Detailed Solution
Model Test 21 (Paper I)

1. **Correct Answer is : (b) Plaster of Paris**

Calcium sulfate (or calcium sulphate) is a common laboratory and industrial chemical. In the form of anhydrite (the nearly anhydrous form), it is used as a desiccant. It is also used as a coagulant in products like tofu. In the natural state, unrefined calcium sulfate is a translucent, crystalline white rock. When sold as a color-indicating variant under the name Drierite, it appears blue or pink due to impregnation with Cobalt(II) chloride, which functions as a moisture indicator. The hemihydrate ($CaSO_4 \cdot \sim 0.5H_2O$) is better known as plaster of Paris, while the dihydrate ($CaSO_4 \cdot 2H_2O$) occurs naturally as gypsum. The anhydrous form occurs naturally as ß-anhydrite. Depending on the method of calcination of calcium sulfate dihydrate, specific hemihydrates are sometimes distinguished: alpha-hemihydrate and beta-hemihydrate. They appear to differ only in crystal size. Alpha-hemihydrate crystals are more prismatic than beta-hemihydrate crystals and, when mixed with water, form a much stronger and harder superstructure

2. -**Correct Answer is : (b) Ptyalin**

Amylase is an enzyme EC 3.2.1.1that hydrolyses alpha-bonds of large alpha-linked polysaccharides, such as starch and glycogen, yielding glucose and maltose. It is the major form of amylase found in humans and other mammals. It is also present in seeds containing starch as a food reserve, and is secreted by many fungi.

Salivary amylase (ptyalin)

Amylase is found in saliva and breaks starch down into maltose and dextrin. This form of amylase is also called "ptyalin". It will break large, insoluble starch molecules into soluble starches (amylodextrin, erythrodextrin, and achrodextrin), producing successively smaller starches and ultimately maltose. Ptyalin acts on linear a(1,4) glycosidic linkages, but compound hydrolysis requires an enzyme that acts on branched products. Salivary amylase is inactivated in the stomach by gastric acid. In gastric juice adjusted to pH 3.3, ptyalin was totally inactivated in 20 minutes at 37℃. In contrast, 50% of amylase activity remained after 150 minutes of exposure to gastric juice at pH 4.3. Both starch, the substrate for ptyalin, and the product (short chains of glucose) are able to partially protect it against inactivation by gastric acid.

3. **Correct Answer is : (a) Art 14**

Article 14 in The Constitution Of India 1949

14. Equality before law The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth.

4. **Correct Answer is : (d) Lok Sabha has special powers to declare that it is necessary and expedient in the national interest that Parliament may make laws with respect to a matter in the State List or to create by law one or more all-India services common to the Union and the States**

Difference between Lok Sabha and Rajya Sabha
1.Members of Lok Sabha are directly elected by the eligible voters. Members of Rajya Sabha are elected by the elected members of State Legislative Assemblies in accordance with the system of proportional representation by means of single transferable vote.
2.The normal life of every Lok Sabha is 5 years only while Rajya Sabha is a permanent body.
3.Lok Sabha is the House to which the Council of Ministers is responsible under the Constitution. Money Bills can only be introduced in Lok Sabha. Also it is Lok Sabha, which grants the money for running the administration of the country.
4.Rajya Sabha has special powers to declare that it is necessary and expedient in the national interest that Parliament may make laws with respect to a matter in the State List or to create by law one or more all-India services common to the Union and the States.

5. **Correct Answer is : (a) Only 1 is correct**

SIDBI was established on April 2, 1990 under an act of Parliament. The business domain of SIDBI consists of small scale industrial units (Units in which the investment in plant and machinery does not exceed Rs.10 million). In addition, SIDBI's assistance flows to the transport, health care, hotel and tourism sectors, infrastructure, etc, and also to the professional and self-employed persons setting up small-sized professional ventures.

6. **Correct Answer is : (c) 1.60**

CO2 emissions (metric tons per capita) in India

The CO2 emissions (metric tons per capita) in India was reported at 1.53 in 2008, according to the World Bank. Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They

include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.This page includes a historical data chart, news and forecasts for CO2 emissions (metric tons per capita) in India. India's diverse economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of services. Services are the major source of economic growth, accounting for more than half of India's output with less than one third of its labor force. The economy has posted an average growth rate of more than 7% in the decade since 1997, reducing poverty by about 10 percentage points.

7. **Correct Answer is : (b) Art 40**

Article 40 in The Constitution Of India 1949

40. Organisation of village panchayats The State shall take steps to organize village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self government.

8. **Correct Answer is : (c) Andaman islands**

In the past 100 years, man has captured the sea, the air and land, making the world a much smaller place and facilitating contact between different races of people. However, sustained contact invariably resulted in certain homogeneity in dress, mannerisms and several other factors that eventually lead to many ethnic groups losing their identity – with language suffering the most.

“The last speaker of the Bo language died in 2010 and the Kora language became extinct in 2009,” says linguistics Professor Anvita Abbi, who spent the last six years painstakingly researching languages in the Andaman Islands that are extinct or on the verge of being lost forever.

Her new book, “Dictionary of the Great Andamanese Language”, released on Monday, is a blend of four different tongues of the region, two of which are already extinct and includes a CD of the entire dictionary backed by original sound recordings of the language.

“Bo, Kora Sare and Jeru follow the same grammatical structure but with different words,” she says before explaining: “In the 1970s, the Indian Government realised that these languages are under threat and that the people speaking these languages were scattered all across the north Andamanese Islands. They were 26 families who were speaking these languages who were brought together and made to live in ‘Straight Island,' where they inter-married.”

9. **Correct Answer is : (d) Art 54**

Article 54 in The Constitution Of India 1949

54. Election of President The President shall be elected by the members of an electoral college consisting of the elected members of both Houses of Parliament; and the elected members of the Legislative Assemblies of the States.

10. **Correct Answer is : (d) Heavy Engineering**

11. **Correct Answer is : (c) Krishna I**

Ellora also known as Ellooru is an archaeological site, 29 km (18 mi) North-West of the city of Aurangabad in the Indian state of Maharashtra built by the Kannadiga Rashtrakuta dynasty . Well known for its monumental caves, Ellora is a World Heritage Site. Ellora represents the epitome of Indian rock-cut architecture. The 34 "caves" – actually structures excavated out of the vertical face of the Charanandri hills. Buddhist, Hindu and Jain rock-cut temples and viharas and mathas were built between the 5th century and 10th century. The 12 Buddhist (caves 1–12), 17 Hindu (caves 13–29) and 5 Jain (caves 30–34) caves, built in proximity, demonstrate the religious harmony prevalent during this period of Indian history.

Cave 16, also known as the Kailasa or the Kailasanatha, is the unrivaled centerpiece of Ellora. This is designed to recall Mount Kailash, the abode of Lord Shiva – looks like a freestanding, multi-storeyed temple complex, but it was carved out of one single rock, and covers an area double the size of Parthenon in Athens. Initially the temple was covered with white plaster thus even more increasing the similarity to snow covered Mount Kailash.

The temple is a splendid achievement of Dravidian art. This project was started by Krishna I (757–773) of the Rashtrakuta dynasty that ruled from Manyakheta in present day Karnataka state. His rule had also spread to southern India, hence this temple was excavated in the prevailing style. Its builders modelled it on the lines of the Virupaksha Temple in Pattadakalh. Being a south Indian style temple, it does not have a shikhara common to north Indian temples.

12. **Correct Answer is : (b) Art 315**

Article 315 in The Constitution Of India 1949

315. Public Service Commissions for the Union and for the States

(1) Subject to the provisions of this article, there shall be a Public Service Commission for the Union and a Public Service Commission for each State

(2) Two or more States may agree that there shall be one Public Service Commission for that group of States, and if a resolution to that effect is passed by the House or, where there are two Houses, by each House of the Legislature of each of those States, Parliament may by law provide for the appointment of a Joint State Public Service Commission (referred to in this Chapter as Joint Commission) to serve the needs of those States

(3) Any such law as aforesaid may contain such incidental and consequential provisions as may be necessary or desirable for giving effect to the purposes of the law

(4) The Public Service Commission for the Union, if requested so to do by the Governor of a State, may, with the approval of the President, agree to serve all or any of the needs of the State

(5) References in this Constitution to the Union Public Service Commission or a State Public Service Commission shall, unless the context otherwise requires, be construed as references to the Commission serving the needs of the Union or, as the case may be, the State as respects the particular matter in question.

13. **Correct Answer is : (c) Both 1 and 2 are correct**

The National Stock Exchange of India Ltd. is the largest stock exchange of thecountry. NSE is setting the agenda for change in the securities markets in India.
The last 5 years have seen us play a major role in bringing investors from 363 cities and towns online, ensuring complete transparency, introducing financial guarantee of settlements, ensuring scientifically designed and professionally managed indices and by nurturing the dematerialization effort across the country. NSE is a complete capital market prime mover. Its wholly-owned subsidiaries, National Securities Clearing Corporation Ltd. (NSCCL) provides clearing and settlement of securities, India Index Services and Products Ltd. (IISL) provides indices and index services with a consulting and licensing agreement with Standard & Poor's (S&P), and NSE.IT Ltd. forms the technology strength that NSE works on.

