CUET 2026 May 29 Shift 2 Biology

Question Paper (Memory-Based) with Solutions

Conducted by National Testing Agency (NTA)

General Instructions

(i) The examination will be conducted in Computer-Based Test (CBT) mode.

(ii) Each question carries +5 marks for correct answer and -1 mark for wrong answer.

(iii) The total number of questions are 50.

(iv) Duration of the exam is 1 hour (60 minutes).

1. Acellular microorganism is:

(A) Bacteria

(B) Virus

(C) Protozoa

(D) None of the above

Correct Answer: (B) Virus

Solution:

Step 1: Understand the term acellular.

Acellular organisms are entities that do not possess a cellular structure.

They lack:

- Cell membrane
- Cytoplasm
- Cellular organelles

Step 2: Examine the given options.

- **Bacteria** are unicellular prokaryotic organisms. ×
- **Protozoa** are unicellular eukaryotic organisms. ×
- **Viruses** are acellular infectious particles consisting of nucleic acid enclosed within a protein coat. ✓

Step 3: Identify the correct answer.

Since viruses do not possess a cellular organization,

$$\boxed{\text{Virus}}$$

is the only acellular microorganism among the given options.

Therefore,

$$\boxed{\text{(B)}}$$

is the correct answer.

Quick Tip: Viruses are called:

$$\boxed{\text{Acellular infectious agents}}$$

They remain inert outside the host cell and replicate only inside living host cells.

Remember:

$$\text{Bacteria} \rightarrow \text{Cellular}$$

$$\text{Protozoa} \rightarrow \text{Cellular}$$

$$\text{Virus} \rightarrow \text{Acellular}$$

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2. Which one of the following is useful in rice fields?

(A) Rhizobium

(B) Clostridium

(C) Anabaena

(D) Ferrobacterium

Correct Answer: (C) Anabaena

Solution:

Step 1: Recall the biofertilizers used in rice cultivation.

Rice fields are waterlogged environments where certain nitrogen-fixing cyanobacteria grow abundantly.

These organisms enrich the soil by converting atmospheric nitrogen into usable forms.

Step 2: Examine the given options.

- **Rhizobium** forms symbiotic associations with leguminous plants, not rice. ×
- **Clostridium** is a free-living anaerobic bacterium but is not commonly used as a biofertilizer in rice fields. ×
- **Anabaena** is a nitrogen-fixing cyanobacterium widely used in paddy fields. ✓
- **Ferrobacterium** is not used as a biofertilizer in rice cultivation. ×

Step 3: Identify the correct answer.

Anabaena fixes atmospheric nitrogen and improves soil fertility in rice fields.

Therefore,

$$\boxed{\text{Anabaena}}$$

is the correct answer.

Hence,

$$\boxed{\text{(C)}}$$

Quick Tip: Important nitrogen-fixing organisms:

Rhizobium → Leguminous plants

Anabaena → Rice (paddy) fields

Anabaena + *Azolla* → Important biofertilizer for paddy cultivation

A common NCERT fact frequently asked in CUET and NEET examinations.

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3. Which one of the following is not a nitrogen-fixing organism?

(A) Pseudomonas

(B) Azotobacter

(C) Nostoc

(D) Anabaena

Correct Answer: (A) Pseudomonas

Solution:

Step 1: Recall the meaning of nitrogen fixation.

Nitrogen fixation is the process by which atmospheric nitrogen

$$(N_2)$$

is converted into biologically usable forms such as ammonia.

Certain bacteria and cyanobacteria possess this ability.

Step 2: Examine the given organisms.

- **Azotobacter** is a free-living nitrogen-fixing bacterium. ✓
- **Nostoc** is a nitrogen-fixing cyanobacterium. ✓
- **Anabaena** is a nitrogen-fixing cyanobacterium commonly found in paddy fields. ✓
- **Pseudomonas** is mainly known as a phosphate-solubilizing bacterium and is not a nitrogen-fixing organism. ×

Step 3: Identify the correct answer.

Among the given options,

Pseudomonas

does not fix atmospheric nitrogen.

Therefore,

(A)

is the correct answer.

Quick Tip: Important nitrogen-fixing microorganisms:

Rhizobium

Azotobacter

Nostoc

Anabaena

Remember:

Pseudomonas

is commonly associated with phosphate solubilization rather than nitrogen fixation.

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4. Name a food product prepared by the action of bacteria:

(A) Curd

(B) Ice-cream

(C) Sugarcane juice

(D) Cold-drinks

Correct Answer: (A) Curd

Solution:

Step 1: Recall the role of bacteria in food production.

