Assignment 4

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-02-27, 23:59 IST

1) State whether this statement is true or false:

In microbial ecology, population is described as group of microbes of different species living in harmony with each other.

- True
- False

No, the answer is incorrect.
Score: 0
Accepted Answers: False

2) Using Simpson’s reciprocal index state which sample is more diverse?

<table>
<thead>
<tr>
<th>Species</th>
<th>Sample 1 (S1)</th>
<th>Sample 2 (S2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zooglea</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Nitrosononas</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Crenarchaeota</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>E.coli</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>15</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

- S2>S1
- S1>S2
- S1=S2<5
- S1=S2=5

No, the answer is incorrect.
Score: 0
Accepted Answers: S2>S1

3) Which statement(s) are correct for “guilds”:

- It is a function of the species present, their population sizes, and the physiological state of the microorganisms in each habitat.
- These are metabolically similar populations of microbes which exploit the same resources in a similar fashion.
- They are a part of microbial community indulged in performing similar functions although being metabolically different.
4) The correct statements describing extracellular polymeric substances (EPS) is/are:

- It is a constitution of polysaccharides, proteins, and nucleic acids that bind the cells together. 
- It is the fluid which is responsible for binding all the cell organelles together within the cell.
- It can also aid in bio-remediation of heavy metals by structurally serving as a platform for growth of metal reducing microbial communities.
- It determines the physiochemical properties of bio-film by establishing structural and functional integrity.

No, the answer is incorrect.
Score: 0
Accepted Answers:
- It is a constitution of polysaccharides, proteins, and nucleic acids that bind the cells together.
- It can also aid in bio-remediation of heavy metals by structurally serving as a platform for growth of metal reducing microbial communities.
- It determines the physiochemical properties of bio-film by establishing structural and functional integrity.

5) Increased BOD value signifies that:

- High biodegradable organic contaminants were there.
- Greater microbial growth and/or mass can be supported.
- The source water contains some hazardous and carcinogenic substances.
- The source is certainly point discharged by some industrial (or chemical) effluent.

No, the answer is incorrect.
Score: 0
Accepted Answers:
- High biodegradable organic contaminants were there.
- Greater microbial growth and/or mass can be supported.

6) Match the following:

<table>
<thead>
<tr>
<th>1. Atmospheric water</th>
<th>A. Cryptosporidium</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Surface water</td>
<td>B. Seasonal flu virus</td>
</tr>
<tr>
<td>3. Groundwater</td>
<td>C. Less chances of bacteriological contamination</td>
</tr>
</tbody>
</table>

- 1-C, 2-A, 3-B
- 1-B, 2-A, 3-C
- 1-A, 2-C, 3-B
- 1-A, 2-B, 3-C

No, the answer is incorrect.
Score: 0
Accepted Answers:
- 1-B, 2-A, 3-C

7) State which of the given statements is/are true:

i) Those organisms which can grow easily in high hydrostatic pressure are piezotolerant.
ii) Sand mining can destroy the habitat of aquatic animals and microbes.

- Both (i) and (ii)
- Only (i)
- Only (ii)
8) True or false:

Flu influenza virus is seasonally diametric in nature as it can grow in cold and moist as well as in hot and dry climatic conditions.

- True
- False

No, the answer is incorrect.
Score: 0
Accepted Answers: False

9) Match the following based on microbes taking part in various processes concerning sulfur cycle:

| 1. Purple and green phototrophs | A. Aerobic Sulfur oxidation |
| 2. Desulfovibrio            | B. Anaerobic Sulfur reduction |
| 3. Desulfitromonas          | C. Sulfur disproportionation |
| 4. Beggiatoa               | D. Anaerobic sulfur oxidation |

- 1-C, 2-D, 3-A, 4-B
- 1-A, 2-B, 3-C, 4-D
- 1-B, 2-C, 3-D, 4-A
- 1-D, 2-C, 3-B, 4-A

No, the answer is incorrect.
Score: 0
Accepted Answers: 1-D, 2-C, 3-B, 4-A

10) Which of the statements are correct regarding biogeochemical cycle of Mercury:

- Some mercury resistant bacteria employ the enzyme organomercury lyase to degrade highly toxic methyl mercury to mercuric ion and methane and thus make the compound less toxic.

- MerR is a regulatory protein that tries to arrange mer genes in an operon and can function both as repressor (in presence of Hg²⁺) and as activator (in absence of Hg²⁺) of these genes.

- The five transformations of mercury during the cycle are: elemental mercury, ionic mercury, methyl mercury, mercury sulphide and dimethyl mercury.

- Methyl mercury is a non-soluble potent neuro-toxin.

No, the answer is incorrect.
Score: 0
Accepted Answers:

- Some mercury resistant bacteria employ the enzyme organomercury lyase to degrade highly toxic methyl mercury to mercuric ion and methane and thus make the compound less toxic.

- The five transformations of mercury during the cycle are: elemental mercury, ionic mercury, methyl mercury, mercury sulphide and dimethyl mercury.