

DAY 5

SUBJECT – SCIENCE & TECHNOLOGY

TOPICS:PRELIMS MCQ's:

Q.1) A Portable Telemedicine System for Armed Forces (PDF) has been developed. Which of the following statements are correct about it?

1. It has been developed by DRDO.
2. It is meant to provide remote assistance to injured personnel in a field hospital or a ship out at sea

Select the code from following:

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

Q.1) Solution (c)

Portable Telemedicine System for Armed Forces

The Portable Telemedicine System (PDF) for Armed Forces was developed by the Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru in early 2016. The system is a means of providing remote assistance to injured personnel in a field hospital or a ship out at sea. The rugged and portable system is capable of taking various readings including blood pressure, temperature, heart rate, and includes an electrocardiogram.



Image: DRDO/DEBEL

The system can store and transmit annotated data, and can open up a real time live channel for high quality video conferencing. The data can be transmitted over various communication channels, and includes the capability to interface with satellites. The Biomedical Data Acquisition System (BioDAS) on board was developed indigenously. An archival software on board the system maintains records in a secure environment. The telemedicine system was successfully demonstrated on board the ships INS Deepak, Gomati, and Talwar.

Q.2) Armament Research and Development Establishment (ARDE) and the High Energy Materials Research Laboratory (HEMRL) have developed Penetration cum Blast and Thermobaric ammunitions. Consider the following statements about these:

1. HEMRL is the research wing of DRDO which researchers in new high energy materials to be used in warheads and ammunition.
2. The newly developed ammunition uses atmospheric oxygen for the explosions instead of the oxidiser included in the compound, as is done in conventional explosives.
3. The blast done by these ammunitions is much weaker than the conventional explosives.

Which of the above statements are correct?

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

Q.2) Solution (a)

Armament Research and Development Establishment (**ARDE**) and the High Energy Materials Research Laboratory (**HEMRL**), research wings of the DRDO based in Pune designed new ammunition meant specifically for the Arjun tank. The Penetration-cum-Blast (PCB) and Thermobaric (TB) Ammunition were successfully test fired in Odisha, demonstrating the devastating power of the ammunition against concrete structures, fortifications and armour plates.



The test firing of the new tank ammunition. Image: DRDO

The HEMRL lab researchers new high energy materials to be used in warheads and ammunition. The newly developed ammunition uses atmospheric oxygen for the explosions instead of the oxidiser included in the compound, as is done in conventional explosives. This means that the resulting mixture is far more explosive for the same amount of weight. The test firing successfully managed to destroy a derelict tank that had been fitted with various sensors to measure the shock, blast pressure and temperature of the new ammunition. It was the first time in India that the effectiveness of the new ammunition was measured in such detail.

Q.3) Which of the following processes are endothermic i.e. they absorb energy?

1. Melting Ice
2. Photosynthesis
3. Respiration
4. Thermal Decomposition

Select the code from the following:

- a) 1 and 3
- b) 1, 2 and 4
- c) 2 and 4
- d) All of the above

Q.3) Solution (b)

In the process of respiration, the food we eat reacts with the oxygen we breathe and releases energy.

Q.4) India has successfully developed its first indigenously built SONAR composite dome. Which of the following statements is correct about it?

- a) The Sonar dome is attached to the bottom of ships, and scans the seas for submarine threats.
- b) It is attached to the nose of fighter planes to navigate properly in bad weather conditions.
- c) It is attached to warheads of fire and forget missile to successfully chase the targets and destroy them.
- d) None of the above

Q.4) Solution (a)

The Defense Minister Manohar Parrikar **flagged off** the first indigenous composite Sonar dome during the **Defexpo 2016**. India joined a select group of countries capable of manufacturing such structures. The Sonar dome is attached to the bottom of ships, and scans the seas for submarine threats. The requirements of manufacturing such domes are technologically demanding, with a need for a solid and robust structure that is also acoustically transparent.



Defense Minister Manohar Parrikar flagging off the indigenously made Sonar Dome.