Several food products are prepared through microbial fermentation.

One of the most common examples is curd, which is produced by the activity of lactic acid bacteria (LAB).

Step 2: Understand curd formation.

Lactic acid bacteria such as:

Lactobacillus

convert lactose present in milk into lactic acid.

The lactic acid coagulates milk proteins and converts milk into curd.

Step 3: Evaluate the options.

- **Curd** → Produced by bacterial fermentation ✓
- **Ice-cream** → Not prepared by bacterial action ×
- **Sugarcane juice** → Natural plant product ×
- **Cold-drinks** → Manufactured beverages, not produced by bacterial fermentation ×

Therefore,

Curd

is the food product prepared by the action of bacteria.

Hence, the correct answer is:

(A)

Quick Tip: Lactic Acid Bacteria (LAB):

Lactobacillus

converts:

Milk → Curd

LAB also improves the nutritional quality of curd by increasing the availability of Vitamin B_{12}.

A very important NCERT fact from *Microbes in Human Welfare*.

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5. Which role is played by lactic acid bacteria (LAB) in our stomach?

(A) Beneficial

(B) Harmful

(C) Neutral

(D) All of these

Correct Answer: (A) Beneficial

Solution:

Step 1: Recall the function of LAB.

Lactic Acid Bacteria (LAB), such as:

Lactobacillus

are beneficial microorganisms commonly present in curd and the human digestive tract.

Step 2: Understand their role in the gut.

LAB help in maintaining a healthy microbial balance in the intestine.

They:

- Suppress harmful microbes
- Improve digestion
- Enhance nutrient availability
- Promote overall gut health

Step 3: Evaluate the options.

- Beneficial → Correct ✓
- Harmful → Incorrect ×
- Neutral → Incorrect ×
- All of these → Incorrect ×

Therefore,

Beneficial

is the correct description of LAB in our digestive system.

Hence, the correct answer is:

(A)

Quick Tip: NCERT states that LAB:

Lactobacillus

present in curd:

- Improve nutritional quality of food
- Increase Vitamin B_{12} content
- Check disease-causing microbes in the stomach and intestine

Therefore,

LAB are beneficial bacteria

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6. Supply of oxygen to the biogas plant will have:

(A) Positive effect

(B) Negative effect

(C) No effect

(D) None of the above

Correct Answer: (B) Negative effect

Solution:

Step 1: Recall how biogas is produced.

Biogas is produced by anaerobic microorganisms called methanogens.

Examples include:

Methanobacterium

These microbes decompose organic matter in the absence of oxygen.

Step 2: Understand the requirement of methanogens.

Methanogens are:

Obligate anaerobes

which means they cannot survive and function properly in the presence of oxygen.

Step 3: Determine the effect of oxygen supply.

If oxygen enters a biogas plant:

- Activity of methanogens decreases
- Biogas production reduces
- Anaerobic digestion is disturbed

Thus, oxygen adversely affects the functioning of the biogas plant.

Therefore,

Supply of oxygen has a negative effect

Hence, the correct answer is:

(B)

Quick Tip: Biogas plants operate under:

Anaerobic conditions

Key microorganism:

Methanobacterium

Oxygen present ⇒ Biogas production decreases

No oxygen ⇒ Maximum methane production

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7. Methanogens do not produce:

(A) Oxygen

(B) Methane

(C) Hydrogen sulfide

(D) Carbon dioxide

Correct Answer: (A) Oxygen

Solution:

Step 1: Recall the nature of methanogens.

Methanogens are anaerobic microorganisms that belong to the group of archaebacteria.

They are commonly found in:

- Marshy areas
- Biogas plants
- Rumen of cattle

Step 2: Understand their metabolic products.

During anaerobic decomposition of organic matter, methanogens produce gases such as:

Methane (CH_4)

Carbon dioxide (CO_2)

and traces of gases including hydrogen sulfide may be present in biogas.

Step 3: Evaluate the options.

- Oxygen → Not produced by methanogens ✓
- Methane → Major product of methanogens ×
- Hydrogen sulfide → May occur in biogas mixtures ×
- Carbon dioxide → Produced during anaerobic digestion ×

Therefore,

Oxygen

is not produced by methanogens.