14. **Correct Answer is : (c) Mercalli scale**

The Mercalli intensity scale is a seismic scale used for measuring the intensity of an earthquake. It measures the effects of an earthquake, and is distinct from the moment magnitude usually reported for an earthquake (sometimes described as the obsolete Richter magnitude), which is a measure of the energy released. The intensity of an earthquake is not totally determined by its magnitude.

The scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature, and man-made structures on a scale from I (not felt) to XII (total destruction). Values depend upon the distance to the earthquake, with the highest intensities being around the epicentral area. Data gathered from people who have experienced the quake are used to determine an intensity value for their location. The Mercalli (Intensity) scale originated with the widely-used simple ten-degree Rossi-Forel scale, which was revised by Italian vulcanologist Giuseppe Mercalli in 1884 and 1906.

In 1902 the ten-degree Mercalli scale was expanded to twelve degrees by Italian physicist Adolfo Cancani. It was later completely re-written by the German

geophysicist August Heinrich Sieberg and became known as the Mercalli-Cancani-Sieberg (MCS) scale.

The Mercalli-Cancani-Sieberg scale was later modified and published in English by Harry O. Wood and Frank Neumann in 1931 as the Mercalli-Wood-Neumann (MWN) scale. It was later improved by Charles Richter, the father of the Richter magnitude scale.

The scale is known today as the Modified Mercalli scale (MM) or Modified Mercalli Intensity scale (MMI).

15. **Correct Answer is : (c) Bengali**

With nearly 230 million total speakers, Bengali is one of the most spoken languages (ranking fifth or sixth in the world). Bengali is the primary language spoken in Bangladesh and is the second most spoken language in India.

16. **Correct Answer is : (c) Guru Gobind Singh**

The term guru comes from the Sanskrit guru, meaning teacher, guide, or mentor. The traditions and philosophy of Sikhi were established by ten specific gurus from 1469 to 1708. Each guru added to and reinforced the message taught by the previous, resulting in the creation of the Sikh religion. Guru Nanak Dev was the first guru and appointed a disciple as successor. Guru Gobind Singh was the final guru in human form. Before his death, Guru Gobind Singh decreed that the Guru Granth Sahib would be the final and perpetual guru of the Sikhs.

17. **Correct Answer is : (c) Declination**

In astronomy, declination (abbrev. dec or d) is one of the two coordinates of the equatorial coordinate system, the other being either right ascension or hour angle. Declination in astronomy is comparable to geographic latitude, but projected onto the celestial sphere. Declination is measured in degrees north and south of the celestial equator. Points north of the celestial equator have positive declinations, while those to the south have negative declinations.
An object on the celestial equator has a declination of 0°.
An object at the celestial north pole has a declination of +90°.
An object at the celestial south pole has a declination of -90°.

18. **Correct Answer is : (b) Cell Membrane**

The cell membrane or plasma membrane is a biological membrane that separates the interior of all cells from the outside environment. The cell

membrane is selectively permeable to ions and organic molecules and controls the movement of substances in and out of cells. It basically protects the cell from outside forces. It consists of the lipid bilayer with embedded proteins. Cell membranes are involved in a variety of cellular processes such as cell adhesion, ion conductivity and cell signaling and serve as the attachment surface for several extracellular structures, including the cell wall, glycocalyx, and intracellular cytoskeleton. Cell membranes can be artificially reassembled.

19. **Correct Answer is : (a) Mesa**

A mesa (Spanish and Portuguese for "table") is the American English term for tableland, an elevated area of land with a flat top and sides that are usually steep cliffs. It takes its name from its characteristic table-top shape.

It is a characteristic landform of arid environments, particularly the Southwestern United States. Many examples are also found in Spain, Sardinia, North and South Africa, Arabia, India, Australia, badlands and in the mountainous parts of Wyoming, Idaho, Montana, Texas, and Oklahoma. Grand Mesa is a large mesa located in western Colorado in the Southwest United States.

The term "mesa" is used throughout the United States to describe a flat-topped mountain or hill. In Spanish such a landform is more usually known as a meseta.

Mesas are formed by weathering and erosion of horizontally layered rocks that have been uplifted by tectonic activity. Variations in the ability of different types of rock to resist weathering and erosion cause the weaker types of rocks to be eroded away, leaving the more resistant types of rocks topographically higher than their surroundings. This process is called differential erosion. The most resistant rock types include sandstone, conglomerate, quartzite, basalt, chert, limestone, lava flows and sills. Lava flows and sills, in particular, are very resistant to weathering and erosion, and often form the flat top, or caprock, of a mesa. The less resistant rock layers are mainly made up of shale, a softer rock that weathers and erodes more easily.

20. **Correct Answer is : (c) A-4, B-3, C-1, D-2**

Article 239 in The Constitution Of India 1949

239. Administration of Union territories
(1) Save as otherwise provided by Parliament by law, every Union territory shall be administered by the President acting, to such extent as he thinks fit, through an administrator to be appointed by him with such designation as he may specify

(2) Notwithstanding anything contained in Part VI, the President may appoint the Governor of a State as the administrator of an adjoining Union territory, and where a Governor is so appointed, he shall exercise his functions as such administrator independently of his Council of Ministers.

Art 239A. Creation of local Legislatures or Council of Ministers or both for certain Union territories.-(1) Parliament may by law create for any of the Union territories of Himachal Pradesh, Manipur, Tripura, Goa, Daman and Diu, and Pondicherry-

(a) a body, whether elected or partly nominated and partly elected, to function as a Legislature for the Union territory, or

(b) a Council of Ministers,

or both with such constitution, powers and functions, in each case, as may be specified in the law.

Article 240 in The Constitution Of India 1949

240. Power of President to make regulations for certain Union territories
(1) The President may make regulations for the peace, progress and good government of the Union territory of
(a) the Andaman and Nicobar Islands;

(b) Lakshadweep;

(c) Dadra and Nagar Haveli;

(d) Daman and Diu;

(e) Pondicherry; Provided that when any body is created under Article 239A to function as a Legislature for the Union territories of Pondicherry, the President shall not make any regulation for the peace, progress and good government of that Union territory with effect from the date appointed for the first meeting of the Legislature: Provided further that whenever the body functioning as a Legislature for the Union territory of Pondicherry is dissolved, or the functioning of that body as such Legislature remains suspended on account of any action taken under any such law as is referred to in clause (1) of Article 239A, the President may, during the period of such dissolution or suspension, make regulations for the peace, progress and good government of that Union territory.

Article 241 in The Constitution Of India 1949

241. High Courts for Union territories

(1) Parliament may by law constitute a High Court for a Union territory or declare any court in any such territory to be a High Court for all or any of the purposes of this Constitution

(2) The provisions of Chapter V of Part VI shall apply in relation to every High Court referred to in clause (1) as they apply in relation to a High Court referred to in Article 214 subject to such modifications or exceptions as Parliament may by law provide.

21. **Correct Answer is : (c) Wadi**

Wadi (Arabic: wadi; also: Vadi) is the Arabic term traditionally referring to a valley. In some cases, it may refer to a dry (ephemeral) riverbed that contains water only during times of heavy rain or simply an intermittent stream.

Modern English usage differentiates a wadi from another canyon or wash by the action and prevalence of water. Wadis, as drainage courses, are formed by water, but are distinguished from river valleys or gullies in that surface water is intermittent or ephemeral. Wadis, cut by stream in a desert environment, generally are dry year round except after a rain. The desert environment is characterized by a sudden but infrequent heavy rainfall often resulting in flash floods. Crossing wadis at certain times of the year can be dangerous because of unexpected flash floods. Such flash floods cause several deaths each year in North America and many Middle Eastern countries.

22. **Correct Answer is : (d) Protoplasm**

Protoplasm is the living contents of a cell that is surrounded by a plasma membrane. It is a general term of the Cytoplasm . Protoplasm is composed of a mixture of small molecules such as ions, amino acids, monosaccharides and water, and macromolecules such as nucleic acids, proteins, lipids and polysaccharides. In eukaryotes the protoplasm surrounding the cell nucleus is known as the cytoplasm and that inside the nucleus as the nucleoplasm. In prokaryotes the material inside the plasma membrane is the bacterial cytoplasm, while in Gram-negative bacteria the region outside the plasma membrane but inside the outer membrane is the periplasm.

The word 'protoplasm' comes from the Greek protos for first, and plasma for thing formed. It was first used in 1846 by Hugo von Mohl to describe the "tough, slimy, granular, semi-fluid" substance within plant cells, to distinguish this from the cell wall, cell nucleus and the cell sap within the vacuole. Thomas Huxley later referred to it as the "physical basis of life" and considered that the property of life resulted from the distribution of molecules within this substance. Its composition, however, was mysterious and there was much controversy over what sort of substance it was. Attempts to investigate the origin of life through the creation of synthetic "protoplasm" in the laboratory were not successful, yet.

23. **Correct Answer is : (a) Nashik, Raichur, Kudatini, Bellary**

24. **Correct Answer is : (b) Progeria**

Progeria (also known as "Hutchinson–Gilford Progeria Syndrome", "Hutchinson–Gilford syndrome", and "Progeria syndrome" is an extremely rare genetic condition wherein symptoms resembling aspects of aging are manifested at an early age. The word progeria comes from the Greek words "pro", meaning "before", and "géras", meaning "old age". The disorder has very low incidences and occurs in an estimated 1 per 8 million live births. Those born with progeria typically live to their mid teens and early twenties. It is a genetic condition that occurs as a new mutation (de novo), and is rarely inherited. Although the term progeria applies strictly speaking to all diseases characterized by premature aging symptoms, and is often used as such, it is often applied specifically in reference to Hutchinson-Gilford Progeria Syndrome (HGPS).