The research and development needed for manufacturing the dome was conducted by a Pune based DRDO lab known as Research and Development Establishment (Engrs) (**RDE(E)**). The dome was manufactured by **Kineco Ltd**, a composites manufacturing company based in Pilerne, Goa. The Vacuum Assisted Resin Transfer Molding (**VARTM**) Process with a process monitoring capability, to ensure that a quality product was manufactured. Successfully manufacturing the Sonar Dome indigenously means that India now has the capability for manufacturing more advanced structures, such as entire ship hulls. There are land based and aerospace applications that stand to benefit from the advancement in manufacturing capabilities.

Q.5) Which of the following statements regarding 'Varunastra' are correct?

1. It is a ship launched heavy weight torpedo.
2. It is capable of taking down stealth submarines in deep or shallow waters.

Select the code from below:

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

Q.5) Solution (c)**Varunastra torpedo**

The Defense minister Manohar Parrikar **handed over the Varunastra** to the Indian Navy at the end of June. Varunastra is a ship launched heavy weight torpedo, also known as an underwater missile. The torpedo was developed by Naval Science and Technological Laboratory (**NSTL**) in partnership with **Bharat Dynamics**. The torpedo is manufactured by using 95 per cent of indigenous parts.

During the handover, Parrikar said “In these high technology areas, DRDO’s contribution with 95 per cent of indigenous content is an apt example of Indigenously Designed Developed and Manufactured category.” The torpedo was an important milestone in pushing India towards self reliance when it comes to underwater defense capabilities. The Rajput and Delhi class of warships can be equipped with the new torpedos, and future Anti-Submarine Warfare capable ships will also have the capability. The torpedo is capable of taking down stealth submarines in deep or shallow waters.

Q.6) Recently Indian Air Force has inducted two Tejas Aircrafts and ordered for twenty more. Which of the following statements are correct about ‘Tejas’?

1. It is a light Combat Aircraft.
2. It is jointly developed by DRDO and Russia.
3. The aircraft are capable of firing air-to-air missiles, and dropping laser guided bombs.

Select the code from below:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) None of the above

Q.6) Solution (c)

The **Indian Air Force** inducted two **Tejas aircraft into its 45th Squadron on July 1**. The Light Combat Aircraft were jointly developed by Hindustan Aeronautics Limited (**HAL**) and Aeronautical Development Agency (**ADA**). The aircraft can take up a variety of roles in combat, and are supersonic. India has been developing the aircraft since 1980. Prior to the induction, the aircraft participated in 3,200 sorties to demonstrate their capabilities.



Image: DRDO/HAL/ADA

Prime minister Modi said “Induction of indigenously made Tejas fighter jet into the Air Force fills our hearts with unparalleled pride and happiness. I laud HAL and ADA on the induction of Tejas fighter jet. This illustrates our skills and strengths to enhance indigenous defence manufacturing.” The Tejas is capable of carrying four tonnes of weapons. The aircraft are capable of firing air-to-air missiles, and dropping laser guided bombs. The aircraft includes a head mounted display for the pilot, and a glass cockpit on which realtime information is displayed. The Indian Air Force has placed an order for an additional 20 Tejas fighter jets.

Q.7) DRDO successfully carried out the maiden flight of the Rustom-II unmanned aerial vehicle (UAV). Which of the following statements are correct about Rustom II?

1. The UAV is a surveillance unmanned aircraft and it is not combat capable.
2. The Rustom-II is a Medium Altitude Long Endurance (MALE) UAV.

Select the code from below:

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

Q.7) Solution (c)

In November, DRDO successfully carried out the maiden flight of the [Rustom-II unmanned aerial vehicle](#) (UAV). The UAV in general is combat capable and can be equipped with electro optic sensors, radar, electronic intelligence, communication intelligence and situational awareness payloads. Rustom II was designed as a combat UAV initially, but in the Current variant it has not been weaponised. So this debate actually gave a good result Rustom II as of now is not combat capable.

The Rustom-II is a Medium Altitude Long Endurance (MALE) UAV. The maiden flight was carried out at the Aeronautical Test Range (ATR), Chitradurga, near Bengaluru, a new facility dedicated to testing UAVs and manned aircraft. The tests proved the capabilities of the flying platform, including take-off, banking, level flight and landing.



