

CBT OCTOBER 2023
CLASS XII BIOLOGY
Answer key with explanation

GENERAL INSTRUCTION :

TOTAL NO OF QUESTIONS 10

ALL QUESTIONS ARE COMPULSORY

05 QUESTIONS IN SECTION B FROM CHAPTER 8 : HUMAN,HEALTH AND DISEASES

05 QUESTIONS IN SECTION C FROM CHAPTER 9 : MICROBES IN HUMAN HEALTH

CHAPTER 8 : HUMAN,HEALTH AND DISEASES

Answer Q.No.1 to Q.No.5 on the basis of the given case :The best defense mechanism in our bodies is the immune system. It works to protect us from harmful bacteria and maintains us healthy. Cells, tissues, and organs that make up the immune system collaborate to defend our body. This system employs several strategies to protect the human body from intruding microorganisms. They operate using memory, some of which are innate and others of which are learned. They, therefore, play a role in autoimmunity, allergies, and organ transplantation or in diseases such as cancer. White blood cells (or leukocytes), which are essential in eradicating disease-causing organisms or chemicals, are the most crucial immune system cells.

In addition to leukocytes, the immune system also includes antibodies as well as lymphoid organs, tissues, and proteinaceous molecules.

Q1.Read the given statements carefully.

- i) Innate immunity is a specific type of defense, that is present at the time of birth.
- ii) IgE is the antibody produced in the host due to an exaggerated response of the immune system.
- iii) Administration of pre-formed antibodies in case of snake bite is an example of active immunity.
- iv) Active immunity is slow and takes time to give its full effective response.
- v) Saliva in the mouth acts as physiological barrier for pathogens.

Which of the above statements are correct?

- a) (ii), (iv) and (v)
- b) (i) and (ii)
- c) (i) and (v)
- d) (ii) , (iii) and (v)

ANS a) (ii), (iv) and (v)

FEEDBACK : Innate immunity is a non- specific type of defence that is present at the time of birth.

Administration of pre-formed antibodies in case of snake bite is an example of passive immunity

Q2. Which one of the following immune system components does not correctly match with its respective role?

- a) Interferons - secreted by virus – infected cells and protect non – infected cells from further viral infection.
- b) B – lymphocytes – produce antibodies in response to pathogens into blood to fight with them.
- b) Bone marrow and spleen are primary lymphoid organs.
- c) IgA – present in colostrum in early days of lactation to protect infant from diseases.

ANS c) Bone marrow and spleen are primary lymphoid organs.

FEEDBACK : Bone marrow and thymus are primary lymphoid organ whereas spleen is a secondary lymphoid organ.

Q3. An intestinal parasite which causes blockage of the intestinal passage and whose eggs are excreted along with the faeces of infected person is_____

- a) *Wuchereria bancrofti*
- b) *Ascaris*
- c) *Epidermophyton*
- d) *Microsporum*

ANS. b) Ascaris

FEEDBACK : *Ascaris* is an endoparasite of the small intestine. A large number of adult *Ascaris* worms normally obstruct the intestinal passage and thereby cause abdominal discomfort and colic pain. Other symptoms include impaired digestion, diarrhoea and vomiting. *Ascaris*'s eggs are excreted along with the faeces of infected person.

Q4. The pathogen *Microsporum* responsible for ringworm disease in humans belongs to the same kingdom as that of :

- a) *Taenia*, a tapeworm
- b) *Ascaris*, a round worm
- c) *Rhizopus*, a mould
- d) *Wuchereria*, a filarial worm

ANS c) Rhizopus, a mould

Feedback for correct answers : *Microsporum* and *Rhizopus* belong to kingdom fungi

Feedback for incorrect answers : *Taenia*, *Ascaris* & *Wuchereria* belong to kingdom animalia

Q5. Read the following statements carefully.

- i) Cancer causing viruses have genes called viral oncogenes.
- ii) Malignant tumors remain confined to their original location.
- iii) Cancer cells do not exhibit contact inhibition.
- iv) X – rays and UV rays are not potent carcinogens
- v) Cancer detection is based on biopsy.

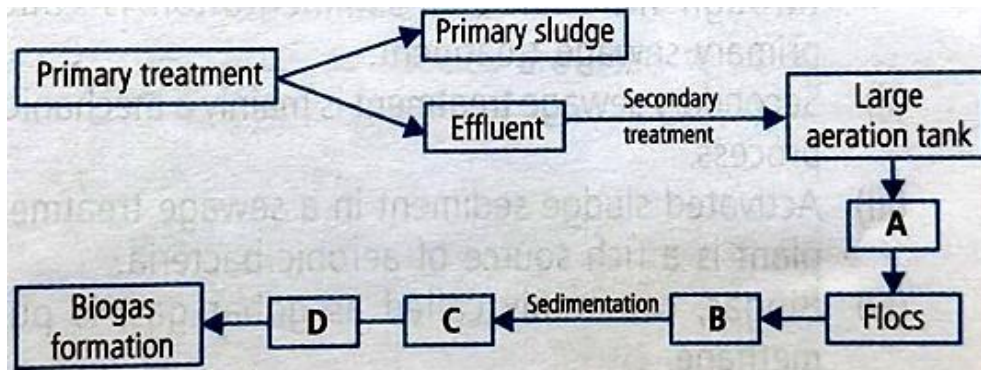
Which of the above statements are not correct regarding cancer?

