

# Directorate of Education

Govt. of NCT of Delhi

## Additional Support Material on Value Based Questions for the Session 2012-2013

**Subject: Biology**

**Class : XII**

Under the guidance of :

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Addl. DE (School/Exam)

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## **Preface**

Central Board of Secondary Education (CBSE), whose educational process is inclusive of co-scholastic areas of life skills, attitude and values, sports and games as well as co-curricular activities, is aiming to strengthen its education system in the area of value education. For the same, the board will be introducing value-based questions in the papers of final examinations in all major subjects for classes XI and XII from the academic session 2012-13.

The Board has decided to assess students for 5 percent weight age in classes XI and XII through questions which will be integrated with the content of the subject and analyzed on the basis of the values it reflects. The questions will be 3-4 marks in a question paper of 70-90 marks.

The sample value based questions deal with the life skills and values attained by students like Self Awareness, Empathy, Critical thinking, Creative Thinking, Decision Making, Problem Solving, effective Communication, Interpersonal Relationships, Coping with Stress and Coping with Anger, and Dealing With Emotions.

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## **UNIT VI- REPRODUCTION**

- Your younger sister has seen a banana tree in backyard of a house. She could see the fruits but no seeds. She wants to know how a new plant of banana will be produced without seed. What will you explain to your sister?
- A popular TV programme shows in some village, girls are killed soon after their birth. Do you approve such practice? What impact does it have on population?
- Sunita's bhabhi is not allowed to enter the kitchen during the days of her menstrual cycle. Sunita's mother thinks that she is impure and dirty and the food prepared by her is also unhygienic. Give your opinion about such traditional belief.
- Monika is a sex worker. You are a NGO worker. You are given the responsibility to educate the sex worker about sexually transmitted diseases. Specify any two ways of prevention from such diseases.
- Neeru and Narim have a three year old daughter. During her second pregnancy she wants to go for sex determination test and if needed medical termination of pregnancy. Do you think her decision is right? Justify your answer.

- Nidhi is a class VI student visits a field and finds that all the flowers of some plant are 'closed'. She thinks such flowers will not open and due to no pollination seeds will not be formed. Such plants will be 'propagated' vegetative. Do you agree with Nidhi's findings? Explain.
- Pooja's grandmother blames her mother for giving birth to three daughters and wants another marriage of her son. Is it right to blame a female for sex determination? Justify your answer.
- Maya saw a farmer spraying some chemical on flowers, on asking she came to know that this act will lead to the formation of fruits without fertilization. Maya thinks that fruits such developed are not good to eat as chemicals are sprayed on it. Explain the difference between such spray and usual pesticide spray.
- Rahul and his friends are having discussion about a recently released movie in which hero is a sperm donor. His friends say that sperm donation is a means to earn money. Rahul explains that sperm donation can help infertile couples. Whom do you think is right? In which type of infertile cases such sperm donation is helpful. Draw a neat and labeled diagram of a sperm.

## **UNIT VII - GENETICS AND EVOLUTION**

- Swati is dark skinned and children of her class tease her. Renu tries to help and explains her classmates that skin color is an inherited character, so they should stop teasing Swati. Name the type of inheritance involved in skin coloration of humans.
- Alok was rejected for driving license as it was found that he could not distinguish between red and green color. What would be the impact of his color blindness on his driving on road?
- A couple fights frequently for the paternity of their child. The husband thinks that he is not the father of this child. Name the technique you will suggest to solve the problem of paternity.
- You must have read in the news paper that some children suffering from Thalesemia became HIV positive due to negligence of a hospital. What negligence has been made on part of hospital authorities in your opinion?
- Rohit meets an accident. Iqbal his schoolmate takes him to hospital where Rohit (AB blood group) needs blood transfusion. Iqbal also has AB blood group and is willing to donate his blood but Rohit's mother object by saying "Iqbal belongs to different community so has different type of blood." In your opinion Rohit's mother is wrong or right? Give your opinion by explaining the allelic composition of blood group AB.
- Mohit had severe pain in his last molar tooth. Doctor advised the tooth to be removed. Mohit's sister objected saying that this was 'wisdom tooth' and is responsible for his IQ. Mohit followed doctor's advice and got his tooth extracted. Do you think Mohit will fail in his final examinations? Justify your answer by naming the type of structures the 'wisdom tooth' is?
- Kavita's parents suffer from high blood pressure and are obsess. Kavita is also worried about her health. Do you think kavita can inherit these characteristic from parent. Suggest two measures kavita can adopt to avoid high blood pressure and obesity.
- Roshan a 5yr child in neighborhood is suffering from Down's syndrome. Other children in your locality do not interact with him.
  - Is it right not to interact with Roshan

- What is the cause of Down's Syndrome
  - Write any two Symptoms.
- The day next to heavy rains, many insects/moths can be seen near light sources. Some people believe that these insects develop from mud. Do you agree with this belief? What is theory of origin of life known as? How will you explain the development of these insects from mud?
  - According to the human Genome Project, almost 99.9% nucleotide bases are exactly the same in all people.
    - Do you think the discrimination of people on the basis of color, creed, caste, religion is correct? Why?
    - What percentage of the human genome codes for proteins?
    - Which chromosome has most genes on it?