The Rustom-II test flight. Image: DRDO.

The development of the UAV contributes to the Make in India initiative, as many sub systems were developed and manufactured entirely in India, with the participation of private companies. The air frame, landing gear, flight control, and avionics sub systems were made entirely in India. The UAV is meant for Intelligence, Surveillance and Reconnaissance (ISR) roles. The UAV is going to undergo further test and trials, for validation of the design parameters. The next step for the UAV is user validation trials.

Q.8) Which of the following statements are correct about 'Anti Tank NAG' Missile?

1. It has been indigenously developed under the Integrated Guided Missile Development Programme, IGMDP
2. It is a fire and forget, heat seeking guided missile.
3. It can be launched from land and air based platforms.

Select the code from below:

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

Q.8) Solution (d)

The Nag anti-tank missile joined the ranks of indigenously developed missiles by the Integrated Guided Missile Development Programme ([IGMDP](#)) a program that was lead by former president Abdul Kalam. The Nag joins Agni, Prithvi, Trishul and Akash. The Nag is a lockon-before-launch (LOBL), fire-and-forget, anti-tank guided missile, and was successfully tested against targets up to a range of four kilometres.



Image: DRDO

The test flights tested the the indigenously developed Thermal Target System and the Infrared Imaging Seeker on board the missile. Real time image processing algorithms on

board the missile process the accuracy of the flight in real time. The Nag missile is meant to tackle modern battle tanks and other heavily armoured tanks. There is a high chance of neutralising the target with a single missile. The Nag can be fired from land or air based platforms, and there are amphibious and mobility tests being conducted. The Nag missile is ready for induction into the Indian Army.

Q.9) Which of the following are the correct differences between Ballistic and Cruise Missiles?

1. Ballistic missiles follow a projectile motion under gravity while cruise missiles have maneuvering capabilities.
2. Usually the range of Cruise missiles is much higher than ballistic missiles.
3. The destruction radius of Ballistic missiles is usually much higher than Cruise missiles.

Select the code from following:

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

Q.9) Solution (c)

There are some important differences between cruise and ballistic missiles. These are:

- Ballistic missiles follow an arc-like trajectory and are launched from the land or sea
- They usually carry a nuclear warhead and are very heavy
- They rely on Earth's gravity to fly down once launched
- They have much larger range

- Cruise missiles can also be launched from air and fly within Earth's atmosphere
- They have their own engines and wings to strike the target
- They can be supersonic or sub-sonic and are highly accurate
- They usually carry conventional warheads although some cruise missiles can also be equipped with nuclear warheads

Q.10) Which of the following statements are incorrect about 'Mercury'?

1. It is the only element which is liquid at room temperature.
2. It shows the properties of malleability and ductility.
3. It is used in fluorescent lamps.

Select the code from following:

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

Q.10) Solution (a)

Mercury and Bromine are the only two elements which are in liquid state at room temperature. (Mercury is the only metal.)

How can a liquid be malleable and ductile?

Mercury is used in thermometers, barometers, manometers, sphygmomanometers, float valves, mercury switches, mercury relays, fluorescent lamps and other devices, though concerns about the element's toxicity have led to mercury thermometers and sphygmomanometers being largely phased out in clinical environments in favor of alternatives such as alcohol- or galinstan-filled glass thermometers and thermistor- or infrared-based electronic instruments. Likewise, mechanical pressure gauges and electronic strain gauge sensors have replaced mercury sphygmomanometers. Mercury remains in use in scientific research applications and in amalgam for dental restoration in some locales. It is used in fluorescent lighting. Electricity passed through mercury vapor in a fluorescent lamp produces short-wave ultraviolet light which then causes the phosphor in the tube to fluoresce, making visible light.

Q.11) Magnetic induction stoves are very commonly used these days. Aluminium and Copper Utensils cannot be directly used over these stoves. What is the reason for that?

- a) They are bad conductors of electricity.
- b) They get cracks because of magnetic induction.
- c) They are not ferro – magnetic in nature.

- d) They can cause food poisoning.

