

## IASbaba's Daily Quiz

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March 13, 2017

### Q.1) Consider the following statements about 'International Vision Zero Conference'

1. It aims to focus on the Occupational Safety and Health issues and challenges in the Manufacturing, Construction and Mining sector
2. It is being organized by Ministry of Labour and Employment

### Select the correct statements

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

### Q.1) Solution (c)

The international conference on the VISION ZERO and its relevance to Occupational Safety and Health (OSH), is being organized by Directorate General Factory Advice and Labour Institutes (DGFASLI), Government of India, Ministry of Labour and Employment and German Social Accident Insurance (DGUV), Germany in association with International Social Security Association (ISSA).

The conference aims to focus on the Occupational Safety and Health issues and challenges in the Manufacturing, Construction and Mining sector. The conference will provide a forum for promoting safety and health at work by exchanging knowledge, practices and experience.

In News - <http://pib.nic.in/newsite/PrintRelease.aspx?relid=159150>

### Q.2) Consider the following statements about Jeevan Pramaan/Digital Life Certificate

1. It is a biometric enabled digital service for Central Government pensioners.
2. It is a valid certificate and recognized under the IT Act

### Select the correct statements

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

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### Q.2) Solution (c)

Jeevan Pramaan is computer generated digital life certificate for pensioner. Jeevan Pramaan Certificate is produced for individual pensioner using his Biometric Credentials.

For this certificate individual pensioner has not to present himself/ herself in front of seniors authorised Officers. This can be generated even from home. Only you need a internet connection and Biometric devices

Digital Life Certificate is a valid certificate and recognized under the IT Act. The system benefits the pensioner from having to go before the Pension disbursing Authority to prove that he/she is alive.

**In News -** <http://economictimes.indiatimes.com/wealth/personal-finance-news/now-submit-digital-life-certificate-through-jeevan-pramaan-patra-by-march-31/articleshow/57535203.cms>

### Q.3) Consider the following statements about “superfluid”

1. It is a fluid with zero viscosity
2. All Bose-Einstein condensates can be regarded as superfluids

#### Select the correct statements

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

### Q.3) Solution (a)

A Bose–Einstein condensate (BEC) is a state of matter of a dilute gas of bosons cooled to temperatures very close to absolute zero (that is, very near 0 K or  $-273.15\text{ }^{\circ}\text{C}$ ). Under such conditions, a large fraction of bosons occupy the lowest quantum state, at which point macroscopic quantum phenomena become apparent. It is formed by cooling a gas of extremely low density, about one-hundred-thousandth the density of normal air, to ultra-low temperatures.

Due to the unique properties of the condensate, Lene Hau showed that light can either be stopped or slowed down significantly to the velocity of 17 meters per second, resulting in an extremely high refractive index.

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This state was first predicted, generally, in 1924–25 by Satyendra Nath Bose and Albert Einstein.

Superfluidity is the characteristic property of a fluid with zero viscosity which therefore flows without loss of kinetic energy. When stirred a superfluid forms cellular vortices that continue to rotate indefinitely. Superfluidity occurs in two isotopes of helium (helium-3 and helium-4) when they are liquified by cooling to cryogenic temperatures. It is also a property of various other exotic states of matter theorized to exist in astrophysics, high-energy physics, and theories of quantum gravity. The phenomenon is related to Bose–Einstein condensation, but neither is a specific type of the other: not all Bose-Einstein condensates can be regarded as superfluids, and not all superfluids are Bose–Einstein condensates.

In News - <http://www.thehindu.com/todays-paper/tp-in-school/nasa-to-create-coolest-spot-in-universe/article17424974.ece>

### Q.4) Consider the following statements about Time crystals

1. They appear to have movement even at their ground state
2. This ability violates time-translation symmetry
3. It was first proposed by Frank Wilczek

### Select the correct statements

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

### Q.4) Solution (d)

To put it simply, they are hypothetical structures that have movement without expending energy. First proposed by Nobel Prize-winning theoretical physicist Frank Wilczek in 2012, time crystals are structures that appear to have movement even at their lowest energy state, known as a ground state. This ability violates a fundamental symmetry in physics called time-translation symmetry, but physicists have now demonstrated that it might actually be possible for time crystals to physically exist. Earlier this year, two separate teams of physicists described ways of actually creating such structures. Because they passed a preliminary peer review earlier this week, the scientific community is excited about it. Being able to create them would mean a leap forward in creating quantum computers, said to be

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the next evolutionary step in data storage. The newly created matter joins a host of other exotic states of matter, such as superconductors, quantum-spin liquids and superfluids.

In News - <http://www.thehindu.com/sci-tech/science/demystifying-science-march-12-2017/article17449491.ece>

**Q.5) Consider the following statements about 'Europa Clipper'**

1. It will probe the habitability of Jupiter's icy moon Europa
2. It is developed by European Space Agency

**Select the correct statements**

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

**Q.5) Solution (a)**

NASA's 'Europa Clipper', set for launch in the 2020s, will probe the habitability of Jupiter's icy moon Europa.

The mission plan includes 40 to 45 flybys, during which the spacecraft would image the moon's icy surface at high resolution and investigate its composition and the structure of its interior and icy shell.

Europa has long been a high priority for exploration because it holds a salty liquid water ocean beneath its icy crust.

The ultimate aim of Europa Clipper is to determine if Europa is habitable, possessing all three of the ingredients necessary for life: liquid water, chemical ingredients, and energy sources sufficient to enable biology.

In News - <http://www.thehindu.com/sci-tech/science/nasas-europa-clipper-to-search-for-alien-life-on-jupiters-moon/article17443361.ece?homepage=true>