Please also give marks out of 20.

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Subject: General Science and Ability.

⇒ Q.NO. 1(a): What is Radioactivity? Differentiate between natural and artificial radioactivity?

1. ⇒ **Radioactivity:-**

It is a phenomenon in which radiation is emitted by the disintegration of atomic nuclei of radioactive elements. This process of radioactive decay is spontaneous and occurs because the atomic nucleus wants to attain a stable configuration.

2. ⇒ **Example of Radioactivity:-**

A number of radioactive elements are found in nature the most famous of which are Uranium (U), Radium (Ra), Polonium (Po), etc. Different types of radioactive decay processes occur in nature, alpha decay, beta decay, gamma decay, in which helium ion, an electron, and a proton are released respectively.

Natural Radioactivity

1. **Definition:-**
The Process occurs naturally, without any human intervention.

2. **Nature of Process:-**
It is spontaneous.

3. **Nature of the Starting Substance:-**
The starting substance or material is unstable.

4. **Is the Process Controllable?**
The Process is usually not controllable.

5. **Where does it take place:-**
It occurs in nature, anywhere a radioactive substance is present.

Artificial Radioactivity:-

1. **Definition:-**
The Process is induced by human beings.

2. **Nature of Process:-**
It is not spontaneous and has to be induced and initiated.

3. **Nature of the Starting Substance:-**
The starting substance or material is stable.

4. **Is the Process controllable?**
As the process is man-made, it is controllable.

5. **Where does it Take Place:-**
It is carried out in a lab.

Natural Radioactivity:-	Artificial Radioactivity:-
6. Example:- Natural radioactive decay of Uranium.	6. Example:- Artificial Uranium disintegration in nuclear fission reactors to Produce energy.

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→ Q. No. 1 (b):- What is the difference between vaccines and antibiotics? How do antibiotics and vaccines contribute to health?

Vaccines	Antibiotics
→ 1. Definition:- Dead or inactivated organisms or compounds are used to provide immunity to a particular infection.	→ 1. Definition:- Small molecular compounds that are effective in treating animals and humans against certain diseases.
→ 2. Source:- They are Produced by live or inactivated microbes, toxins, and antigens.	→ 2. Source:- Antibiotics are Prepared naturally or Synthetically by different drugs.

Vaccines	Antibiotics
⇒ 3. Functions:- They are used to build immunity and Prevent viral infections.	⇒ 3. Functions:- However, antibiotics are used to treat bacterial and parasitic infections.
⇒ 4. Adverse Effects:- Sometimes cause allergic reactions and swelling.	⇒ 4. Adverse Effects:- They can cause gastric discomfort and allergic reaction.
⇒ 5. Examples:- Polio vaccine measles, Mumps and Rubella (MMR) vaccine.	⇒ 5. Examples:- Penicillin cephalosporin's.

⇒ Contribution of Vaccines and antibiotics towards health:-

Vaccines and antibiotics have significantly contributed to improving health and also increasing the longevity of human beings as vaccines strengthen your immune system so infections can't get started and antibiotics help fight an infection that is already making you sick.

→ **Q.No. 1(c):-** Why an indiscriminate/ casual use of Antibiotics may prove dangerous?

1⇒ **Antibiotics:-** An antibiotic is a type of antimicrobial substance that is used to treat bacterial and other microbial infections.

2⇒ **Examples of Antibiotics.**

a. Penicillin
b. cephalosporin
c. Tetracycline
d. Aminoglycosides

3⇒ **Dangers associated with the casual use of Antibiotics:-**

Since antibiotics work on the basis of a particular mechanism on specific receptors, they are safe to use until taken according to a prescribed dose for a particular number of days. However, taking antibiotics repeatedly may lead to adverse effects on the body.

1 Resistance to Infection:-

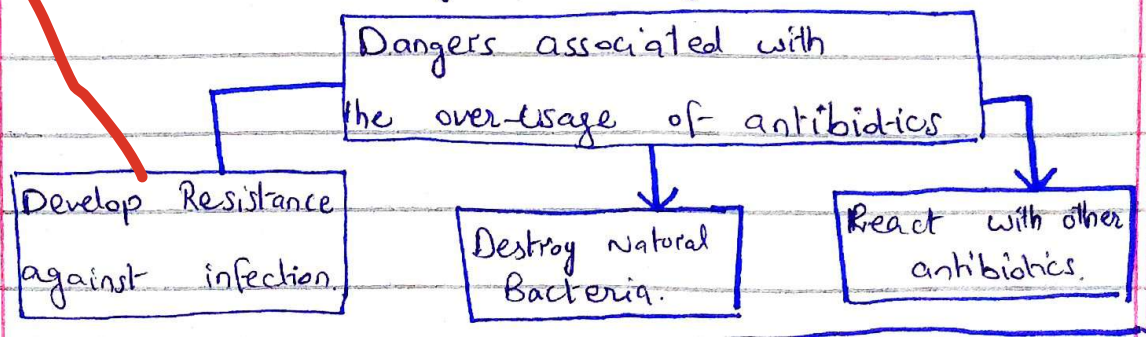
The repeated intake of antiotics without the actual use, such as for common cdd and flue may develop resistance to the causative bacteria that adopt changes in their structure leading to the Killing and Prevention of organisms impossible when required.

2. Destruction of Natural Bacteria:-

The inappropriate use of antibiotics sometimes also kills the naturally occuring good bacteria, which exposes the body to many other Killing infections, for instance, fungal and yeast infections.

3. Adverse Reactions of Antibiotics:-

Antibiotics also produce adverse effect on the body that make the natural defence system of the body weak and imposes deadly effects on the other organs including the kidneys, liver and gastric system.



→ **Q.No.1(d):- Why the exessive use of chemical fertilizers should be avoided?**

⇒ **1. Chemical Fertilizers:-**

Chemical Fertilizers are substances containing chemical elements that increase the fertility of the soil and improve the growth and Productivity of crops.

⇒ **2. The Need for Chemical Fertilizer:-**

Plants require a number of nutrients like sulfur, nitrogen, and phosphorus for their growth. However, soil nutrient levels can decrease over time when crop plants are harvested. Hence, these essential nutrients need to be compensated either through the natural process of decomposition, when plants die and decay, and the nutrients extracted from the soil returns to the soil or by the easy means of adding fertilizers.

3=> Hazards associated with exessive use of fertilizers:-

Although chemical fertilizers are no less than a blessing for human beings, their excessive uses are associated with numerous hazards.

(1). Disturbing pH of the soil:-

Chemical fertilizers affect microorganisms living in the soil by disturbing its pH more acidic.

(2). Leaching of soil:-

Chemical Fertilizers are highly soluble in water; thus they leach away from the soil without benefiting the plants to their maximum.

(3). Contribution to environmental pollution:-

Excessive nitrogen used in the chemical fertilizer can emit greenhouse gasses into the atmosphere, contributing to environmental pollution.

⇒ 4. Eutrophication:-

Fertilizers are chemical based, their inappropriate can cause eutrophication the phenomenon of accumulation of nutrients building a layer of green algae over water resources that endangers the existence of aquatic life.

⇒ 5. Depletes essential nutrients:-

The excessive use of chemical fertilizers depletes the soil of natural essential nutrients. consequently, the produced foods have less nutrients value.

good answers!!!