

**Science and Technology-UPSC Pre-2023**

**Q- Consider the following actions:**

- 1. Detection of car crash/collision which results in the deployment of airbags almost instantaneously**
- 2. Detection of accidental free fall of a laptop towards the ground which results in the immediate turning off of the hard drive**
- 3. Detection of the tilt of the smart- phone which results in the rotation of display between portrait and landscape mode**

**In how many of the above actions is the function of accelerometer required?**

- [a] Only one**
- [b] Only two**
- [c] All three**
- [d] None**

**Q- Consider the following pairs:**

**Objects in space : Description**

- 1. Cepheids : Giant clouds of dust and gas in space**
- 2. Nebulae : Stars which brighten and dim periodically**
- 3. Pulsars : Neutron stars that are formed when massive stars run out of fuel and collapse**

**How many of the above pairs are correctly matched ?**

- [a] Only one**
- [b] Only two**
- [c] All three**
- [d] None**

**Q- Which one of the following countries has its own Satellite Navigation System?**

- [a] Australia**
- [b] Canada**
- [c] Israel**
- [d] Japan**

**Q- Consider the following statements**

- 1. Ballistic missiles are jet-propelled at subsonic speeds throughout their flights, while cruise missiles are rocket-powered only in the initial phase of flight.**
- 2. Agni-V is a medium-range supersonic cruise missile, while BrahMos is a solid-fuelled intercontinental ballistic missile.**

**Which of the statements given above is/are correct?**

- [a] 1 only**
- [b] 2 only**
- [c] Both 1 and 2**
- [d] Neither 1 nor 2**

**Q- Aerial metagenomics best refers to which one of the following situations?**

- [a] Collecting DNA samples from air in a habitat at one go**
- [b] Understanding the genetic makeup of avian species of a habitat**
- [c] Using air-borne devices to collect blood samples from moving animals**
- [d] Sending drones to inaccessible areas to collect plant and animal samples from land surfaces and water bodies**

**Q- Microsatellite DNA' is used in the case of which one of the following?**

- [a] Studying evolutionary relationships among various species of fauna**
- [b] Stimulating stem cells transform into diverse functional tissues**
- [c] Promoting clonal propagation of horticultural plant**
- [d] Assessing the efficacy of drugs by conducting series of drug trials in a population.**

**Q- 'Wolbachia method' is sometimes talked about with reference to which one of the following?(Biology)**

- [a] Controlling the viral diseases spread by mosquitoes.**
- [b] Converting crop residues into packing material.**
- [c] Producing biodegradable plastics.**
- [d] Producing biochar from thermo- chemical conversion of biomass.**

**Q- With reference to the role of biofilters in Recirculating Aquaculture System, consider the following statements:**

- 1. Biofilters provide waste treatment by removing uneaten fish feed.**
- 2. Biofilters convert ammonia present in fish waste to nitrate.**
- 3. Biofilters increase phosphorus as nutrient for fish in water.**

**How many of the statements given above are correct?**

- [a] Only one**
- [b] Only two**
- [c] All three**
- [d] None**

**Q- Consider the following statements :**

- 1. Carbon fibres are used in the manufacture of components used in automobiles and aircrafts.**
- 2. Carbon fibres once used cannot be recycled**

**Which of the statements given above is/are correct?**

- [a] 1 only**
- [b] 2 only**
- [c] Both 1 and 2**
- [d] Neither 1 nor 2**