**Q: Consider the following statement regarding International Telecommunication Union (ITU):**

1. It facilitates international connectivity in communications networks.
2. It allocates global radio spectrum and satellite orbits.
3. Study Group 9 (SG-9) at ITU is responsible for telecommunication systems for the primary distribution of audio-visual content only.

Choose the correct option from the codes given below:

a) 1 and 2
b) 2 and 3
c) 1 and 3
d) 1, 2 and 3

Ans: a
Explanation:
**International Telecommunication Union (ITU)**

- Established in 1865, ITU facilitates international connectivity in communications networks.
- It allocates global radio spectrum and satellite orbits, while also developing the technical standards that ensure networks and technologies seamlessly interconnect.
- It tries to improve access to Information and Communications Technologies (ICTs) in underserved communities worldwide.
- SG 9 at ITU is responsible for telecommunication systems for the primary and secondary distribution of audiovisual content, including accessibility services and emerging interactive media.

**Q: Consider the following statement regarding artificial sweetener:**

1. Saccharin is an artificial sweetener with high food energy.
2. Sodium cyclamate is an artificial sweetener.
3. Neotame is a non-caloric artificial sweetener.

Choose the correct option from the codes given below:

a) 1 and 2
b) 2 and 3
c) 1 and 3
d) 1, 2 and 3

Ans: b
Explanation:

- Saccharin is an artificial sweetener with effectively no food energy. It is about 300 to 400 times as sweet as sucrose but has a bitter or metallic aftertaste.
- Sodium cyclamate is an artificial sweetener. It is almost 30 to 50 times sweeter than sucrose, making it the least potent of the commercially used artificial sweeteners.
- Neotame, also known by the commercial name Newtame, is a non-caloric artificial sweetener and aspartame analogue by NutraSweet.

**Q: Consider the following statement:**

1. Methanol is produced by combining carbon monoxide and hydrogen in the presence of copper and zinc oxides as catalysts.
2. Methanol is used as a solvent and as antifreeze.

Choose the correct option from the codes given below:

a) 1 Only
b) 2 Only
c) 1 and 2
d) None of the above

Ans: c
Explanation:

- The most common way to produce methanol is to combine carbon monoxide and hydrogen in the presence of copper and zinc oxides as catalysts at 50-100 atm of pressure and 250°C. In the pre-industrial era, going back to ancient Egypt, people also made methanol (together with several other byproducts) by heating wood to a very high temperature.
- Methanol has several industrial applications, including as a precursor to acetic acid, formaldehyde, and aromatic hydrocarbons. It is also used as a solvent and as antifreeze.

**Q: Consider the following statement:**

1. The adverse effects of alcohol consumption is due to acetaldehyde.
2. Spurious liquor is characterised by the liquid mixture containing methanol as well.
3. Arrack is distilled from the fermented sap of the palm tree.

Choose the correct option from the codes given below:

a) 1 and 2
b) 2 and 3
c) 1 and 3
d) 1, 2 and 3

Ans: d
Explanation:

- The adverse effects of alcohol consumption, from the hangover to a cancer, are due to acetaldehyde.
- Spurious liquor is characterised by the liquid mixture containing methanol as well.
- In many cases, such liquor is typically a home-made liquor, such as arrack, to which methanol was added to strengthen the intoxicating effects (in colloquial parlance, its kick) and/or to increase its bulk volume. Arrack is distilled from the fermented sap of the palm tree.

**Q: Consider the following statement regarding Sea butterflies:**

1. It is a suborder of sea snails.
2. It is a smallest species found in the Southern Ocean.
3. They lack muscular feet.

Choose the correct option from the codes given below:

a) 1 and 2
b) 2 and 3
c) 1 and 3
d) 1, 2 and 3

Ans: a
Explanation:

- The sea butterflies, a suborder of sea snails, are tiny creatures that play a big role in the marine ecosystem.
- But the smallest species in this group found in the Southern Ocean are extremely vulnerable to climate change and their population is shrinking in a warming world, according to a new study.
- The shelled pteropods (group of free-swimming sea snails) live at or very close to the ocean surface.
- Like snails, they have muscular feet that they use as flappers to swim around in water, instead of glide on solid surface.