Assignment 11

The due date for submitting this assignment has passed. Due on 2019-04-17, 23:59 IST.

As per our records you have not submitted this assignment.

1) Which of them are not matched correctly? 1 point

- Sporadic disease → disease occurring or arising randomly with no known cause.
- Endemic → disease regularly found among particular people or in a certain area.
- Epidemic → a sudden increase in occurrences of a disease in a particular time and place.
- Outbreak → a large number of people suffering from the same disease at the same time.

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**
- Epidemic → a sudden increase in occurrences of a disease in a particular time and place.
- Outbreak → a large number of people suffering from the same disease at the same time.

2) The value ‘Ro’ used in the lecture (‘Ro’ i.e. how many people you can infect if you are a sick person) depends on which of these factors: 1 point

- Population density
- Infectious dose
- Fate of pathogens in environment
- All of the above.

**No, the answer is incorrect.**

**Score:** 0

**Accepted Answers:**
- All of the above.

3) What practices we shouldn't have for reducing the spread of cholera infection: 1 point

- Robust and high integrity water distribution system.
- Open drains
- Water shortage
- Proper wastewater collection and treatment system
- Open defecation
- Hygiene

**No, the answer is incorrect.**

**Score:** 0
5) What is/ are correct definition/s of biosensor?  
- It is a self-contained integrated device that is capable of providing specific quantitative or semi-quantitative analytical information using a biological recognition element which is in direct spatial contact with a transduction element.
- A device that uses specific biochemical reactions to detect target.
- A sensor that integrates a biological element with a physiochemical transducer to produce an electronic signal proportional to a single analyte which is then conveyed to a detector.
- All the statements are correct.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
- All the statements are correct.

6) What are the requirements of a BIORECEPTOR:  
1) Selection of a suitable bio-receptor molecule like any enzyme, antibody or microorganism, and a suitable transducer like a thermistor, photon counter or semiconductor pH electrode.  
2) Selection of a suitable immobilization method.

- Only 1
- Only 2
- Both are correct
- Both are incorrect.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
- Both are correct

7) Match the following:  

<table>
<thead>
<tr>
<th>1. Calorimetric Biosensor</th>
<th>a. The change in frequency of oscillations is proportional to the mass of absorbed material.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Electrochemical Biosensor</td>
<td>b. Change in distribution of charge is detected using ion-selective electrodes.</td>
</tr>
<tr>
<td>4. Piezo-electric Biosensor</td>
<td>d. Two thermistors may be used to measure the difference in resistance between reactant and product and, hence, the analyte concentration.</td>
</tr>
<tr>
<td>5. Optical Biosensor</td>
<td>e. Movement of e– in redox reactions detected when a potential is applied between two electrodes.</td>
</tr>
</tbody>
</table>

- 1) 2-e, 3-b, 4-a, 5-c
- 1-e, 2-a, 3-c, 4-b, 5-d
- 1-a, 2-b, 3-d, 4-a, 5-c
8) Biosensors cannot be used in which of these sectors:

1. Crime detection
2. Photogrammetry
3. Medical diagnosis
4. Detection of warfare agents
5. Robotics
6. Environmental monitoring

- 1, 3
- 2, 5
- 4, 6
- 3, 4

No, the answer is incorrect.
Score: 0
Accepted Answers:
2, 5

9) Say true or false:

There are some biosensors which can be worn for long periods of time and are helpful in monitoring heart rate, oxygen saturation, temperatures and respiration rate of the body for the medical diagnosis.

- TRUE
- FALSE

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

10) Which statements are correct for the Biosensors on the Nanoscale?

- Molecular sheaths around the nanotube are developed that respond to a particular chemical and modulate the nanotube's optical properties.
- A layer of olfactory proteins on a nanoelectrode react with low-concentration odorants (SPOT-NOSED Project). Doctors can use to diagnose diseases at earlier stages.
- Nano-sphere lithography (NSL) derived triangular Ag nanoparticles are used to detect streptavidin down to one pico-molar concentrations.
- All of the above.

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