- a) (iii) and (v)
- b) (ii) and (iv)
- c) (i), (iii) and (v)
- d) (ii), (iv) and (v)

ANS b) (ii) and (iv)

FEEDBACK : Benign tumours remain confined to their original location.
X – rays and UV – rays are carcinogenic

Q6. Given below is the flow chart of sewage treatment. Identify A, B, C and D and select the correct option.



- (a) A – Mechanical agitation, B – increased BOD, C – Activated sludge, D – Aerobic sludge digesters
- (b) A – Mechanical agitation, B – Reduced BOD, C – Activated sludge, D – Anaerobic sludge digesters
- (c) A – Microbial digestion, B – Activated sludge, C – Reduced BOD, D Anaerobic sludge digesters
- (d) A – Microbial digestion, B – Mechanical agitation, C – Reduced BOD, D – Aerobic sludge digesters.

ANS (b) A – Mechanical agitation, B – Reduced BOD, C – Activated sludge, D – Anaerobic sludge digesters

FEEDBACK : Other options show wrong labeling.

Q7. Match column – I with column – II and select the correct option from the codes given below.

A.	Statins	(i)	Biogas
B.	Dung	(ii)	<i>Saccharomyces cerevisiae</i>
C.	Ethanol production	(iii)	<i>Monascus purpureus</i>
D.	Cyclosporin A	(iv)	<i>Trichoderma polysporum</i>

- a) A – (iii), B – (i), C – (iv), D – (ii)
- b) A – (i), B – (iii), C – (iv), D – (ii)
- c) A – (iii), B – (ii), C – (iv), D – (i)
- b) A – (iii), B – (i), C – (ii), D – (iv)

ANS d) A – (iii), B – (i), C – (ii), D – (iv)

FEEDBACK : (d) A – (iii), B – (i), C – (ii), D – (iv)

**Answer Q.No.8 to Q.No.10 on the basis of the given case and figure of a typical biogas plant :
India's Biogas Sector Poised For Growth :**

Government initiatives are propelling sector growth with the target of achieving a 15% contribution to the energy mix by 2030.

For decades, India has been harnessing the potential of biogas as a viable alternative to LPG and biomass burning, particularly in rural areas. However, the lack of technological advancements and high setup costs have impeded the widespread adoption of biogas. But now, things are changing as the Indian government focuses on increasing the natural gas contribution to the total energy mix to 15% by 2030, from the current 6.9%.

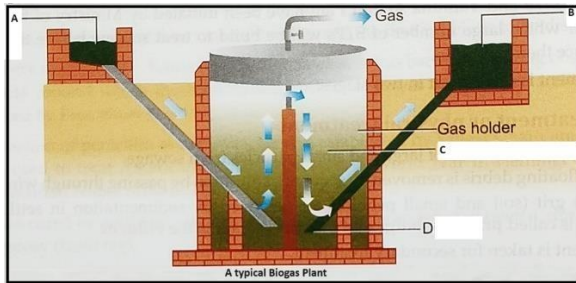
Recent data from the Sustainable Alternative Towards Affordable Transportation portal and the Ministry of New and Renewable Energy shows that 58 compressed biogas plants with a total capacity of 271 tonnes per day were commissioned in India as of March 31 2023.

- a) (i) and (ii)
- b) (ii) and (iii)
- c) (ii), and (iv)
- d) ii, (iii) and (iv)

ANS d) ii, (iii) and (iv)

FEEDBACK : option a,b,c show wrong combination of statements
Statement (i) Methanogens grow anaerobically on cellulosic material.

Q8. Read the following statements about biogas plant and biogas production and select the correct option from the codes given below.:



- i) Methanogens grow aerobically on cellulosic material.
- ii) Methanobacterium is a common methanogen
- iii) Biogas is a mixture of methane, Carbon dioxide, hydrogen & hydrogen sulphide.
- iv) Methanogens play an important role in the nutrition of cattle.

Which of the above statements are correct?

ANS b) A - Slurry, B - Sludge, C – Biogas and D – Digester

FEEDBACK : option a,b,c show wrong combination of statements

Statement (i) Methanogens grow anaerobically on cellulosic material

Q9. The Labelling A, B, C and D mentioned in the diagram of typical biogas plant are:

- a) A - Sludge, B - Slurry, C – Biogas and D – Digester
- b) A - Slurry, B - Sludge, C – Biogas and D – Digester
- c) A – Cow dung, B - Sludge, C – Digester and D – Biogas
- d) A - Sludge, B - Slurry, C – Digester and D - Biogas

ANS b)

FEEDBACK: A - Slurry, B - Sludge, C – Biogas and D – Digester FEEDBACK : .The other options bear incorrect labellings.

Q10. The technology of biogas production was developed in India mainly due to the efforts of - --- A --- and ----B-----Here A and B refers to :

- a) A – Rural Bank of India, B – Khadi and Village Industries Commission
- b) A – Indian Agricultural Research Institute, Khadi and Village Industries Commission
- c) A – Indian Council of Agricultural Research, B – Khadi and Village Industries Commission
- d) A – Indian Agricultural Research Institute, B – National Board of Agricultural Development

ANS b) A – Indian Agricultural Research Institute, Khadi and Village Industries Commission

FEEDBACK : The other options bear the names of some other institutes which are not involved in the development of Biogas plant.