## **UNIT VIII- Biology in Human Welfare**

- After a rainy day Rahul found many dragon flies flying over stagnant water. He thinks these flies come to drink water. Is Rahul's explanation correct? Give your views.
- Nowadays capsules of Spirulina are used as food supplements. Do you recommend the use of these capsules? Why?
- Sunita finds that after few periods of teaching classroom is littered with many small pieces of papers. Next day she delivered a speech in assembly-"if a paper is torn a branch of tree is being destroyed." Do you agree with Sunita? Give reasons.
- Anita believes that breastfeeding her new born child would spoil her figure and also make her weak. Do you think Anita is right? If not, how would you convince her?

- Delhi govt. has recently decided to ban the sale of Gutka (this fetches them a lot of monetary gain) in the state. Do you support the decision and Why?
  
- You go to a super market to buy rice. Two types of products are available- one is organically grown and second is conventionally grown. The organically grown crops are costlier so your mother does not want to purchase it. Convince your mother by telling her the advantages of organic foods.
  
- Municipal Corporation has deputed personnel to check for mosquito breeding in your school.
  - a) Which are the places they should check for mosquitoes and there larvae?
  - b) Name to diseases which are spread by mosquitoes.
  - c) Name any two biological agents which can be used to control mosquitoes
  
- Prabha has seen huge garbage dumps outside your school which are not being regularly disposed of by MCD. Prabha discusses the problems with school mates and decide to organize rally to spread awareness among local people about public hygiene.
  - Prepare two slogans for rally
  - Name any two infectious diseases which may spread due to such unhygienic conditions at public place
  
- Anand a 14yr old boy thinks smoking makes him more energetic and feel like adult and thus more responsible citizen. He tries to smoke when he is with his peer group. As a friend you have to educate him
  - Why he feels more energetic while smoking?
  - Effects of CO in smoke
  - Other ill effects on body
  
- Ram is managing a dairy firm. He has been advised to use artificial insemination to overcome several problems in developing better breeds of cow. Govind has advised him MOET for herd improvement. Ram is ignorant and is not able to decide. How will you help Ram regarding

- Which technique should he adopt
- Procedure of new technique
- What is advantage of this technique

## **UNIT IX - BIOTECHNOLOGY**

- A newspaper has reported that an American company has patented turmeric. Indian government is fighting against this patent. What will you call this act of American company?
- Sangeeta has developed a transgenic crop. She wants to grow this crop directly into the field. Will you allow her to do so? What will you suggest her?
- Arvind's mother has developed Diabetes. Doctor suggests her to take Insulin injections. But his mother declines as she presumes injections are prepared by slaughtering of animals. How will you solve his mother's problem with your knowledge of biotechnology?
- Inspector Dubey could find only few hair strands from crime scene. He wants to proceed for DNA fingerprinting but the amount of DNA is very less. In your opinion what could be the solution to this problem? Write the basic steps of this technique?
- Sunil's uncle is very worried as his crop is destroyed by insects. He suggests his uncle to use Bt crops. His uncle says that such crops produce toxins which can harm the consumers of this crop. Whom do you support and why?

## **UNIT X- ECOLOGY**

- The city government is planning to bring metro rail to your area. But this will require around 10,000 trees to be cut. Do you think govt. should go ahead with the project? Justify your answer?

- You find that a lake in your neighboring area has been covered by Water hyacinth. You have contacted your friends to remove this weed. Nobody agrees to support you .How will you explain the necessity of this?
- Now a days we see that people use CD's and DVD's for storing information, movies and songs. Do you think these things create pollution?
- Government of India has launched clean Ganga programme by the name Ganga Action Plan. Do you want to be a part of it? How?
- You have read the newspaper reports that lots of cows die because of polythene bags getting entangled in their intestine. You go to market and see vegetable vender selling vegetables in plastic bags. What will be your suggestion to - (i) buyer and (ii) seller?
- One of your friends Rakesh has gone to jungle safari with his family. On returning from that safari he is sharing experiences with you and tells that his father who is a businessman hunted a deer with his gun. What will you tell your friend after knowing about their expedition?
- Pankhuri watched a TV program based on life in polar region. She observed that all the animals in polar region possess larger size and smaller animals are not found in that region. She asked about this surprising fact to her friends. Being her friend, how can you satisfy her curiosity?
- Ajay a notorious boy often involved in destruction of surrounding plants and killing small animals. You are given a responsibility to make him understand about importance of each and every organism present in world. How can you explain him about it and which hypothesis you will use for it?
- A well known personality killed a black buck during hunting in sacred groves of Aravali Hills in Rajasthan. Local people caught him and lodged a case in court against him. He argued that court that killing a human being is a crime but killing a animal is not crime.