Scientists are particularly interested in progeria because it might reveal clues about the normal process of aging. Progeria was first described in 1886 by Jonathan Hutchinson. It was also described independently in 1897 by Hastings Gilford. The condition was later named Hutchinson-Gilford Progeria Syndrome (HGPS).

25. **Correct Answer is : (c) Pine**

Medicinal Uses: Juniper fruits are commonly used in herbal medicine, as a household remedy, and also in some commercial preparations. They are especially useful in the treatment of digestive disorders plus kidney and bladder

problems. The fully ripe fruits are strongly antiseptic, aromatic, carminative, diaphoretic, strongly diuretic, rubefacient, stomachic and tonic. They are used in the treatment of cystitis, digestive problems, chronic arthritis, gout and rheumatic conditions.

26. **Correct Answer is : (a) Newly Industrialised Country**

The category of newly industrialized country (NIC) is a socioeconomic classification applied to several countries around the world by political scientists and economists.

NICs are countries whose economies have not yet reached First World status but have, in a macroeconomic sense, outpaced their developing counterparts. Another characterization of NICs is that of nations undergoing rapid economic growth (usually export-oriented). Incipient or ongoing industrialization is an important indicator of a NIC. In many NICs, social upheaval can occur as primarily rural, or agricultural, populations migrate to the cities, where the growth of manufacturing concerns and factories can draw many thousands of laborers.

NICs usually share some other common features, including:
Increased social freedoms and civil rights.
Strong political leaders.
A switch from agricultural to industrial economies, especially in the manufacturing sector.
An increasingly open-market economy, allowing free trade with other nations in the world.
Large national corporations operating in several continents.
Strong capital investment from foreign countries.
Political leadership in their area of influence.

NICs often receive support from international organizations such as the World Trade Organization (WTO) and other internal support bodies. However, as environmental, labor, and social standards tend to be significantly weaker in NICs, many fair trade supporters have advocated standards for importing their products and criticized the outsourcing of jobs to NICs.

27. **Correct Answer is : (c) Genistein**

Genistein is one of several known isoflavones. Isoflavones, such as genistein and daidzein, are found in a number of plants including lupin, fava beans, soybeans, kudzu, and psoralea being the primary food source, also in the medicinal plant, Flemingia vestita and coffee. Besides functioning as antioxidant and anthelmintic, many isoflavones have been shown to interact with animal and

human estrogen receptors, causing effects in the body similar to those caused by the hormone estrogen. Isoflavones also produce non-hormonal effects.

Genistein was first isolated in 1899 from the dyer's broom, Genista tinctoria; hence, the chemical name derived from the generic name. The compound nucleus was established in 1926, when it was found to be identical with prunetol. It was chemically synthesized in 1928

28. **Correct Answer is : (b) Burgess**

The Concentric zone model also known as the Burgess model is one of the earliest theoretical models to explain urban social structures. It was created by sociologist Ernest Burgess in 1924.

Based on human ecology theories done by Burgess and applied on Chicago, it was the first to give the explanation of distribution of social groups within urban areas. This concentric ring model depicts urban land use in concentric rings: the Central Business District (or CBD) was in the middle of the model, and the city expanded in rings with different land uses. It is effectively an urban version of Von Thunen's regional land use model developed a century earlier. It contrasts with Homer Hoyt's sector model and the multiple nuclei model.

The zones identified are:

1.The center was the CBD
2.The transition zone of mixed residential and commercial uses or the Zone of Transition
3.Working class residential homes (inner suburbs), in later decades called inner city or Zone of independent working men's home
4.Better quality middle-class homes (Outer Suburbs) or Zone of better Housing
5.Commuters zone

The model is more detailed than the traditional down-mid-uptown divide by which downtown is the CBD, uptown the affluent residential outer ring, and midtown in between.

Burgess's work is based on the bid rent curve. This theory states that the concentric circles are based on the amount that people will pay for the land. This value is based on the profits that are obtainable from maintaining a business on that land. The center of the town will have the highest number of customers so it is profitable for retail activities. Manufacturing will pay slightly less for the land as they are only interested in the accessibility for workers, 'goods in' and 'goods out'. Residential land use will take the surrounding land.

29. **Correct Answer is : (a) Valerian**

Valerian, in pharmacology and phytotherapic medicine, is the name of an herb or dietary supplement prepared from roots of the plant, which, after maceration, trituration and dehydration processes, are packaged, usually into capsules. Based on its pharmacological mode of action, valerian root has been demonstrated to possess sedative and anxiolytic effects.

The amino acid valine is named after this plant.

30. **Correct Answer is : (d) 1946**

The widening gulf between the Congress and the Muslim League ultimately led to the passing by the Muslim League of the famous Pakistan resolution in 1940.

The idea of Pakistan was first mooted by India's most popular and influential poet Muhammad Iqbal. In his presidential address at the All-India Muslim League session at Allahabad he said.

"I would like to see the Punjab, North-West Frontier Province, Sindh and Baluchistan amalgamated into a single state. Self government within the British Empire or without the British Empire, the formation of a consolidated North-West Indian Muslim state appears to me to be the final destiny of the Muslims at least of North-West India".

What Iqbal precisely envisaged is not clear. Subsequent commentators have maintained that he foreshadowed a separate, free Muslim state. But the fact is that Iqbal was not thinking in terms of the partition of India, but in terms of a federation of autonomous states within India.

The idea as well as the name of Pakistan was suggested by Chowdhary Rahmat Ali, a student of Cambridge University in 1930. He published a pamphlet 'Now or Never' in 1933 in which he advocated a separate Muslim state in the North-West of India. He named it Pakistan which meant the land of the pure and was coined from the first letters of Punjab, Afghanistan, Kashmir, Sindh and the final part of Baluchistan. This did not include Bengal where Muslims were also concentrated. However, in the beginning the idea was dismissed as a school boyish exercise, a chimera. But the idea became popular during the period 1937-39 when the Muslim League carried on baseless communal propaganda against the Congress. Finally, the Lahore sessions of the League passed the following resolution on March 24, 1940.

31. **Correct Answer is : (b) H. C. Urey**

The American chemist Harold Clayton Urey discovered in 1932 the presence in water of a small amount (1 part in 6000) of so-called heavy water, or deuterium.

32. **Correct Answer is : (c) Angola and Zambia**

The Ogaden War was a conventional conflict between Somalia and Ethiopia in 1977 and 1978 over the Ogaden region of Ethiopia. Fighting erupted as Somalia sought to exploit a temporary shift in the regional balance of power in their favour to occupy the Ogaden region, claimed to be part of Greater Somalia. In a notable illustration of the nature of Cold War alliances, the Soviet Union switched from supplying aid to Somalia to supporting Ethiopia, which had previously been backed by the United States, prompting the U.S. to start supporting Somalia. The war ended when Somali forces retreated back across the border and a truce was declared.

33. **Correct Answer is : (c) Both 1 and 2 are correct**

The Neelum River, or Kishanganga, is a river in the Kashmir region of India and Pakistan.

In the Indian state of Jammu & Kashmir, the construction work on the 330 MW Kishanganga Hydroelectric Plant project has started, after being defunct for eighteen years. Recently, the project was awarded to Hindustan Construction Company (HCC) with a timeline of seven years. The 330 MW Kishanganga hydro-electric power project involves damming of Kishanganga or Neelam River and the proposed 37 metre reservoir will submerge some parts of the Gurez valley of India. The water of Kishen Ganga River will be diverted through a 24 kilometre tunnel dug through the mountains to Bandipore where it will join the Wular Lake and then Jhelum River.

Similarly, Pakistan is constructing the 969 MW Neelum–Jhelum Hydropower Plant; the country has placed the project in the hands of a Chinese consortium. Pakistan claims that the Indian dam project will violate the Indus Waters Treaty and has pursued formal arbitration proceedings against India over the matter.

34. **Correct Answer is : (c) sugar**

35. **Correct Answer is : (d) 4.25**

CO2 emissions (metric tons per capita)

Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.

Current World carbon dioxide(CO2) emissions from the consumption of energy: 4.47 Metric Tons of Carbon Dioxide per person.

36. **Correct Answer is : (a) a**

Acceleration due to gravity is the acceleration of a freely falling body. Free falling means to drop vertically with no air resistance and an acceleration that doesn't change, or that is constant. The symbol for acceleration due to gravity is the letter g. The acceleration due to gravity, g is directed towards the center of whatever object gravity is draw towards, for example Earth, or any other planet.

An equation can be used to find the gravitational acceleration in different places. This equation is …

G is a constant, called the universal gravitational constant, which is equal to 6.67 × 10-11 N·m2/kg2. M is the mass of the object in which gravitational acceleration is being found. R is the radius of the object. There is a negative sign in front of the equation because objects in free fall always fall downwards toward the center of the object.

The acceleration due to gravity is 1.62 m/s2. This is approximately 1/6 that of the acceleration due to gravity on Earth, 9.81 m/s2.

