon as the teacher advanced with the students, some enthusiastic students climbed up the tree and started cutting the branches, collecting its leaves as precious collection.

Rajesh instead took photographs of the tree from various angles. The boys mocked at Rajesh while the teacher appreciated him.

a) What values did Rajesh possess?

b) Why should we conserve biodiversity?

c) How can be biodiversity be conserved? 1+1+2

Q.19 A snake charmer came to the house and smelled the presence of a cobra which the residents had never seen in the last 10 years. The landlord agreed to allow the man to search, catch and take away with him the snake. Little Jazman disagreed and drove the man away.

a) Did Jazman do the right thing? What values did he show?

b) What importance do snakes have in nature?

c) Draw a food web showing the place of snakes.

1+1+2

Q.20 During a visit to a government office with his father, young Pratap saw dirty spittoons in every corner of the building. Some people were spitting paan and gutka through the window grills. As soon as he objected to their action, Pratap was scolded by some persons and the quarrel between the two parties became a matter of concern. The very next week Pratap was amazed to see the walls cleaned, no spittoons and a notification hung to maintain cleanliness and hygiene inside the office. The officer appreciated Pratap.

a) What values are promoted through the incident?

b) Which diseases are transmitted through droplets and air?

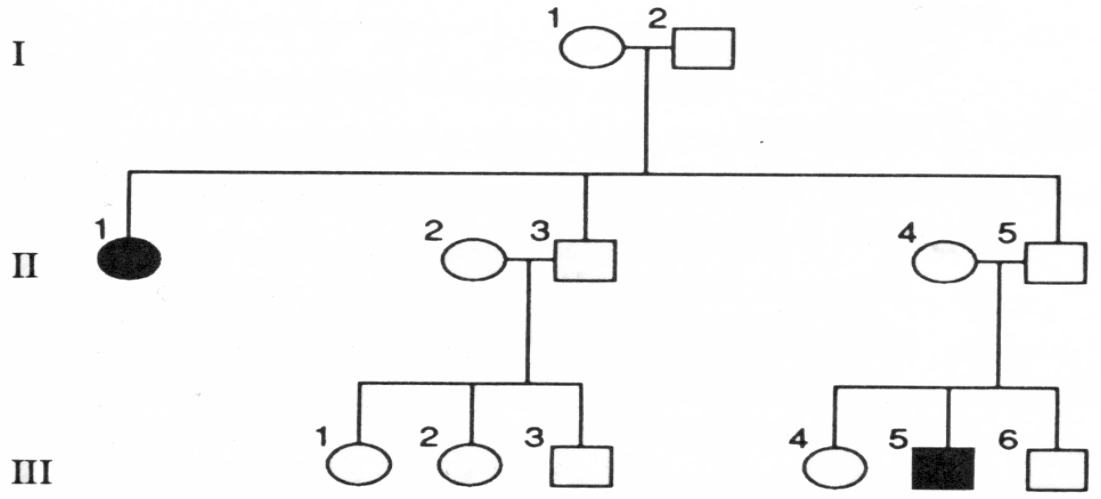
c) How does chewing paan or gutka cause health hazard? 1+1+2

Q. 21 a) Mention the reasons for difference in ploidy of zygote and primary endosperm nucleus in an angiosperm.

b) The cell division involved in gamete formation is not of same type in different organisms. Justify.

2+2

Q.23 Study the given pedigree chart and answer the questions that follow:



a Is the trait recessive or dominant?
b Is the trait sex-linked or autosomal?
c Give the genotypes of the parents in generation I and of their child in generation II.

1+1+2

Q.24 a. Describe the experiment in brief that helped Louis Pasteur to dismiss the theory of spontaneous generation of life.
b. Fitness is the end result of the ability to adapt and get selected by Nature.Comment in brief.

2+2

Q.25 a. Why do the symptoms of malaria not appear immediately after the entry of sporozoties into the human body when bitten by female Anopheles? Explain.

b. Define auto-immune disease. Give two examples.

2+2

Q.26 Explain the role of the following in providing defence against infection in human body:

a. Histamines b. Interferons c. B-cells

1+1+1

Q.27 what is 'MOET' expand it? This programme has helped in increasing the herd size of the desired variety of cattle. List the steps involved in conducting the programme.

1+2

Q.28 Write the name of the following:

a. the most common species of bees suitable for apiculture.
b. An improved breed of chicken.
c. Write the two semi-dwarf and high yielding rice varieties developed in India after 1996.
d. Two exotic breeds of poultry in India.

1+1+1+1

Q.29 a. Why do farmers prefer biofertilisers to chemical fertilisers these days? Explain.

b. How do Anabaena and mycorrhiza act as biofertilisers?

2+2

Q.30 Explain the role of Baculoviruses as biological control agents. Mention their importance in organic farming.

2+2

Q.31 a. When and where does spermatogenesis occur in a human male?
b. Draw a diagram of a mature human male gamete. Label the following parts:
acrosome, nucleus, middle piece and tail.
c. Mention the functions of acrosome and middle piece.