- Do you favor his argument? Why?
- What is the role of sacred groves? Mention any two names of such places other than Aravali Hills.
- Anil and Sunil are partners and established a factory. After a few months electrostatic precipitator became out of order. Sunil wanted to replace it but Anil expressed the view that they have no effect of it on productivity as well as income; therefore they should not waste money to replace it.

(a) Out of these partners whom do you support and why?

(b) Suggest any two measures to stop such negligence.

- A team of research workers observed that the population of fish eating birds is declining every year after the establishment of a pesticide factory nearby five years ago.

(a) What may be the possible reason in your opinion? Explain?

(b) Can you suggest alternative to pesticide so that factory may be stopped.

- A few months ago the people of Ramgarh started a bad practice of disposing their waste in the pond of village which was earlier source of drinking water. It resulted in deterioration of quality of water and fish mortality.

(a) What changes do you think have taken place in pond? Name such condition.

(b) What measure will you take to stop villagers for such practices as well as to improve the condition?

## UNIT-6 Reproduction

### Answers & Values

- In banana the vegetative propagation is with the help of rhizome

#### **Values**

- *Awareness*
- *Observation*

2. No, I do not approve such practice as girls are equally important in the society. Otherwise the sex ratio will decrease.

#### **Values**

- *Sensitivity to words others*
- *Awareness*

3. Menstrual cycle is a normal process in the body of female which helps in reproduction.

#### **Values**

- *Self awareness about body.*
- *Compassion for others.*

4. a) Always use condom during coitus  
b) in case of doubt of any disease consult doctor

**Values**

- *Services to society*
- *Compassion*
- *Awareness of STD*

5. No

Sex determination and MTP is not legal

**Values**

- *Should be ethical*
- *Awareness*

6. No the flowers which do not open can have self pollination and produce seed. They can be propagated through seed.

**Values**

- *Concern about plants*
- *Observation*
- *Critical thinking*

7. No. Female produces all eggs with X chromosomes while male is heterogametic and produce two types of gametes X and Y. It is the fusion of his gamete (X or Y) with egg of X type which determine the sex of baby

## Values

- *Understanding.*
- *Respect for female.*

8. The chemical sprayed by farmer is growth hormone which will induce parthenocarpy. This is not causing any harm to fruit or to the health of consumer. Pesticides are harmful to human health.

## Values

- Sensitivity and awareness about use of chemicals.
- observation

9. a) Rahul is right . As it helps infertile couples. It is helpful in following cases

I) Inability of male partner to inseminate.

II) Very low sperm count.

## Values

- *Courage*
- *Believing that "other" can make a world of difference*
- *Compassion for others*

## **Unit-7 Genetics and Evolution**

### **Answers & Values**

- Quantitative /Polygenic inheritance

#### **Values**

- *Sensitivity towards fellow beings.*
  - *Compassion.*
  - *Understanding*
- 
- He will not be able to distinguish between red and green signal on road. This may lead to an accident

#### **Values**

- *Responsibility*

- *Awareness*

- DNA Fingerprinting

**Values**

- *Compassion.*

- *Empathy.*

- During transfusion of blood to thalassaemic patient.

- Blood might have been contaminated.

- Sterile needles/ injection were not used

**Values**

- *Critical thinking*

- *Awareness about health*

- *Empathy.*

- Wrong.

Blood Group AB has two alleles A and B in the people of all communities

**Values**

- *Sensitivity towards fellow beings.*

- *Compassion for others*

- *Responsibility.*

- No. "Wisdom tooth" Has nothing to do with IQ or performance of any person. It is vestigial organ which can be remove

### **Values**

- *Awareness.*
- 1) No, these are life style related diseases
  - 2) Any two measures- changing in food habits, exercises, leading active life, meditation.

### **Values**

- *Awareness about health.*
- *Understanding.*
- 1) No.
  - 2) Genetic disorder due to trisomy.
  - 3) Any two symptoms.

### **Values**

- *Empathy.*
- *Concern.*
- No  
Spontaneous generation theory

### **Values**

- *Awareness about environment.*
- *Understanding.*

## **Unit-8 Biology in Human Welfare**

### **Answers & Values**

- No, dragon flies eat mosquito larva and act as bio control agents.

#### **Values**

- *Awareness about environment*
- *Critical thinking.*

- Yes

Any one reason –these are rich in proteins and can be produced in large quantities in less time.