37. **Correct Answer is : (a) a**

A parabolic microphone is effectively a mirror telescope for sound. When sound waves strike the dense, rigid surface of the parabolic dish, they partially reflect. This reflection occurs because sound travels much faster in a rigid solid than in the air and changes in the speed of a wave cause part of it to reflect. In this case, the reflection redirects the sound waves inward because the reflecting surface is curved and the sound waves form a real image of the distant source that produced them. While you can't see this real image with your eyes, you can hear it with your ears. If you were to mount a large parabolic dish so that it faced horizontally and then moved your ear around in the focal plane of the dish, you would hear sounds coming from various objects far away from the dish. The same effect occurs for light when it bounces off a curved mirror—a real mirror telescope. A TV satellite dish is the same thing, but this time for microwaves! In all three cases, the real images that form are upside down. To make a parabolic microphone, you normally put a conventional microphone in the central focus of a parabolic surface so that the microphone receives all the sound coming from objects directly in front of the parabola. To listen to different objects, you simply steer the parabola from one to the other. This is exactly what a TV satellite dish does when it wants to "listen" to a different satellite—it steers from one to the other.

38. **Correct Answer is : (a) a**

The earth is a globe, of course, and can be divided into lots of lines called latitude and longitude.
Latitude lines run east and west and measure north and south; longitude lines run north and south and measure east and west. The lines measure distances in degrees.

But where do you start? Where is 0 degrees?

Well, that depends on whether you're looking for 0 degrees latitude or 0 degrees longitude. They are different things.

The equator is 0 degree latitude. This imaginary line, which runs through parts of South America, Africa, and Asia, is officially the halfway point between the North Pole and the South Pole.

The prime meridian is 0 degrees longitude. This imaginary line runs through the United Kingdom, France, Spain, western Africa, and Antarctica.

By using the equator and prime meridian, we can divide the world into four hemispheres, north, south, east, and west. For instance, the United States is in the Western Hemisphere (because it is west of the prime meridian) and also in the Northern Hemisphere (because it is north of the equator).

39. **Correct Answer is : (d) d**

Maps and globes usually have lines on them to help locate places on Earth. These lines are called latitude and longitude lines. These lines are not actually on the planet, but are imaginary lines used to help us fi nd our way around the curved surface of Earth. The imag i nary lines cir cling the globe in an east-west direction are called the lines of lat i tude (or par al lels, as they are parallel to the equator). They are used to measure distances north and south of the equator. The lines cir cling the globe in a north-south direction are called lines of lon gi tude (or me rid i ans). They are used to measure distances east and west. Lines of latitude and longitude crisscross to form a grid. The location of any point on the surface of Earth can be de scribed by two co or di nates: its latitude and its longitude.

40. **Correct Answer is : (c) c**

A lunar eclipse occurs when the Moon passes behind the Earth so that the Earth blocks the Sun's rays from striking the Moon. This can occur only when the Sun, Earth, and Moon are aligned exactly, or very closely so, with the Earth in the

middle. Hence, a lunar eclipse can only occur the night of a full moon. The type and length of an eclipse depend upon the Moon's location relative to its orbital nodes. The most recent total lunar eclipse occurred on December 10, 2011. The previous total lunar eclipse occurred on June 15, 2011; The recent eclipse was visible from all of Asia and Australia, seen as rising over Europe and setting over Northwest North America. The last to previous total lunar eclipse occurred on December 21, 2010.

Unlike a solar eclipse, which can only be viewed from a certain relatively small area of the world, a lunar eclipse may be viewed from anywhere on the night side of the Earth. A lunar eclipse lasts for a few hours, whereas a total solar eclipse lasts for only a few minutes at any given place, due to the smaller size of the moon's shadow. Also unlike solar eclipses, lunar eclipses are safe to view without any eye protection or special precautions, as they are no brighter (indeed dimmer) than the full moon itself.

41. **Correct Answer is : (d) d**

Normally, 7-8% of human body weight is from blood. In adults, this amounts to 4.5-6 quarts of blood. This essential fluid carries out the critical functions of transporting oxygen and nutrients to our cells and getting rid of carbon dioxide, ammonia, and other waste products. In addition, it plays a vital role in our immune system and in maintaining a relatively constant body temperature. Blood is a highly specialized tissue composed of more than 4,000 different kinds of components. Four of the most important ones are red cells, white cells, platelets, and plasma. All humans produce these blood components--there are no populational or regional differences.

Plasma is the relatively clear, yellow tinted water (92+%), sugar, fat, protein and salt solution which carries the red cells, white cells, and platelets. Normally, 55% of our blood's volume is made up of plasma. As the heart pumps blood to cells throughout the body, plasma brings nourishment to them and removes the waste products of metabolism. Plasma also contains blood clotting factors, sugars, lipids, vitamins, minerals, hormones, enzymes, antibodies, and other proteins. It is likely that plasma contains some of every protein produced by the body--approximately 500 have been identified in human plasma so far.

The phrase fresh frozen plasma (FFP) refers to the liquid portion of human blood that has been frozen and preserved after a blood donation and will be used for blood transfusion. The capitalized phrase Fresh Frozen Plasma in the United States can refer to the fluid portion of one unit of human blood that has been centrifuged, separated, and frozen solid at -18 °C (-0 °F) or colder within eight hours of collection. The phrase "FFP" is often used to mean any transfused plasma product. The other commonly transfused plasma, PF24, has similar

indications as those for FFP with the exception of heat-sensitive proteins in the plasma such as factor V.

42. **Correct Answer is : (b) b**

Igneous rock (derived from the Latin word igneus meaning of fire, from ignis meaning fire) is one of the three main rock types, the others being sedimentary and metamorphic rock. Igneous rock is formed through the cooling and solidification of magma or lava. Igneous rock may form with or without crystallization, either below the surface as intrusive (plutonic) rocks or on the surface as extrusive (volcanic) rocks.

The central cores of major mountain ranges consist of intrusive igneous rocks, usually granite. When exposed by erosion, these cores (called batholiths) may occupy huge areas of the Earth's surface.

Basalt is a dark-colored, fine-grained, igneous rock composed mainly of plagioclase and pyroxene minerals. It most commonly forms as an extrusive rock, such as a lava flow, but can also form in small intrusive bodies, such as an igneous dike or a thin sill. It has a composition similar to gabbro. The difference between basalt and gabbro is that basalt is a fine-grained rock while gabbro is a coarse-grained rock.

43. **Correct Answer is : (a) a**

WHAT ARE FORAMINIFERA?
Foraminifera (forams for short) are single-celled organisms (protists) with shells or tests (a technical term for internal shells). They are abundant as fossils for the last 540 million years. The shells are commonly divided into chambers that are added during growth, though the simplest forms are open tubes or hollow spheres. Depending on the species, the shell may be made of organic compounds, sand grains or other particles cemented together, or crystalline $CaCO_3$ (calcite or aragonite).
Fully grown individuals range in size from about 100 micrometers to almost 20 centimeters long. Some have a symbiotic relationship with algae, which they "farm" inside their shells. Other species eat foods ranging from dissolved organic molecules, bacteria, diatoms and other single-celled algae, to small animals such as copepods. They catch their food with a network of thin pseudopodia (called reticulopodia) that extend from one or more apertures in the shell. Benthic (bottom-dwelling) foraminifera also use their pseudopodia for locomotion.

WHERE DO THEY LIVE?
There are an estimated 4,000 species living in the world's oceans today. Of these, 40 species are planktonic, that is they float in the water. The remainder

live on or in the sand, mud, rocks and plants at the bottom of the ocean. Foraminifera are found in all marine environments, from the intertidal to the deepest ocean trenches, and from the tropics to the poles, but species of foraminifera can be very particular about the environmentin which they live. Some are abundant only in the deep ocean, others are found only on coral reefs, and still other species live only in brackish estuaries or intertidal salt marshes.

Foraminifera are among the most abundant shelled organisms in many marine environments. A cubic centimeter of sediment may hold hundreds of living individuals, and many more dead shells. In some environments their shells are an important component of the sediment. For example, the pink sands of some Bermuda beaches get much of their color from the pink to red-colored shells of a foraminiferan. In regions of the deep ocean far from land the bottom is often made up almost entirely of the shells of planktonic species.

44. **Correct Answer is : (c) c**

A solstice is an astronomical event that happens twice each year when the Sun reaches its highest position in the sky as seen from the North or South Pole. The word solstice is derived from the Latin sol (sun) and sistere (to stand still), because at the solstices, the Sun stands still in declination; that is, the seasonal movement of the Sun's path (as seen from Earth) comes to a stop before reversing direction. The solstices, together with the equinoxes, are connected with the seasons. In many cultures the solstices mark either the beginning or the midpoint of winter and summer.

Summer solstice 21st June : One 21st June, Sun shines vertically over the tropic of cancer, at this time the North Pole and the whole area North of Arctic circle there is for complete 24 hours period of continuousday light. During this period day light goes on increasing from 12 hrs at the equator to 24 hours at the North pole. This time when the sun reaches its maximum distance from the equator is known as Summer solstice.
Winter solstice 22nd Dec. : When Northern hemisphere is titled away from the sun, the sun rays are slanted on it, and days are shorter, which means that it will less heat and for a short period of time. As a result it is winter in this hemisphere on 22nd Dec. Sun rays reaches its lowest and southern most position in the sky, and this movement is known as winter solstice.