1+2+1

Q.32 a. Draw a diagrammatic sectional view of human ovary showing different stages of Oogenesis along with corpus luteum.
b. Where is morula formed in humans? Explain the process of its development from zygote.

2+2

Q.33 a. Write the full form of VNTR. How is VNTR different from probe?
b. Draw a neat labelled diagram of a nucleosome.
c. What enables histones to acquire a positive charge?

1+2+1

Q.34 a. What is meant by semi-conservative nature of DNA replication?
b. Write two functions of DNA-polymerase.
c. What is splicing? Why is splicing necessary in eukaryotic genes?

1+1+2

Q.35 a. A normal visioned woman, whose father is colour blind, marries normal Visioned man. What would be the probability of her (a)

sons (b) daughters to be Colour blind? Explain with the help of pedigree chart.

2+2

Q.36 A homozygous tall pea plant with green seeds is crossed with a dwarf pea plant with yellow seeds:

i What would be the phenotype and genotype of F1?
ii Work out the phenotypic ratio of F2 generation with the help of a Punnett square.

2+2

Q.37 a. A woman with blood group O married a man with AB group. Show the possible blood groups of the progeny. List the alleles involved in this inheritance.
b. What is aneuploidy?
c. What is trisomy? Give an example.

1+1+2

Q.38 Why does corpous luteum secrete large amount of progesterone during leutal /secretory phase of menstrual cycle? Name two hormones that can only be found in the blood of pregnant women. Mention the source that secretes each of them?

1+1+1

Q.38 Name the vegetative units of the following:

a. Agave
b. Bryophyllum
c. Ginger
d. Oxalis
e. Mint
f. Water Hyacinth

½+½+½+½+½+½

Q.39 Draw a labeled diagram of an anther lobe at microspore mother cell stage. Mention the role of different wall layers of anther.

2+1

Q.40 a. Describe the stages of oogenesis in human females.
b. Draw a labeled diagram of a human ovum released after ovulation

2½+2½

Q.41 What is parturition ? Which hormones are involved in induction of parturition. Corpus luteum in pregnancy has a long life. However, if fertilization does not take place it remains active only for 10-12 days. Why?

1+2+2

Q.42 How are assisted reproductive technologies helpful to humans? How are ZIFT and GIFT different from intra uterine transfers? Explain.

1+2

Q.43 Give the chromosomal constitution and the resulting sex in each of the following syndromes:

a. Turner's syndrome b. Klinefelter's syndrome c. Down Syndrome

1+1+1

Q.44 a. Explain the characteristic features of wind pollinated flowers. How are insect pollinated flowers different from them. Explain the mutually rewarding relationship between Yucca plant and a species of moth.

2½+2½

Q.45 a. Draw labelled diagram of pollen grain with germ tube and two male gametes.What is emasculation? Explain its importance in hybridisation.

2½+2½

Q.46 a. Explain the events taking place at the time of fertilization of an ovum in a human female. Trace the development of the zygote up to its implantation in the uterus.

2½+2½

Q.47 a. What are the major functions of male accessory ducts and glands?

b. When and how does placenta develop in human female?

2½+2½

Q.48 Work out a dihybrid cross between homozygous tall Pisum sativum bearing round seeds and a dwarf plant with wrinkled seeds through two generations using Punnett square. Give the dihybrid phenotypic ratio.

5

Q.49 Explain the mechanism of sex determination in humans. Differentiate between male hetetogamety and female Hetetogamety with the help of an example of each.

5

Q.50 (*a*) Cancer is one of the most dreaded diseases of humans. Explain 'Contact inhibition' and 'Metastasis' with respect to the disease.

(*b*) Name the group of genes which have been identified in normal cells that could lead to cancer and how they do so?

(*c*) Name any two techniques which are useful to detect cancers of internal organs.

(*d*) Why are cancer patients often given a-interferon as part of the treatment?

1+1+1+1

Q.51 (*a*) Name the technology that has helped the scientists to propagate on large scale the desired crops in short duration. List the steps carried out to propagate the crops by the said technique.

(*b*) How are somatic hybrids obtained?

2½+2½

Q.52 (*a*) Explain Darwinian theory of evolution with the help of one suitable example. State the two key concepts of the theory.

(*b*) Mention any three characteristics of Neanderthal man that lived in near east and central Asia.

2½+2½

Q.53 (*a*) Explain the process of DNA replication with the help of a schematic diagram.

(*b*) In which phase of the cell cycle does replication occur in Eukaryotes? What would happen if cell division is not followed after DNA replication?

2½+2½

Q.54 (*a*) How is 'oogenesis' markedly different from 'spermatogenesis' with respect to the growth till puberty in the humans?

(*b*) Draw a sectional view of human ovary and label the different follicular stages, ovum and corpus luteum.

2½+2½

Q.55 (*a*) Coconut palm is monoecious, while date palm is dioecious. Why are they so called?