Q.11) Solution (c)

Induction cooking heats a cooking vessel by magnetic induction, instead of by thermal conduction from a flame, or an electrical heating element. Because inductive heating directly heats the vessel, very rapid increases in temperature can be achieved.

In an induction cooker, a coil of copper wire is placed under the cooking pot and an alternating electric current is passed through it. The resulting oscillating magnetic field induces a magnetic flux which repeatedly magnetises the pot, treating it like the lossy magnetic core of a transformer. This produces large eddy currents in the pot, which because of the resistance of the pot, heats it.

For nearly all models of induction cooktops, a cooking vessel must be made of, or contain, a ferromagnetic metal such as cast iron or some stainless steels. However, copper, glass, non magnetic stainless steels, and aluminum vessels can be used if placed on a ferromagnetic disk which functions as a conventional hotplate.

Induction cooking is quite efficient, which means it puts less waste heat into the kitchen, can be quickly turned off, and has safety advantages compared to gas hobs (cooktops). Hobs are also usually easy to clean, because the hob itself does not get very hot.

Q.12) Graphite is an important allotrope of Carbon. Which of the following statements are correct about Graphite?

1. It is an organic compound.
2. It is a good conductor of electricity unlike other allotropes of carbon.
3. It is used as a lubricating agent because of its layered structure.

Select the code from below:

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

Q.12) Solution (b)

Graphite and diamond are the two mineral forms of carbon. Diamond forms in the mantle under extreme heat and pressure. Most graphite found near Earth's surface was formed within the crust at lower temperatures and pressures. Graphite and diamond share the same composition but have very different structures.

The carbon atoms in graphite are linked in a hexagonal network which forms sheets that are one atom thick. These sheets are poorly connected and easily cleave or slide over one another if subjected to a small amount of force. This gives graphite its very low hardness, its perfect cleavage, and its slippery feel.

Graphite is an allotrope of carbon and it is one of the debatable aspects of chemistry to put it as organic or inorganic as per its definition. Going by mere definition, it cannot be considered as organic compound for many reasons.

In contrast, the carbon atoms in diamond are linked into a frameworks structure. Every carbon atom is linked into a three-dimensional network with four other carbon atoms with strong covalent bonds. This arrangement holds the atoms firmly in place and makes diamond an exceptionally hard material.

Physical Properties of Graphite	
Chemical Classification	Native element
Color	Steel gray to black
Streak	Black
Luster	Metallic, sometimes earthy
Diaphaneity	Opaque
Cleavage	Perfect in one direction
Mohs Hardness	1 to 2
Specific Gravity	2.1 to 2.3
Diagnostic Properties	Color, streak, slippery feel, specific gravity
Chemical Composition	C
Crystal System	Hexagonal
Uses	Used to manufacture heat and chemical resistant containers and other objects. Battery anodes. A dry lubricant. The "lead" in pencils.

Q.13) ISRO has recently successfully tested the SCRAMJET engine technology. Which of the following statements are correct about SCRAMJET?

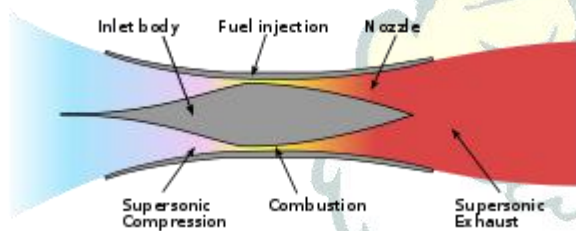
1. SCRAMJET stands for Subsonic Combusting Ramjet.
2. Scramjet engines use atmospheric oxygen as oxidizers for combustion of its fuel.

Select the code from below:

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

Q.13) Solution (b)

A **scramjet** (*supersonic combusting ramjet*) is a variant of a ramjet airbreathing jet engine in which combustion takes place in supersonic airflow. As in ramjets, a scramjet relies on high vehicle speed to forcefully compress the incoming air before combustion (hence *ramjet*), but a ramjet decelerates the air to subsonic velocities before combustion, while airflow in a scramjet is supersonic throughout the entire engine. This allows the scramjet to operate efficiently at extremely high speeds.



