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Q.1) The '+1' in 'P5+1 Countries' refers to

- a) Germany
- b) Japan
- c) Canada
- d) Australia

Q.1) Solution (a)

The P5+1 refers to the UN Security Council's five permanent members (the P5); namely China, France, Russia, the United Kingdom, and the United States; plus Germany. The P5+1 is often referred to as the E3+3 by European countries. It is a group of six world powers which, in 2006, joined together in diplomatic efforts with Iran with regard to its nuclear program.

Q.2) Which of the following statements is/are correct?

1. Article 86 confers a right on the President to address either House of Parliament or both Houses assembled together, and for that purpose require the attendance of members
2. Article 87 deals with Special Address by the President and provides that the President shall address both Houses of Parliament assembled together at the commencement of the first session after each general election to the Lok Sabha and at the commencement of the first session of each year and inform Parliament of the causes of its summons.

Select the correct statements

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.2) Solution (c)

Articles 86 and 87 of the Constitution deal with the Address by the President. Article 86 confers a right on the President to address either House of Parliament or both Houses assembled together, and for that purpose require the attendance of members. However,

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since the commencement of the Constitution, the President has not so far addressed a House or Houses together under this provision.

Article 87 deals with Special Address by the President and provides that the President shall address both Houses of Parliament assembled together at the commencement of the first session after each general election to the Lok Sabha and at the commencement of the first session of each year and inform Parliament of the causes of its summons.¹ Article 87(1) originally required the President to address both Houses of Parliament at the commencement of every session. The Constitution (First Amendment) Act, 1951, amended this provision.

As article 87 makes it clear, the Address is to be to both Houses of Parliament assembled together. In other words, it means that if at the time of commencement of the first session of the year, the Lok Sabha has been dissolved and the Rajya Sabha has to meet, then the Rajya Sabha can have its session without the President's Address. During the dissolution of the Lok Sabha in 1977 and 1991, the Rajya Sabha had its sessions on 1 February 1977 and 3 June 1991, respectively without the President's Address.

Read More - <https://indianexpress.com/article/explained/explained-when-does-the-president-address-both-houses-of-parliament-5563110/>

Q.3) Consider the following statements with respect to 'Polar Vortex'

1. They are weakest during summer and strongest during winter
2. They rotate counter-clockwise in the Northern Hemisphere

Select the correct statements

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.3) Solution (c)

A polar vortex is an upper level low-pressure area lying near the Earth's pole. There are two polar vortices in the Earth's atmosphere, which overlie the North, and South Poles. Each polar vortex is a persistent, large-scale, low pressure zone that rotates counter-clockwise at the North Pole (called a cyclone), and clockwise at the South Pole.[discuss] The bases of the two polar vortices are located in the middle and upper troposphere and extend into the stratosphere. Beneath that lies a large mass of cold, dense arctic air. The vortices weaken

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and strengthen from year to year. When the vortex of the arctic is strong it is well defined, there is a single vortex and the arctic air is well contained; when weaker, which it generally is, it will break into two or more vortices; when very weak, the flow of arctic air becomes more disorganized and masses of cold arctic air can push equatorward, bringing with it a rapid and sharp temperature drop. The interface between the cold dry air mass of the pole and the warm moist air mass further south defines the location of the polar front. The polar front is centered, roughly at 60° latitude. A polar vortex strengthens in the winter and weakens in the summer due to its dependence on the temperature difference between the equator and the poles. The vortices span less than 1,000 kilometers (620 miles) in diameter within which they rotate counter-clockwise in the Northern Hemisphere, and in a clockwise fashion in the Southern Hemisphere. As with other cyclones, their rotation is driven by the Coriolis effect.

Polar cyclones are low pressure zones embedded within the polar air masses, and exist year-round. The stratospheric polar vortex develops at latitudes above the subtropical jet stream. Horizontally, most polar vortices have a radius of less than 1,000 kilometres (620 mi). Since polar vortices exist from the stratosphere downward into the mid-troposphere, a variety of heights/pressure levels are used to mark its position. The 50 millibars pressure surface is most often used to identify its stratospheric location.

Polar vortices are weakest during summer and strongest during winter. Extratropical cyclones that migrate into higher latitudes when the polar vortex is weak can disrupt the single vortex creating smaller vortices (cold-core lows) within the polar air mass. Those individual vortices can persist for more than a month.

Watch - <https://www.thehindu.com/sci-tech/science/the-hindu-explains-what-is-the-polar-vortex/article26140605.ece>

Q.4) Who was the first to make a 'periodic table of chemical elements' similar to the one used today?

- a) Ernest Rutherford
- b) Dmitri Mendeleev
- c) Glenn Seaborg
- d) William Ramsay

Q.4) Solution (b)

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The Russian chemist Dmitri Mendeleev was the first scientist to make a periodic table similar to the one used today. Mendeleev arranged the elements by atomic mass, corresponding to relative molar mass.

Read More - <https://indianexpress.com/article/world/unesco-celebrates-150-years-of-chemistrys-periodic-table-5561030/>

Q.5) What is the protein found in human hair and finger nails, as well as in hooves, horns, wool, claws, bird beaks, and spider webs?

- a) Collagen
- b) Keratin
- c) Cellulose
- d) Glycogen

Q.5) Solution (b)

Keratin is also found in bird and reptile scales. Collagen is found in skin, tendons, and ligaments. Glycogen is a carbohydrate. Cellulite is "cottage-cheese" skin.