45. **Correct Answer is : (a) a**

The earth can be regarded as a spherical object, and since we're dealing with a 3-dimensional shape we need coordinates of a different form than the usual x- and y-axes. Though adding an extra z-axes would make sense for submarines, we will most likely be found on the surface of this sphere while using another

system of coordinates, that covers our planet with imaginary lines called meridians and parallels, see figure 1. All these lines together provide the grid which enables us to describe any position in longitudes and latitudes.
The obvious place to divide the Northern and Southern Hemispheres was the equator. But the division of the Eastern and Western hemispheres was the source of much political turmoil. Greenwich (Great Britain) won, placing for example The Netherlands in the Eastern and Ireland in the Western Hemisphere.

It takes the earth 24 hours for a full rotation of 360°. Thus, every hour we rotate 15° longitude, see figure 2.

When it is 12:00 UTC (international standard time) - anywhere in the world - it is 12:00 Local Time in Greenwich and 24:00 Local Time at the other side of the planet: 180° E or 180° W: the date line. Crossing this special meridian changes not only the hour but also the date.

The North Pole has a latitude of 90° N and the South Pole 90° S. The meridians cover twice this angle up to 180° W or E.
Meridians converge at the poles, whereas parallels run parallel to each other and never meet. All meridians and the equator - the biggest parallel - form great circles, and the remaining parallels form so-called small circles. A great circle divides the earth in two exact halves.

46. **Correct Answer is : (a) Bhavnagar**

Palitana is a city, a municipality and former princely state in Bhavnagar district in the Indian state of Gujarat. It is located 50 km South-West of Bhavnagar city and is a major pilgrimage centre for Jains.

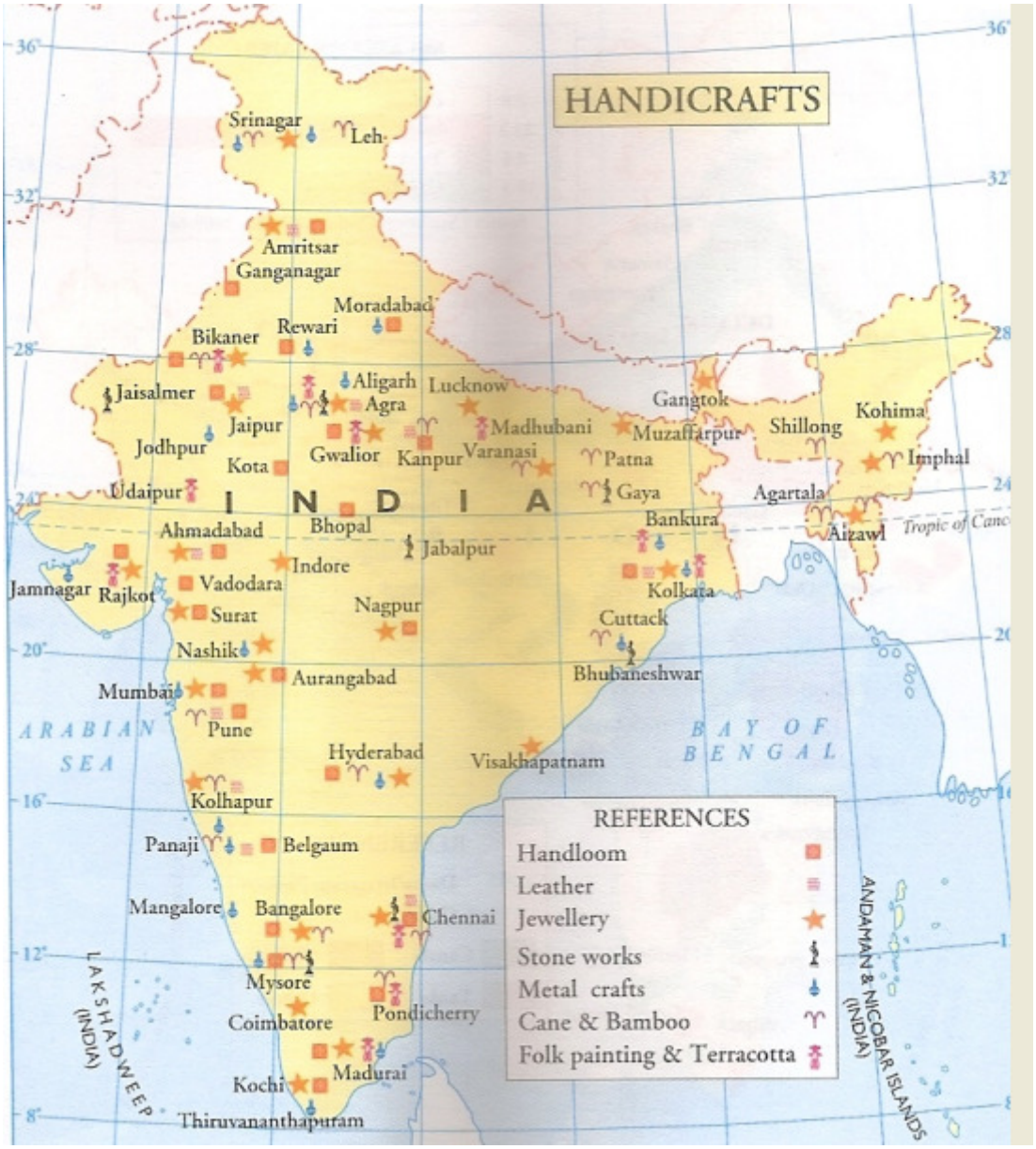
47. **Correct Answer is : (b) CRPF**

Central Reserve Police Force
The Central Reserve Police Force (CRPF) is an Armed Force of the Union of India for internal security management. This Force was raised in 1939 at Nimuch (MP) as the Crown Representative's Police and was renamed as the Central Reserve Police Force in 1949.
At present, CRPF has 191 Battalions including Rapid Action Force (RAF). The Force remained committed to internal security and counter insurgency-cumantiterrorist
operations in various parts of the country. This is a Force with ladies contingents organised in two Mahila Battalions.

48. **Correct Answer is : (d) 1, 2 and 3**

The Barabar Caves are the oldest surviving rock-cut caves in India, mostly dating from the Mauryan period (322–185 BCE), and some with Ashokan inscriptions, located in the Jehanabad District of Bihar, India, 24 km north of Gaya.
These caves are situated in the twin hills of Barabar (four caves) and Nagarjuni (three caves) - caves of the 1.6 km distant Nagarjuni Hill sometimes are singled out as Nagarjuni Caves. These rock-cut chambers date back to the 3rd century BC, Maurya period, of Ashoka (r. 273 BC to 232 BC.) and his son, Dasaratha. Though Buddhists themselves, they allowed various Jain sects to flourish under a policy of religious tolerance. These caves were used by ascetics from the Ajivika sect , founded by Makkhali Gosala, a contemporary of Siddhartha Gautama, the founder of Buddhism, and of Mahavira, the last and 24th Tirthankara of Jainism. Also found at the site were several rock-cut Buddhist and Hindu sculptures .
Barabar Hill contains four caves - Karan Chaupar, Lomas Rishi, Sudama and Visva Zopri. Sudama and Lomas Rishi Caves are the earliest examples of rockcut
architecture in India, with architectural detailing, made in the Mauryan period, and became a trend the subsequent centuries, like the larger Buddhist Chaitya, that were found in Maharashtra, such as in Ajanta and Karla Caves, and greatly influenced the tradition of South Asian rock-cut architecture.
Lomas Rishi cave: The arch-like shape facade of Lomas Rishi Caves, imitate the contemporary timber architecture. On the doorway, a row of elephants proceed towards stupa emblems, along the curved architrave.
Sudama cave: This cave was dedicated by Mauryan Emperor, Ashoka in 261 BC, and consist of a circular vaulted chamber with a rectangular mandapa .
Karan Chaupar (Karna Chaupar): Consists of single rectangular room with polished surfaces, contains inscription which could be dated to 245 BC.
Visva Zopri: Reachable by Asoka steps hewn in cliff, consists of two rectangular rooms

49. **Correct Answer is : (b) Leather**



50. **Correct Answer is : (d) 1, 2 and 3**

The Arabian Sea's surface area is about 3,862,000 km2 (1,491,130 sq mi). The maximum width of the Arabian Sea is approximately 2,400 km (1,490 mi), and its maximum depth is 4,652 metres (15,262 ft), in the Arabian Basin approximately at the same latitude as the southernmost tip of India. The largest river flowing into the Arabian Sea is the Indus River; others include the Netravathi, Sharavathi, Narmada, Tapti, Mahi, and the numerous rivers of Kerala. The Arabian Sea coast of central India from Gujarat to Kerala is known as the Konkan Coast, and that of southern India is known as the Malabar Coast. The Sabarmati River is a river in western India and one of the biggest rivers of

north Gujarat. River Sabarmati is one of the major West flowing river of Gujarat which originates from Dhebar lake in Aravalli Range of the Udaipur District of Rajasthan and meets the Gulf of Cambay of Arabian Sea after travelling 371 km. from the origin.

51. **Correct Answer is : (c) Both 1 and 2 are correct**

Leadership positions in the gem-quality diamond production race are constantly changing as new discoveries are made and old mines are worked out. Production trends by country between 1994 and 2010 are shown in the graph at right.

Botswana

Botswana had insignificant production until 1970 and became one of the top producers in the mid-1980s. Botswana has some of the highest yielding mines in the world and has been the world's leading producer of diamonds since it displaced Australia as the leading producer in 1999.