Q.14) There is a growing demand from many states to open more 'Sainik Schools'. Consider the following statements regarding Sainik Schools:

1. They are established as a Joint Venture between Center and State Government.
2. They are specifically meant to provide education to children of personnel of Indian Armed Forces only.
3. The aim of Sainik Schools is all round development of a child's personality in order to prepare him for entry into National Defence Academy and to remove regional imbalance in the officer's cadre of the Armed Forces.

Which of the above statements are correct?

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3

- d) All of the above

Q.14) Solution (c)

Sainik Schools

The Sainik Schools are established as a joint venture of the Central and State Governments. These are under the overall governance of Sainik Schools Society, Ministry of Defence.

At present, there are 25 Sainik Schools located in various parts of the country. There is a growing demand from many States to open new Sainik Schools. As a result, states of Andhra Pradesh, Haryana, Bihar and Karnataka have two Sainik Schools each.

The objectives of Sainik Schools include bringing quality Public School education within the reach of common man, all round development of a child's personality in order to prepare him for entry into National Defence Academy and to remove regional imbalance in the officer's cadre of the Armed Forces. The number of cadets joining the National Defence Academy is on the rise in keeping with the primary aim of establishing of Sainik Schools to prepare boys academically, physically and mentally for entry into NDA. For the 134th NDA/INA Course which commenced in July 2015, a total of 101 Cadets from all Sainik Schools have joined the NDA and Naval Academy.

Sainik Schools admit boys into classes VI and IX. Their age should be 10-11 years for classes VI and 13-14 years for class IX as on 1st July of the year in which admission is sought. Admissions are made strictly as per the order of merit on the basis of an All India Sainik School Entrance

Examination held in January each year.

Q.15) Which of the following countries is India's largest defence Supplier?

- a) Russia
- b) USA
- c) Israel
- d) France

Q.15) Solution (b)

Parliament's Standing Committee on Defence reveals in a new report released that **the United States** has been India's biggest supplier of weapons platforms over the past three years.

It is followed by Russia, Israel and France in that order.

Non-official think tanks and non-proliferation groups like the Stockholm International Peace Research Institute (SIPRI) publish annual assessments of global arms transfers. This, however, is an authoritative declaration from the government of India.

The committee's report number 31 divulges that India concluded contracts worth Rs 28,895 crore (\$4.35 billion) with the US during 2013-14, 2014-15 and 2015-16.

Russia was a distant second in this period with contracts worth Rs 8,374 crore (\$1.26 billion), Israel third with contracts worth Rs 7,605 crore (\$1.14 billion), and France fourth with contracts worth Rs 1,836 crore. India also signed contracts worth Rs 6,974 crore (\$1.05 billion) with "others", which include Germany, the UK, Ukraine and Poland.

Q.16) Consider the following statements about Kudankulam Nuclear Power Plant

1. It is the first in the world to have post-Fukushima safety enhancement requirements implemented and operated successfully
2. It is the single largest nuclear power station in India
3. It has a pressurized heavy-water reactor (PHWR) type of nuclear reactor

Select the correct statements

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

Q.16) Solution (a)

The Kudankulam Nuclear Power Plant (KKNPP) is the first in the world to have post-Fukushima safety enhancement requirements implemented and operated successfully.

There are a number of advanced active and passive safety systems which ensure unprecedented design-level nuclear and ecological safety of the plant

Double localising and protective containment, passive heat removal system from reactor plant automatically, core catcher, and closed industrial water intake are some of the safety features incorporated.

The reactor is protected from the impact of any earthquake, tsunami, tornado and hurricane.

Given that a large amount of seawater is drawn in to cool the reactors, measures have been taken to preserve the biological diversity of the Mannar Bay adjacent to Kudankulam.

Seawater is supplied from the so-called “bucket” constructed in the sea into the special facilities and systems which ensure that fish and plankton return to sea.

It is the single largest nuclear power station in India, situated in Koodankulam in the Tirunelveli district of the southern Indian state of Tamil Nadu.

KKNPP is scheduled to have six VVER-1000 reactors built in collaboration with Atomstroyexport, the Russian state company and Nuclear Power Corporation of India Limited (NPCIL), with an installed capacity of 6,000 MW of electricity.