#### **Values**

- *Awareness.*
- *Problem solving.*

- Yes, wood is used in manufacturing of paper.

#### **Values**

- *Sense of responsibility.*
- *Awareness.*

- No, Her figure will not be spoilt

By telling the advantages of breast feeding.

**Values**

- *Self awareness.*
- *Sense of responsibility.*

- Yes Gutka increases the changes of cancer

**Values**

- *Awareness of Govt. Policies.*
- *Consciousness to words health*

- Advantages of organic farming like – biofertilisers and bio pesticides are used in organic farming which is not harmful to health.

**Values**

- *Sensitivity and awareness about use of harmful chemicals*
- *Decision making.*

- A) water tanks , flowerpots, stagnant water

- Dengue, Malaria
- Gambusia, dragonfly

**Values**

- *Observation*
- *Sensitivity towards health.*

- 1) Any slogans.
- 2) Diseases like typhoid and amoebiasis.

### **Values**

- *Responsibility.*
  - *Sensitivity towards public. Hygiene*
  - *Problem solving.*
- i) He feels energetic because nicotine raises blood pressure and increases heart beat. This is not good for his health.
  - ii) CO binds to hemoglobin and reduces concentration of oxygen
  - iii) Any one effect cancer of lung, throat, emphysema.

### **Values**

- *Awareness about health*
  - *Consciousness.*
  - *Critical thinking.*
- I) MOET as success rate of this technique is more
  - II) Cow is administered hormones, with FSH like activity, to induce follicular maturation and super ovulation-(6-8 eggs). The animal is mated. Fertilized eggs are recovered and transferred to surrogate mother.
  - III) Herd size is increased in short time.

Genetic mother is available for another round of super ovulation.

## Values

- *Critical thinking*
- *Problem solving.*

## Unit –IX Biotechnology

### Answers & Values

- Biopiracy.

#### **Values**

- *Awareness*
- *Justice for country.*

- Insulin can also be synthesized in laboratory with r DNA

#### **Values**

- *Empathy.*
- *Awareness*
- *Concern.*

- No, as GMO may pose some threat to environment or living organism

I will ask her to approach GEAC.

#### **Values**

- *Sense of responsibility.*
- *Understanding.*

• He can amplify DNA with the help of PCR technique Basic steps of PCR ----

• Denaturation

• Annealing

III) Extension

### **Values**

- *Critical thinking*
- *Awareness.*

• I support him.

Bt crops produce protoxin which changes into active form only in the intestine of insects in alkaline pH. It is completely safe for other animals and human beings

### **Values**

- *Empathy.*
- *Awareness.*



# Unit-X Ecology

## Answers & Values

- Yes. But the track of metro should be so changed that minimum no of trees are cut. Track can be made underground and more trees can be planted after the project is over.

### **Values**

- *Sensitivity towards environment*
  - *Decision making.*
- 
- Friends should be explained the process of natural ageing of a lake by mineral enrichment of water. (eutrophication) which is harmful to aquatic life .

### **Values**

- *Problem solving*
  - *Critical thinking.*
  - *Responsibility*
- 
- Yes. Because all this material contain heavy metals and toxics substances and known as e-wastes.

### **Values**

- *Concern about environment.*
- *Awareness.*

- Yes I will start awareness programmes like Nukkad Nataks, rallies and slogans making to keep the river clean.

#### **Values**

- *Innovation*
  - *Service to society*
- I) Use cloth or jute bag to save environment and thus life of cow
  - II) Use paper bags, polythene are non biodegradable and toxic.

#### **Values**

- *Sensitivity to words environment*
  - *Concern.*
- It is unethical and leads to loss of biodiversity and result in imbalance in Eco system.

#### **Values**

- *Concern about animal.*
  - *Empathy.*
- Because smaller animals have larger surface area relative their volume so they lose body heat very fast when it is cold outside. They have to expense lot of energy to generate body heat.

#### **Vales**

- *Critical thinking*
- *Awareness.*

- Explanation through “Rivet popper hypothesis.

**Values**

- *Social responsibility*
- *Concerns about eco system.*

- A) No because each living organism has its own role in balanced eco system.  
b) Sacred groves are culturally protected area where large no of rare and Threatened wild life is given total protection.

[Any other two sacred groves]

**Values**

- *Awareness*
  - *Responsibility.*
- A) I will support Sunil because his approach is eco friendly.  
B) By imposing fine and punishment  
Cancellation of registration of such industries

**Values**

- *Decision making*
  - *Concern about environment*
- A) Pesticide entering in food chain and resulting in biomagnifications
  - Bio controlling agent to remove pest

**Values**

- *Problem solving*
- *Critical thinking.*

- A) Eutrophication – Brief explanation.

B) Any two means of spreading awareness of disposal of waste and keeping the pond clean.

**Values**

- *Service to society*
- *Concern about environment.*