Russia

Russia began producing diamonds in the late 1950's and became one of the top three producers in 1970. The Russian mines are at high latitude and in demanding environments yet they continue to produce at high levels, competing with Botswana for the leading producer position.

Canada

Canada is the real surprise. Commercial mining there began in the late 1990's. Several mines came online in rapid succession, quickly making Canada one of the leading diamond producers. Some of the mines there are starting to be worked out and there are very few mines in the development stage.

South Africa

South Africa was where the African diamond rush began in the 1870's. It immediately became the leading producer of gem-quality diamonds and held that position until the 1920's when Zaire entered major production. South Africa has been a consistent producer for the past few decades with production volumes regularly ranging between 4 million and 6 million carats per year.

Australia

Australia entered commercial production in 1981 and quickly became the top producer of gem-quality diamonds. In recent years, production in Australia has fallen sharply as deposits there were depleted.

Where will the next big diamond discovery occur? Perhaps it will be in Canada where another group of difficult-to-find kimberlite pipes are located, or perhaps it will be in the outback of Australia or poorly explored areas of northern Siberia. Or, it could be in the United States where rocks similar to the Canadian production areas are starting to attract attention.

52. **Correct Answer is : (d) 1, 2 and 3**

Jagadish Chandra Bose was a polymath: a physicist, biologist, botanist, archaeologist, and writer of science fiction. He pioneered the investigation of radio and microwave optics, made very significant contributions to plant science, and laid the foundations of experimental science in the Indian subcontinent. He is considered one of the fathers of radio science, and is also considered the father of Bengali science fiction. He was the first from the Indian subcontinent to get a US patent, in 1904.

53. **Correct Answer is : (a) Hong kong**

Representing domain name registration in the Asia-Pacific region, the .asia domain name fulfills the need for a versatile and adaptable Asian web address. It represents a region growing in global force for both business and culture. .asia is a Generic Top Level Domain sponsored by the DotAsia Organisation.

Asia already makes up 36.5% of the world's online population surpassing the US and EU and this is set to increase. By 2010, China's internet market alone is set to be bigger than that of the US.

The .asia web address will help to establish a global internet presence of recognition and regional significance that is capable of reaching millions of internet users. It is sure to become one of the largest and widely sought web addresses on the gTLD marketplace.

The DotAsia Organisation

Asia has developed into a global force in the international commercial, political and cultural network. DotAsia Organisation is dedicated to the needs of the community with a vision of leveraging the successful, collaborative atmosphere and network among the Asia Internet community to create a globally visible Internet domain as a cyberspace that belongs to Asia, and a platform that would contribute in accelerating the overall growth of the region. The “.Asia” domain

aspires to embrace this dynamism in the Asia Century to become a nucleus, intersection and breeding ground for Internet activity and development in the region.

DotAsia Organisation is a not-for-profit, membership-based organization incorporated in Hong Kong as a “limited by guarantee and not having a share capital” corporation. DotAsia is the Sponsoring Organisation and Registry Operator for the .Asia Sponsored Generic Top Level Domain (TLD). DotAsia oversees the policies and governance of the “.Asia” TLD Registry. To register a “.Asia” domain name, please visit one of our Accredited Registrars

54. **Correct Answer is : (d) 1/16**

After 5 years the amount of element left will be 1/2
After 10 years the amount of element left will be 1/2 x 1/2 = 1/4
After 15 years the amount of element left will be 1/2 x 1/2 x 1/2 = 1/8
After20 years the amount of element left will be 1/2 x 1/2 x 1/2 x 1/2 = 1/16

55. **Correct Answer is : (d) Vitamin D**

According to Professor Trevor G. Marshall, the increase of vitamin D in our modern diets is based on a common belief he states is a misconception with potential consequences.

Prof Marshall from the School of Biological Sciences and Biotechnology at Murdoch University in Western Australia has recently confirmed several astounding aspects about vitamin D that will surprise you.

“What we have confirmed with our recent research” says the Professor, “is that vitamin D isn’t a vitamin at all, it’s a hormone that is made by the body itself.”

Prof Marshall goes on to explode another long held belief about this secosteriod previously known as vitamin D.

“You don’t have to ingest any vitamin D in order to be perfectly healthy.”

So no more need for expensive supplements, no more basking in the sun to put us in a better mood? And what about the thinking that suggests vitamin D is vital in the production of serotonin, an essential element linked to helping maintaining normal brain chemical function?

“What we’ve shown is that all forms of vitamin D from outside the body are counterproductive to the body’s own ability to regulate its own internal production.”

56. **Correct Answer is : (d) 1, 2, 3 and 4**

The production of spices and herbs is widely distributed in a number of Indian states. Southern states of Karnataka, Kerala, and Tamilnadu are one of the major areas producing quite a few spices, states of Rajasthan and Uttar Pradesh are also apt for growing spices like Garlic, Mustard, Fennel, Turmeric etc.

Gujarat, one of the leading groundnut-growing states in the country, is likely to see groundnut production of more than 1.5 million tonnes this kharif season in 2010-11. This shows an increase of 200,000 tonnes as compared to 1.3 million tonnes of groundnut output during the same season in 2009-10.

Karnataka's numero uno position in the country's sericulture map appears to be precarious after the silk production in the State dropped by a whopping 1,000 tonnes last year to 7,238 tonnes, against 8,240 tonnes production recorded during 2007-08.
Silk production in Karnataka used to account for almost two-thirds of the country's output till a decade ago. "For the first time in the last few years, silk production in Karnataka accounted for less than 50 per cent of the country's output.

The major tea growing areas of India are Darjeeling (West Bengal), Terai and Dooars (West Bengal) Assam and Nilgiri (Kerala and Tamil Nadu). Tea is also produced in smaller volumes in the states of Himachal Pradesh, Karnataka, Uttaranchal, Tripura, Manipur, Sikkim, Nagaland, Meghalaya, Mizoram, Bihar and Orissa totalling approx. 21,000 hectares.

57. **Correct Answer is : (c) Acetic acid and water**

Vinegar is a liquid substance consisting mainly of acetic acid and water, the acetic acid being produced through the fermentation of ethanol by acetic acid bacteria. It is today mainly used in the kitchen, but historically, as the most easily available mild acid, it had a great variety of industrial, medical, and domestic uses. Commercial vinegar is produced either by fast or slow fermentation processes. In general, slow methods are used with traditional vinegars, and fermentation proceeds slowly over the course of weeks or months

58. **Correct Answer is : (b) Bhogavo**

Lothal, 30 kilometres (19 mi) in length according to satellite imagery— an ancient extension of the northern river channel bed of a tributary of the Bhogavo river. Small channel widths (10–300 m/30–1000 ft) when compared to the lower

reaches (1.2–1.6 km/0.75–1.0 mi) suggest the presence of a strong tidal influence upon the city—tidal waters ingressed up to and beyond the city. Upstream elements of this river provided a suitable source of freshwater for the inhabitants.

Lothal is situated about 85 kms. southwest of Ahmedabad. This important archaeological site was discovered in 1954. The city that stood here 4500 years ago is clearly related to the Indus Valley cities of Mohenjodaro and Harappa, both in Pakistan. It has the same neat street pattern, carefully assembled, neat brickwork and scientific drainage system. Lothal means mound of the dead in Gujarati. Lothal is located between the Sabarmati river and the Bhogavo river and is now 10 kms. up from the Gulf of Khambhat (Cambay). It has some of the most substantial remains of the Harappan culture in India, dating from 250 to 1700 BC. Its site and function as a port have led most authorities to argue that it was settled by Harappan trading communities who came by sea from the mouth of the river but some believe that it may have been settled by traders moving across the overland route. The site is surrounded by a mud brick embankment 300 m North to South and 400 m East to West. Unlike the defensive walls at Harappa and Mohenjodaro, the wall at Lothal enclosed the workers area as well as the citadel. The presence of a dry dock and a warehouse further distinguish it from other major Harappan sites. Excavations here have revealed a tidal dockyard (with a complex lock-gate system) at its peak, this was probably one of the most important ports on the Indian subcontinent. The Sabarmati river, which no longer runs past here, connected the dock to the Gulf of Cambay. Seals discovered at the site suggest that trade may have been conducted with the civilizations of Mesopotamia, Egypt and Persia.

59. **Correct Answer is : (c) Both 1 and 2 are correct**

The World Summit on the Information Society (WSIS) was a pair of United Nations-sponsored conferences about information, communication and, in broad terms, the information society that took place in 2003 in Geneva and in 2005 in Tunis. One of its chief aims was to bridge the so-called global digital divide separating rich countries from poor countries by spreading access to the Internet in the developing world. The conferences established 17 May as World Information Society Day.

60. **Correct Answer is : (c) Both 1 and 2 are correct**

The G20 was established in 1999, in the wake of the 1997 Asian Financial Crisis, to bring together major advanced and emerging economies to stabilize the global financial market. Since its inception, the G20 has held annual Finance Ministers and Central Bank Governors' Meetings and discussed measures to promote the financial stability of the world and to achieve a sustainable economic

growth and development.

61. **Correct Answer is : (c) 3**

National Days
26th January (Republic Day)
15th August (Independence Day)
2nd October (Gandhi Jayanti; Mahatma Gandhi's Birthday)

62. **Correct Answer is : (d) 1, 2, 3 , 4 and 5**

All the five major racial types - Australoid, Mongoloid, Europoid, Caucasian, and Negroid find representation among the people of India.