The main distinguishing features of the VVER compared to other PWRs are:

- Horizontal steam generators
- Hexagonal fuel assemblies
- No bottom penetrations in the pressure vessel
- High-capacity pressurisers providing a large reactor coolant inventory

Read More - <http://www.thehindu.com/news/national/The-story-of-Kudankulam-From-1988-to-2016/article14564027.ece>

Source: <http://www.thehindu.com/news/national/Kudankulam-plant-safest-in-the-world-says-Russian-official/article14544107.ece>

Q.17) Consider the following statements about CRISPR

1. It allows scientists to selectively edit genome parts and replace them with new DNA stretches
2. It consists of two key molecules that introduce a change into the DNA – Cas9 and Guide RNA (gRNA)
3. CRISPRs do not need to be paired with separate cleaving enzymes as other tools do

Select the correct statements

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

Q.17) Solution (c)

Clustered Regularly Interspaced Short Palindromic Repeats

CRISPR-Cas9 is a genome editing tool that is creating a buzz in the science world. It is faster, cheaper and more accurate than previous techniques of editing DNA and has a wide range of potential applications.

CRISPR-Cas9 is a unique technology that enables geneticists and medical researchers to edit parts of the genome by removing, adding or altering sections of the DNA sequence.

The CRISPR-Cas9 system consists of two key molecules that introduce a change into the DNA. These are:

- an enzyme called Cas9. This acts as a pair of 'molecular scissors' that can cut the two strands of DNA at a specific location in the genome so that bits of DNA can then be added or removed.
- a piece of RNA called guide RNA (gRNA). This consists of a small piece of pre-designed RNA sequence (about 20 bases long) located within a longer RNA scaffold. The scaffold part binds to DNA and the pre-designed sequence 'guides' Cas9 to the right part of the genome. This makes sure that the Cas9 enzyme cuts at the right point in the genome.

Since the CRISPR-Cas9 system itself is capable of cutting DNA strands, CRISPRs do not need to be paired with separate cleaving enzymes as other tools do.

Read More - <http://www.yourgenome.org/facts/what-is-crispr-cas9>

Source: <http://www.thehindu.com/sci-tech/health/First-human-genetic-editing-trial-in-China/article14547625.ece>

Q.18) The endeavour of MAA programme is

- a) To ensure adequate awareness is generated among masses, especially mothers, on the benefits of breastfeeding
- b) To promote institutional deliveries
- c) To provide monetary assistance to the mother to meet the cost of delivery
- d) To provide for wage loss due to pregnancy and confinement

Q.18) Solution (a)

MAA (Mothers Absolute Affection), a flagship programme to ensure adequate awareness is generated among masses, especially mothers, on the benefits of breastfeeding.

"MAA-Mother's Absolute Affection" is a nationwide programme launched in an attempt to bring undiluted focus on promotion of breastfeeding and provision of counselling services

for supporting breastfeeding through health systems. The programme has been named 'MAA' to signify the support a lactating mother requires from family members and at health facilities to breastfeed successfully. The chief components of the MAA Programme are Community awareness generation, Strengthening inter personal communication through ASHA, Skilled support for breastfeeding at Delivery points in Public health facilities, and Monitoring and Award/recognition.

Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=148531>

Q.19) Recently Reserve Bank of India (RBI) launched Sachet' portal to

- a) Curb illegal collection of money by companies
- b) Promote financial literacy
- c) Facilitate RBI's Core Banking Solution (CBS)
- d) None of the above

Q.19) Solution (a)

- The Reserve Bank of India (RBI) launched a portal to curb illegal collection of money by companies.
- The website will enable public to obtain information regarding entities who accept deposits, lodge complaints and also share information regarding illegal acceptance of deposits.
- The website would also help enhance coordination among regulators and state government agencies.
- The website also incorporates regulations prescribed by all financial regulators that one has to follow.
- 'Sachet' also has a section for closed user group for State Level Coordination Committee (SLCCs) wherein they could share market intelligence and other information about their activities as well as agenda and minutes of meetings across the country in real time.
- All states have SLCCs comprising of various regulators, including RBI, Securities and Exchange Board of India (Sebi), National Housing Bank (NHB), Insurance Regulatory and Development Authority (IRDA), Registrar of Companies (ROC) and concerned state government departments, such as, home, finance, law and various police authorities.