(*b*) Draw a labelled diagram of sectional view of a mature embryo sac of an angiosperm.

2½+2½

Q.56 (*a*) State the objective of animal breeding.

(*b*) List the importance and limitations of inbreeding. How can the limitations be overcome?

c) Give an example of a new breed each of cattle and poultry.

1+2+1

Q.57 With advancements in genetics, molecular biology and tissue culture, new traits have been incorporated into crop plants. Explain the main steps in breeding a new genetic variety of a crop. 5

Q.58 (*a*) Describe the various steps of Griffith's experiment that led to the conclusion of the 'Transforming Principle'.

(*b*) How did the chemical nature of the 'Transforming Principle' get established?

2½+2½

Q.59 (*a*) Explain the different ways apomictic seeds can develop. Give an example of each.

(*b*) Mention one advantage of apomictic seeds to farmers.

(*c*) Draw a labelled mature stage of a dicotyledonous embryo.

1+1+2

Q.60 (*a*) Where does fertilisation occur in humans? Explain the events that occur during this process.

(*b*) A couple where both husband and wife are producing functional gametes, but the wife is still unable to conceive, is seeking medical aid. Describe any one method that you can suggest to this couple to become happy parents.

2½+2½

Q.61 (i)Since the origin of life on Earth, there were five episodes of mass extinction of species.How is the 'Sixth Extinction', presently in progress, different from the previous episodes?

(*ii*) Who is mainly responsible for the 'Sixth Extinction'?List any four points that can help to overcome this disaster.

2½+2½

Q.62 A cross was carried out between a pea plant heterozygous for round and yellow seeds with a pea plant having wrinkled and green seeds.

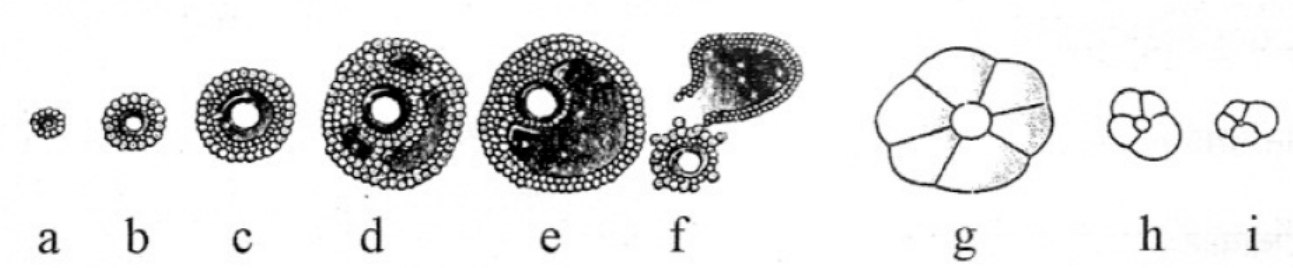
i. Show the cross in a Punnett square.

ii. Write the phenotype of the progeny of this cross.

iii. What is this cross known as? State the purpose of conducting such a cross.

2+1+2

Q.63 The following diagram is the illustration of the sequence of ovarian events (a to i) in human female:



(i)Identify the figure that illustrate ovulation and mention the stage of oogenesis it represents.
(ii) Name the ovarian hormone and pituitary hormone that have caused the above mentioned event
(iii) Explain the changes that occur in the uterus simultaneously in anticipation.
(iv) Write the difference between 'c' and 'h'.
(v) Draw a labeled sketch of human ovum prior to fertilization.

1+1+1+1+1

Q.64 (a) Explain what DNA replication refers to.
(b) State the properties of DNA replication model.
(c) List any three enzymes involved in the process along with their functions.

2+2+1

Q.65 (*a*) Why is there a need to conserve biodiversity?
(*b*) Name and explain any two ways that are responsible for the loss of biodiversity.

2½+2½

Q.66 (*a*) Differentiate between primary and secondary ecological successions.
(*b*) Explain the different steps of xerarch succession occurring in nature.

2½+2½

Q.67 (*a*) Name and explain any four lymphoid organs present in humans.
(*b*) Categorise the named lymphoid organs as primary or secondary lymphoid organs, giving reasons.

2½+2½

Q.68 (*a*) What is plant breeding? List the two steps the classical plant breeding involves.
(*b*) How has the mutation breeding helped in improving crop varieties? Give one example where this technique has helped.
(*c*) How has the breeding programme helped in improving the public nutritional health? State two examples in support of your answer.

1+2+2

Q.69 (*a*) Name the category of microbes occurring naturally in sewage and making it less polluted during the treatment.
(*b*) Explain the different steps involved in the secondary treatment of sewage.

2½+2½

Q.70 (*a*) What was proposed by Oparin and Haldane on origin of life? How did

S.L. Miller's experiment support their proposal?

(*b*) Which human chromosome has

(*i*) maximum number of genes, and which one has

(*ii*) fewest genes?

(*c*) Write the scientific importance of single nucleotide polymorphism identified in human genome.

2+2+1