63. **Correct Answer is : (c) Gangtok, Darjiling, Silliguri, Imphal**

64. **Correct Answer is : (d) The desert insects are active during night time**

Some of the most interesting examples of this unique relationship of nighttime wildlife pollinators occurs right here in native plants of the desert southwest. Cereus is an enormous genus of cacti with over 450 species that bloom at night, and in the early California fiestas were arranged around the flowering of giant cereus called "reina-de-la-noche" or queen-of-the-night. Many other types of cacti and desert plants bloom at night when temperatures are cooler and flying insects more numerous. They also draw bats which help to pollinate the giant saguaro cactus, the most easily recognized of all with its massive size and human-like arms. High atop the plants there develops a "wreath" of white fragrant blossoms, each one up to four inches across when fully open. These are a

favorite food of Sanborn's long-nosed bat which literally buries itself in pollen while sucking out the abundant nectar deep inside each flower.

Another fascinating desert plant is the yucca with its iridescent candles of blooms which makes a fine garden specimen and a conversation piece after dark. This plant maintains a unique relationship with "yucca moths" Tegeticula yuccasella, which plays a key role in the plant's ability to reproduce. Although yucca flowers are open during the daytime and visited by bees, they do not carry on pollination as the blooms are "nyctitropic". This botanical term indicates they physically change at nightfall. During the day the cup-like blossoms hang downwards, but just as a sunflower follows the sun, the yucca flowers turn to face the sky at night and emit their fragrance. This artificial pheromone or sexual scent attracts the yucca moths, although different species of moth may be required for specific types of yucca.

65. **Correct Answer is : (d) Avadi session**

India under the guidance of Jawaharlal Nehru had accepted socialism as her goal. Socialism implies the social or collective ownership of the instruments of production. It means that the control of production and distribution must be in the hands, not of private owners of capital, but of the community itself.

Orthodox communists equate community with the working class. As a means to exercise, this collective control, they urge the socialisation of the key industries and all-important means of production. But this transformation of society from capitalist ownership into socialism will not be the outcome of an evolutionary process.

Marx, the pioneer of scientific socialism, explained that as the workers or the proletariat gain increasing control of the instruments of production, they will over-throw the capitalist and the proprietored class.

Nehru, of course, never accepted this thesis. That is why he preferred and adopted the rather ambiguous phrase a 'socialistic pattern' instead of 'socialism'.

One may well look for a explanation of this hesitation and half-hearted compromise of Avadi socialism, i.e. according to the resolution of Avadi session of the Congress. In fact, like many American and English thinkers, he chose to regard Marxism as impracticable. He believed with Gandhiji in the possibility of revolution, i.e. radical change of social order by consent, by appeal to the collective conscience of humanity.

66. **Correct Answer is : (d) 1,2,3 and 4**

Element in protein are as follows: carbon, hydrogen, nitrogen and oxygen. There are four distinct aspects of the protein structure which include primary, secondary, tertiary, and quaternary.

67. **Correct Answer is : (a) Thyroxine**

Iodine is commonly known to have a major effect on thyroid function, being a main component of the thyroid hormone thyroxine. However, Iodine has many other effects, from controlling the effects of oestrogen on breast tissue to protecting against the effects of radioactivity.

Iodine has been a favourite with those who want to lose weight for many years. As stated above, iodine is the main component of thyroxine, the thyroid component which controls metabolism. As metabolic rate controls the amount of "fuel" burned by the body for energy, iodine deficiency can result in a decreased metabolic rate, hence the supplementation by weight-watchers.

One of the other key functions of iodine is in the formation of the foetal nervous system. If the mother is deficient, there is a significant chance of the baby being born with cretinism (extremely low intellectual capacity). Iodine is also an important component of healthy connective tissues.

68. **Correct Answer is : (d) Branmagupta**Brahmagupta (598–668 CE) was an Indian mathematician and astronomer who wrote many important works on mathematics and astronomy. His best known work is the Brahmasphutasiddhanta (Correctly Established Doctrine of Brahma), written in 628 in Bhinmal. Its 25 chapters contain several unprecedented mathematical results.

According to al-Biruni, Brahmagupta responded to these criticisms with the following argument on gravitation:

"On the contrary, if that were the case, the earth would not vie in keeping an even and uniform pace with the minutes of heaven, the pranas of the times. All heavy things are attracted towards the center of the earth. The earth on all its sides is the same; all people on earth stand upright, and all heavy things fall down to the earth by a law of nature, for it is the nature of the earth to attract and to keep things, as it is the nature of water to flow, that of fire to burn, and that of wind to set in motion… The earth is the only low thing, and seeds always return to it, in whatever direction you may throw them away, and never rise upwards from the earth."

About the Earth's gravity he said: "Bodies fall towards the earth as it is in the nature of the earth to attract bodies, just as it is in the nature of water to flow.

69. **Correct Answer is : (d) Karma**

The first major orthodox philosophical system to develop was Purva Mimamsa. The other one to follow was the Uttar Mimamsa. The orthodox systems accept the authority of the Vedas.

The Sanskrit word 'mimamsa means a ‘revered thought’. The word is originated from the root ‘man’ which refers to ‘thinking’ or ‘investigating’. The word 'mimamsa' suggests "probing and acquiring knowledge" or "critical review and investigation of the Vedas".

Jaimini is credited as the chief proponent of the Mimamsa system. His glorious work is Mimamsa-Sutra written around the end of the 2nd century A.D. Mimamsa-Sutra is the largest of all the philosophical Sutras. Divided into 12 chapters, it is a collection of nearly 2500 aphorisms which are extremely difficult to comprehend.

The system is a pluralistic realist. It endorses the reality of the world as well as that of the individual souls. The soul is accepted as an eternal and infinite substance. Consciousness is an accidental attribute of the soul. The soul is distinct from the body, the senses and the mind. Though Kumarila Bhatta and Prabhakara differ on issues like the self, the soul and it attribute. The earlier mimamsakas do not give much importance to the deities. Hence they do not endorse God as the creator of the universe. But later mimamsakas show a bent towards theism.

This system has a profound faith in the Vedas. The system supports the law of karma. It believes in the Unseen Power or ‘apurva’. Apart from accepting the heaven and the hell, the system supports the theory of liberation.

70. **Correct Answer is : (c) Four hands**

The Cosmic dance

The cosmic dance was performed in Chidambaram in South India, revered as the center of the universe by some Hindus.

The dance of Shiva represents his five attributes:

Shrishti (creation, evolution, symbolized by the drum)

Sthiti (preservation, support, by the "fear not" hand gesture of abhaya)

Samhara (destruction, evolution, by the fire)

Tirobhava (illusion, by the foot planted on the ground)

Anugraha (release, emancipation, grace, by the foot held aloft).

The characteristic of Nataraja, though with minor variations at some places, are as follows

He is shown with four hands, two on either side. The upper left hand holds a flame, the lower left hand points down to the demon Muyalaka, who is shown holding a serpent, toward that holy foot in assurance that Siva's grace is the refuge for everyone, the way to liberation.

In the back right hand Shiva often holds a damaru (an hour glass shaped drum), representing the rhythmic sound to which Nataraja dances ceaselessly recreating the universe.

The front right hand is in the abhaya-mudra (the "fear not" gesture represented by holding the palm outward with fingers pointing up).

The front left hand is held across the chest in the gahahasta (elephant trunk pose), with the wrist limp and the fingers pointed downward toward the uplifted foot.

The back left hand carries agni (fire) in a vessel or in his hand. Its flames represent the destructive energy with which Nataraja dances at the end of each cosmic age, cleansing sins and removing illusion.

The upper right hand holds a drum, the lower one is in the abhayamudra (fear not).

The demon Apasmarapurusha (denoting ignorance, laziness, lethargy etc.) generally shown holding a serpant, is being crushed by Shiva's right foot, the other foot is raised.

Shiva's hair is shown braided and jeweled, but some of his locks whirl as he dances. Within the folds of his hair are a wreathing cobra, a skull, and the figure of Ganga. Shiva's unkempt hair symbolises the rejection of the society, showing him to be an ascetic.

The goddess Ganges is shown nesting in Shiva's dreadlocks. The river Ganges that flows in Nataraja's hair originally flowed in heaven. When the heavenly Ganges was needed on earth, she was unwilling to fall to earth for rear that the force of her fall would be too severe for the earth to withstand. Shiva as Nataraja

agreed to break the violent power of the fall by catching her in his tangled hair and moderate it with his hair.

71. **Correct Answer is : (d) Akbar**

The construction of the Agra fort was started around 1565, when the initial structures were built by
the Mughal Emperor Akbar, and subsequently taken over by his grandson Shah Jahan, who added most
of the marble creations to the fort. The fort is crescent shaped, flattened on the east with a long, nearly
straight wall facing the river. It is ringed by double castellated ramparts of red sandstone, punctuated at
regular intervals by bastions. A 9m wide and 10m deep moat surrounds the outer wall. An imposing
22m high inner wall imparts a feeling of invincible defensive construction. The layout of the fort was
determined by the course of the river, which in those days flowed alongside. The main axis is parallel
to the river and the walls bridge out towards the city.

72. **Correct Answer is : (b) 1872**

The answer 1951 is correct for Independent India. It was earlier held in 1872, though the first complete census was in 1881.