The Portal - <http://sachet.rbi.org.in/home/index>

Source: http://www.business-standard.com/article/finance/rbi-launches-sachet-portal-to-check-illegal-money-collection-116080401392_1.html

Q.20) Which of the following is associated with mobile internet coverage speed?

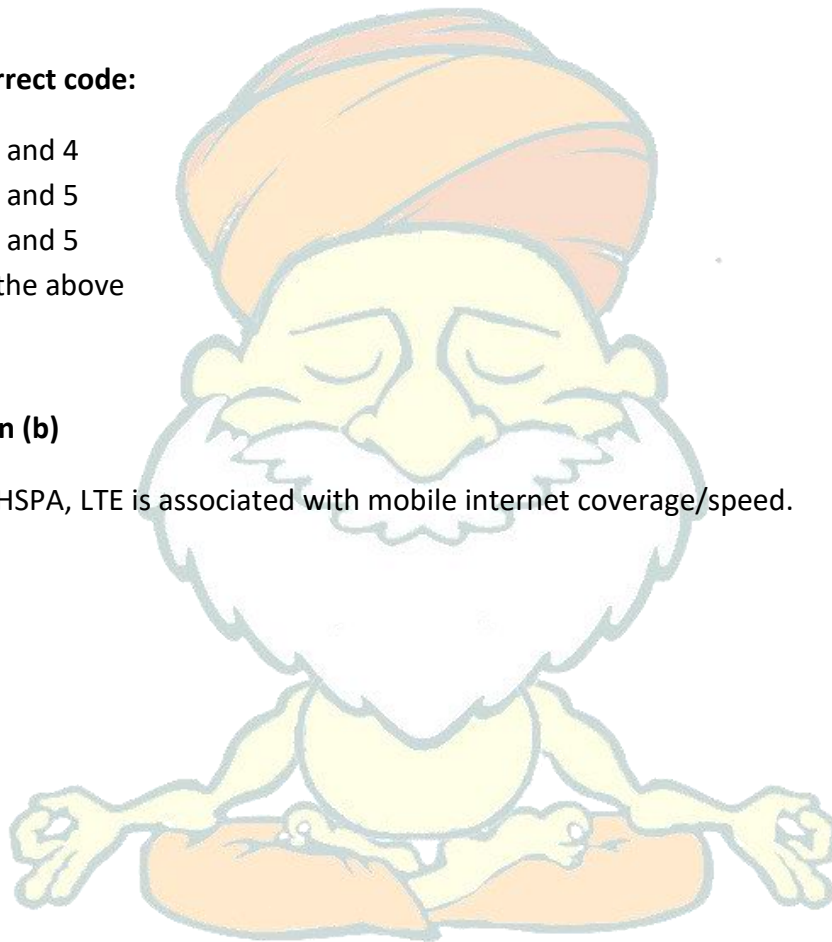
1. EDGE
2. HSPA
3. NFC
4. GPRS
5. LTE

Select the correct code:

- a) 1, 2, 3 and 4
- b) 1, 2, 4 and 5
- c) 1, 3, 4 and 5
- d) All of the above

Q.20) Solution (b)

GPRS, EDGE, HSPA, LTE is associated with mobile internet coverage/speed.



