Daily subject quiz – Science & Technology (20-11-2026)

https://www.shanmugamiasacademy.in/daily-subject-quiz/2026-11-20-science-technology/en

Questions

1. Optical fibres carry light signals over long distances mainly on the principle of:

A. Dispersion

B. Total internal reflection

C. Diffraction

D. Scattering

2. Consider the following statements:

1. The Kudankulam Nuclear Power Plant in Tirunelveli district uses Pressurised Heavy Water Reactors (PHWRs) designed in India.

2. The Prototype Fast Breeder Reactor at Kalpakkam belongs to the second stage of India's three-stage nuclear power programme.

3. The third stage of the programme aims to use India's large thorium reserves.

Which of the above are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

3. Match the instrument (List I) with what it measures (List II):

(a) Hygrometer – 1. Wind speed

(b) Anemometer – 2. Electric current

(c) Manometer – 3. Relative humidity

(d) Ammeter – 4. Pressure of gases

Codes: (a) (b) (c) (d)

A. 3 1 4 2

B. 1 3 4 2

C. 3 1 2 4

D. 4 1 3 2

4. Assertion (A): Two astronauts on the Moon's surface cannot hear each other directly, even when standing close together.
Reason (R): Sound is a mechanical wave and needs a material medium to travel.

A. Both A and R are true, and R is the correct explanation of A
B. Both A and R are true, but R is not the correct explanation of A
C. A is true, but R is false
D. A is false, but R is true

5. The proposed India-based Neutrino Observatory (INO), an underground laboratory to study neutrinos, is to be located in the Bodi West Hills near Pottipuram in which district of Tamil Nadu?

A. Theni
B. Nilgiris
C. Tirunelveli
D. Krishnagiri

6. Consider the following statements about human red blood cells (RBCs):
1. Mature RBCs have no nucleus.
2. In adults, RBCs are produced mainly in the spleen.
3. The haemoglobin in RBCs contains iron.
Which of the above are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

7. Match the natural source (List I) with the acid it contains (List II):
(a) Vinegar – 1. Methanoic (formic) acid
(b) Curd – 2. Tartaric acid
(c) Tamarind – 3. Acetic acid
(d) Ant sting – 4. Lactic acid
Codes: (a) (b) (c) (d)

A. 4 3 2 1
B. 3 4 1 2
C. 3 4 2 1
D. 3 2 4 1

SHANMUGAM IAS ACADEMY
www.shanmugamiasacademy.in
YOUR DREAM OUR RESPONSE...!

8. Assertion (A): Ice floats on water, which helps aquatic life survive in lakes that freeze in winter.
Reason (R): Water has its maximum density at 0 °C.

A. Both A and R are true, and R is the correct explanation of A
B. Both A and R are true, but R is not the correct explanation of A
C. A is true, but R is false
D. A is false, but R is true

9. Temporary hardness of water, which can be removed by boiling, is caused by the presence of:

A. Chlorides and sulphates of calcium and magnesium
B. Bicarbonates (hydrogencarbonates) of calcium and magnesium
C. Sodium chloride
D. Dissolved oxygen

10. Consider the following statements:
1. Myopia (near-sightedness) is corrected with a concave lens.
2. Hypermetropia (far-sightedness) is corrected with a convex lens.
3. Presbyopia arises from the gradual weakening of the ciliary muscles and the reduced flexibility of the eye lens with age.
Which of the above are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

Answers with explanations

1. **B) Total internal reflection** – Light entering the glass core strikes the boundary with the cladding (of lower refractive index) at an angle greater than the critical angle, so it is reflected back again and again and travels along the fibre with little loss. The same principle explains the sparkle of diamonds and mirages.

2. **B) 2 and 3 only** – Statements 2 and 3 are correct. Statement 1 is wrong: Kudankulam's units are Russian-designed VVER-1000 reactors – pressurised light-water reactors built with Russian cooperation. Stage 1 uses PHWRs with natural uranium; stage 2 uses fast breeder reactors (the 500 MWe PFBR at Kalpakkam, built by BHAVINI); stage 3 is to use thorium-232 to breed uranium-233.

3. **A) 3 1 4 2** – Hygrometer – relative humidity of the air; anemometer – wind speed; manometer – pressure of gases (a U-tube with liquid); ammeter – electric current, connected in series in a circuit (a voltmeter, connected in parallel, measures potential difference).

4. **A) Both A and R are true, and R is the correct explanation of A** – Both are true and R explains A. The Moon has practically no atmosphere, so there is no medium to carry sound; astronauts talk by

radio, which uses electromagnetic waves that can travel through a vacuum. Sound travels fastest in solids, slower in liquids and slowest in gases (about 343 m/s in air at 20 °C).

5. **A) Theni** – The INO, a project of the Department of Atomic Energy and the Department of Science and Technology, plans a cavern under more than 1 km of rock in the Bodi West Hills, Theni district, so that the rock shields the detector from cosmic rays. The project has been delayed by environmental clearance and legal challenges. Neutrinos are nearly massless, uncharged particles that rarely interact with matter.

6. **C) 1 and 3 only** – Statements 1 and 3 are correct. Statement 2 is wrong: in adults RBCs are formed in the red bone marrow; the spleen is the 'graveyard' where old RBCs are destroyed. RBCs live for about 120 days; iron in haemoglobin binds oxygen, and iron deficiency causes anaemia.

7. **C) 3 4 2 1** – Vinegar – acetic acid; curd (sour milk) – lactic acid; tamarind – tartaric acid; ant sting (and nettle sting) – methanoic acid. Other pairs from the same NCERT table: orange and lemon – citric acid; tomato – oxalic acid.

8. **C) A is true, but R is false** – A is true; R is false. Water is densest at about 4 °C. On freezing it forms an open, hydrogen-bonded crystal structure, so ice is less dense than liquid water and floats; the ice layer insulates the water below, which stays near 4 °C at the bottom.

9. **B) Bicarbonates (hydrogencarbonates) of calcium and magnesium** – On boiling, soluble calcium and magnesium bicarbonates break down into insoluble carbonate (and, for magnesium, hydroxide), which settles and can be filtered off; Clark's method (adding slaked lime) also removes it. Chlorides and sulphates of calcium and magnesium cause permanent hardness, removed by washing soda, ion exchange or the Calgon method.

10. **D) 1, 2 and 3** – All three are correct. In myopia the image forms in front of the retina (eyeball too long or lens too curved), so a diverging (concave) lens is used; in hypermetropia it forms behind the retina, so a converging (convex) lens is used. Presbyopia is often corrected with bifocal lenses. The power of a lens is measured in dioptres.

Shanmugam IAS Academy – your next step

- **Courses:** TNPSC Group 1, 2 / 2A (Prelims + Mains), Group 4, UPSC / IAS, Bank, SSC, SI – Coimbatore · Madurai · Online – https://www.shanmugamiasacademy.in/fees
- **Books (PDF):** TNPSC PYQ books, UPSC books – https://www.shanmugamiasacademy.in/study-materials
- **More free PDFs:** https://www.shanmugamiasacademy.in/free-pdf-download · This page: https://www.shanmugamiasacademy.in/daily-subject-quiz/2026-11-20-science-technology/en

Admissions – call / WhatsApp: 99941 46662 · 99944 27714 · www.shanmugamiasacademy.in