Hence, the correct answer is:

(A)

Quick Tip: Methanogens are:

$$\boxed{\text{Anaerobic archaebacteria}}$$

Major biogas components:

$$CH_4\ (50-70\%)$$

$$CO_2$$

They function in the absence of oxygen and therefore do not produce:

$$\boxed{O_2}$$

A common NCERT-based CUET and NEET question.

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8. BOD of waste water is estimated by measuring the amount of:

(A) Total organic matter

(B) Biodegradable organic matter

(C) Oxygen evolution

(D) Oxygen consumption

Correct Answer: (D) Oxygen consumption

Solution:

Step 1: Recall the meaning of BOD.

BOD stands for:

$$\boxed{\text{Biochemical Oxygen Demand}}$$

It is a measure of the amount of oxygen required by microorganisms to decompose organic matter present in water.

Step 2: Understand how BOD is measured.

When microorganisms degrade organic pollutants, they consume dissolved oxygen.

Therefore, BOD is determined by measuring:

$$\boxed{\text{The amount of oxygen consumed}}$$

during microbial decomposition.

Step 3: Interpret the significance of BOD.

$$\text{Higher BOD} \Rightarrow \text{More organic pollution}$$

$$\text{Lower BOD} \Rightarrow \text{Cleaner water}$$

Thus BOD directly reflects oxygen consumption by microbes.

Therefore,

$$\boxed{\text{Oxygen consumption}}$$

is the correct answer.

Hence,

$$\boxed{\text{(D)}}$$

Quick Tip: Remember:

$$\boxed{\text{BOD} = \text{Oxygen consumed by microbes}}$$

BOD is used as an indicator of water pollution.

$$\text{High BOD} \rightarrow \text{Highly polluted water}$$

$$\text{Low BOD} \rightarrow \text{Cleaner water}$$

This is one of the most frequently asked NCERT facts from *Microbes in Human Welfare*.

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9. Which of the following is a pair of biofertilizer?

(A) Azolla and BGA

(B) Nostoc and legume

(C) Rhizobium and grasses

(D) Salmonella and E. coli

Correct Answer: (A) Azolla and BGA

Solution:

Step 1: Recall the meaning of biofertilizers.

Biofertilizers are living microorganisms that enrich soil fertility by increasing the availability of nutrients, especially nitrogen and phosphorus.

Step 2: Examine the given options.

- **Azolla** is a water fern associated with the nitrogen-fixing cyanobacterium *Anabaena*. It is widely used as a biofertilizer in paddy fields. ✓
- **BGA (Blue-Green Algae)** such as *Nostoc* and *Anabaena* are important nitrogen-fixing biofertilizers. ✓
- **Legume** is a plant, not a biofertilizer. ×
- **Grasses** are not biofertilizers. ×
- **Salmonella** and **E. coli** are bacteria, but they are not used as biofertilizers. ×

Step 3: Identify the correct pair.

Among the given options, only

Azolla and BGA

are both used as biofertilizers.

Therefore,

(A) Azolla and BGA

is the correct answer.

Quick Tip: Important biofertilizers from NCERT:

Rhizobium

Azotobacter

Anabaena

Nostoc

Azolla-Anabaena

For paddy fields, remember:

Azolla + BGA

as a highly important biofertilizer combination.

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10. Which of the following acts as a biofertilizer?

(A) Blue-green algae

(B) Green algae

(C) Yellow algae

(D) Red algae

Correct Answer: (A) Blue-green algae

Solution:

Step 1: Recall the concept of biofertilizers.

Biofertilizers are microorganisms that improve soil fertility by increasing the availability of nutrients, especially nitrogen.

Step 2: Identify the algae used as biofertilizers.

Blue-green algae (cyanobacteria) such as:

Anabaena

Nostoc

possess nitrogen-fixing ability and are widely used in paddy fields.

Step 3: Evaluate the given options.

- **Blue-green algae** → Important biofertilizers due to nitrogen fixation ✓
- **Green algae** → Not commonly used as biofertilizers ×
- **Yellow algae** → Not used as biofertilizers ×
- **Red algae** → Not used as biofertilizers ×

Therefore,

$$\boxed{\text{Blue-green algae}}$$

act as biofertilizers.

Hence, the correct answer is:

$$\boxed{\text{(A)}}$$

Quick Tip: Important blue-green algae used as biofertilizers:

Anabaena

Nostoc

They fix atmospheric nitrogen and enrich soil fertility.

Remember:

$$\boxed{\text{Blue-green algae (Cyanobacteria)} = \text{Biofertilizers}}$$

This is a very common NCERT-based CUET and NEET question.