Symbol	Standard	Full Name	Maximum Download Speed (Theoretical)	Maximum Upload Speed (Theoretical)
2G	GSM	Global System for Mobile Communications	14.4 Kbits/s	14.4 Kbits/s
G	GPRS	General Packet Radio Service	53.6 Kbits/s	26.8 Kbits/s
E	EDGE	Enhanced Data rates for GSM Evolution	217.6 Kbits/s	108.8 Kbits/s
3G	UMTS	Universal Mobile Telecommunications System	384 Kbits/s	128 Kbits/s
H	HSPA	High-Speed Packet Access	7.2 Mbits/s	3.6 Mbits/s
H+	HSPA+	Evolved High-Speed Packet Access - Release 6	14.4 Mbits/s	5.76 Mbits/s
H+	HSPA+	Evolved High-Speed Packet Access - Release 7	21.1 Mbits/s or 28.0 Mbits/s	11.5 Mbits/s
H+	HSPA+	Evolved High-Speed Packet Access - Release 8	42.2 Mbits/s	11.5 Mbits/s
H+	HSPA+	Evolved High-Speed Packet Access - Release 9	84.4 Mbits/s	11.5 Mbits/s
H+	HSPA+	Evolved High-Speed Packet Access - Release 10	168.8 Mbits/s	23.0 Mbits/s
4G	LTE	Long Term Evolution	100 Mbits/s	50 Mbits/s
4G	LTE-A	Long Term Evolution - Advanced	1 Gbits/s	500 Mbits/s

Near-field communication (NFC) is a set of communication protocols that enable two electronic devices, one of which is usually a portable device such as a smartphone, to establish communication by bringing them within 4 cm (1.6 in) of each other.

Q.21) This tool allows developing countries to raise tariffs temporarily to deal with import surges or price falls. Identify the tool from the following options:

- Special Drawing Rights
- Special Safeguard Mechanism
- GATT
- National Treatment Obligation

Q.21) Solution (b)

WTO's Special Safeguard Mechanism (SSM) is a protection measure allowed for developing countries to take contingency restrictions against agricultural imports that are causing

injuries to domestic farmers. The contingency measure is imposition of tariff if the import surge causes welfare loss to the domestic poor farmers. The design and use of the SSM is an area of conflict under the WTO.

In WTO's terms, safeguards are contingency or emergency restrictions on imports taken temporarily to deal with special circumstances such as a surge in imports. Contingency restriction means imposition of an import tax if the imports are causing injuries to domestic agricultural sector. The original GATT itself allows such restrictions to protect domestic economy.

At the Doha Ministerial Conference, the developing countries were given a concession to adopt a Special Safeguard Mechanism (SSM) besides the existing safeguards (like the Special Agricultural Safeguard or the SSG). This SSM constituted an important part of the promises offered to the developing world at Doha (known as Doha Development Agenda) and the Doha MC became known as a development round.

As mentioned, the Special Safeguard Mechanism (SSM) allowed developing countries to raise import duties on agricultural products in response to import surges.

The SSG was available to all countries- both developing and developed whereas the SSM is allowable only to the developing countries. It is to be mentioned that the SSG was available as it was inducted under the GATT agreement; whereas the SSM was the invention of the Doha MC.

Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=148541>

Q.22) Consider the following statements with respect to Food Safety and Standards Authority of India (FSSAI).

1. It is established under the Food Safety and Standards Act, 2006
2. Ministry of Consumer Affairs, Food and Public Distribution is administrative ministry for the implementation of FSSAI

Which of the following statements is/are correct?

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

Q.22) Solution (a)

FSSAI

- FSSAI is established under FSS Act, 2006
- It is a statutory body for laying down science based standards for articles of food and regulating manufacturing, processing, distribution, sale and import of food so as to ensure safe and wholesome food for human consumption
- Ministry of Health & Family Welfare, Government of India is the Administrative Ministry for the implementation of FSSAI.
- Chairperson and CEO of FSSAI is appointed by Government of India
- The Chairperson is in the rank of Secretary to Government of India

Source: <http://www.livemint.com/Politics/8621Grfw5wxzrnPDjPgyqM/FSSAI-wants-to-regulate-quality-of-tap-water.html>

Q.23) Global Innovation Index (GII) is released by

- a) World Economic Forum
- b) World Bank
- c) IMF
- d) None of the above

Q.23) Solution (d)

Global Innovation Index (GII) 2016 has been released. It is published by Cornell University, INSEAD, and the World Intellectual Property Organization, in partnership with other organizations and institutions.

GII 2016 Theme: "Winning with Global Innovation".

Source: <http://www.livemint.com/Politics/IATexj4C2o8ynCSRyM1VeL/India-climbs-15-spots-in-innovation-ranking.html>