73. **Correct Answer is : (b) 1, 3 and 4**

Eligibility

Article 58 of the Constitution sets the principle qualifications one must meet to be eligible to the office of the President. A President must be:
a citizen of India
of 35 years of age or above
qualified to become a member of the Lok Sabha
the constitution of India is silent about the candidate contesting again in the election (Article 53) E. g. A. P. J. Abdul Kalam

A person shall not be eligible for election as President if he holds any office of profit under the Government of India or the Government of any State or under any local or other authority subject to the control of any of the said Governments.

Certain office-holders, however, are permitted to stand as Presidential candidates. These are:
The current Vice President.
The Governor of any State.
A Minister of the Union or of any State (Including Prime Minister and Chief Ministers).

In the event that the Vice President, a State Governor or a Minister is elected President, they are considered to have vacated their previous office on the date they begin serving as President.

74. **Correct Answer is : (c) 1, 2 and 4 only**

Edwin Samuel Montagu served as Secretary of State for India between 1917 and 1922. **On 20 August 1917**, he made a historic declaration in the House of Commons defining the goal of British policies in India. In the previous month, he had made a scathing attack on the whole system by which India was being administered in a debate in British House of Commons. It is also known as **August Declaration of 1917**

The **Montague declaration** is titled:

"Increasing association of Indians in every branch of administration, and the Gradual development of self governing Institutions with a view to the progressive realization of responsible governments in India as an Integral part of the British Empire".

The Keyword was ***Responsible Government***; the rulers must be answerable to the elected representatives. In November 1917, Montagu visited India to ascertain the views from all sections of political opinion from India. He discussed with Gandhi, with Jinnah and others. On the basis of the above discussions, a detailed report on **Indian Constitutional Reforms** was prepared. This report was published in **July 1918**.

75. **Correct Answer is : (d) A-3, B-4, C-1, D-2**

Library Committee Constitution

1. (1) There shall be a Library Committee consisting of- (a)the Deputy Speaker and five other members from the Lok Sabha nominated by the Speaker. (b)three members from the Rajya Sabha nominated by the Chairman of the Rajya Sabha.

(2) The Committee shall hold office for a term not exceeding one year.

(3) The Deputy Speaker shall be the ex-officio Chairman of the Committee.

(4) Casual vacancies in the Committee shall be filled by nomination by the Speaker in respect of members from the Lok Sabha and by the Chairman of the Rajya Sabha in respect of members from the Rajya Sabha.

Functions

2. The functions of the Committee shall be -

(a) to consider and advise on such matters concerning the Library as may be referred to it by the Speaker from time to time.

(b) to consider suggestions for the improvement of the Library; and

(c) to assist members of Parliament in fully utilising the services provided by the Library.

Committee of Privileges (Lok Sabha)

This Committee consists of 15 members nominated by the Speaker. The function is to examine every question involving breach of privilege of the House or of the members of any Committee thereof referred to it by the House or by the Speaker. It determines with reference to the facts of each case whether a breach of privilege is involved and makes suitable recommendations in its report.

Committee on Estimates

This Committee consists of 30 members who are elected by the Lok Sabha every year from amongst its members. A Minister is not eligible for election to this Committee. The term of the Committee is one year. The main function of the Committee on Estimates is to report what economies, improvements in organisation, efficiency, or administrative reform, consistent with the policy underlying the estimates may be effected and to suggest alternative policies in order to bring about efficiency and economy in administration. From time to time the Committee selects such of the estimates pertaining to a Ministry or a group of Ministries or the statutory and other Government bodies as may seem fit to the Committee. The Committee also examines matters of special interest which may arise or come to light in the course of its work or which are specifically referred to it by the House or the Speaker.

Business Advisory Committee (Lok Sabha)

The Business Advisory Committee of Lok Sabha consists of 15 members including the Speaker who is the ex-officio Chairman. The members are nominated by the Speaker. Almost all sections of the House are represented on the Committee as per the respective strength of parties in the House. The

function of the Committee is to recommend the time that should be allotted for the discussion of such Government legislative and other business as the Speaker, in consultation with the Leader of the House, may direct to be referred to the Committee. The Committee, on its own initiative, may also recommend to the Government to bring forward particular subjects for discussion in the House and recommend allocation of time for such discussions. The decisions reached by the Committee are always unanimous in character and representative of the collective view of the House. The Committee generally meets at the beginning of each Session and thereafter as and when necessary.

76. **Correct Answer is : (a) The steering level**

Contour Plots
500 mb Height Contour
This is a contour plot of 500 mb height in meters with a interval of 60 meters. The 500 mb level is often referred to as the steering level as most weather systems and precipitation follow the winds at this level. The winds follow the height contours and generally run from 30 to 100 knots. The speeds can be roughly estimated from the 300 mb winds as roughly 2/3rds their magnitude. This level averages around 18,000 feet above sea level and is roughly half-way up through the weather producing part of the atmosphere called the troposphere.
850 mb Temperature Contour
This a contour plot of temperature in Celsius at the 850 mb level. The interval is 5 degrees. The temperature field shows where warm and cold air are located. Temperatures at this level do not show the diurnal temperature changes from morning low to afternoon high we see at the earth's surface. The 850 temperature is also a decent indicator of the type of precipitation. Since most precipitation forms at 5000 feet or above, a temperature of freezing (0 Celsius) or below would indicate snow whereas a temperature above freezing would indicate rain.
1000-500 mb Thickness Contour
This is contour plot of thickness in meters with an interval of 60 meters. Thickness is a measure of mean temperature in a layer of the atmosphere and ranges from 4900m in cold wintertime atmospheres to 5900m in warm summertime atmospheres. The 5400 meter line is often used as an indicator of the rain-snow line.
300 mb Wind Speeds
This is a contour plot of 300 mb wind speeds in knots. The contour interval is 10 knots. This level is referred to as the jet stream level. Areas of bold winds at this level (winds > 100 knots or 115 mph), commonly referred to as jets, indicate areas of high atmospheric energy. These are created by bold temperature contrasts in the lower and middle tropopause and reflect areas of potential storm development. A bold jet (winds >130 knots) can indicate the potential for the development of a bold low pressure system especially when if moves over the

Rocky mountains and into the Plains states. A bold jet hitting the west coast can indicate the existence of a bold precipitation producing system.

77. **Correct Answer is : (c) Lifting condensation level**

The lifted condensation level or lifting condensation level (LCL) is formally defined as the height at which the relative humidity (RH) of an air parcel will reach 100% when it is cooled by dry adiabatic lifting. The RH of air increases when it is cooled, since the amount of water vapor in the air (i.e., its specific humidity) remains constant, while the saturation vapor pressure decreases almost exponentially with decreasing temperature. If the air parcel is lifting further beyond the LCL, water vapor in the air parcel will begin condensing, forming cloud droplets. (In the real atmosphere, it is usually necessary for air to be slightly supersaturated, normally by around 0.5%, before condensation occurs; this translates into about 10 meters or so of additional lifting above the LCL.) The LCL is a good approximation of the height of the cloud base which will be observed on days when air is lifted mechanically from the surface to the cloud base (e.g., due to convergence of airmasses).

78. **Correct Answer is : (a) The air is not affected by diurnal temperature changes**

The 850 mb chart
The 850 mb chart, representing weather conditions in the lower troposphere, is at a level that is above approximately 15 percent of the atmosphere in terms of mass. At an altitude of approximately 1500 meters (5000 feet), this level is above most of the influences of surface friction in the many sections of the country. Unfortunately, the 850 mb intersects and goes below the terrain in the Rocky Mountains. For example, the "Mile High City" of Denver, CO usually has a surface pressure - a measured value not corrected to sea level - of approximately 830 mb, which places it at a higher altitude than the 850 mb surface. Meteorologists often look at the analyzed temperature field of this level, because over the non-mountainous regions, the diurnal temperature cycle is much less than at the surface. They can frequently tell correctly that precipitation falling in regions with an 850 mb temperature of 0 degrees Celsius will probably fall as snow, while rain would more than likely fall at warmer temperatures.

Lake-effect snow is produced during cooler atmospheric conditions when cold winds move across long expanses of warmer lake water, providing energy and picking up water vapor which freezes and is deposited on the leeward shores. The same effect over bodies of salt water is called _____-effect snow, where the blank would contain the description of the relevant body of water (e.g., ocean, sea, bay, sound). The effect is enhanced when the moving air mass is uplifted by the orographic influence of higher elevations on the downwind shores. This uplifting can produce narrow but very intense bands of precipitation, which

deposit at a rate of many inches of snow each hour, often resulting in copious snowfall totals. The areas affected by lake-effect snow are called snowbelts. This effect occurs in many locations throughout the world but is best known in the populated areas of the Great Lakes of North America, and especially Western New York, northwestern Pennsylvania, northeastern Ohio, southwestern and central Ontario, northwestern and northcentral Indiana (mostly between Gary, IN and Elkhart, IN), and western Michigan. The Tug Hill Plateau of New York State has the most snow amounts of any non-mountainous location within the continental U.S., followed by the Upper Peninsula of Michigan, which can average over 200 inches (508 centimeters) of snow per year.

If the air temperature is not low enough to keep the precipitation frozen, it falls as lake-effect rain. For lake-effect rain or snow to form, the air moving across the lake must be significantly cooler than the surface air (which is likely to be near the temperature of the water surface). Specifically, the air temperature at an altitude where the air pressure is 850 millibars (85 kPa) (roughly 1.5 kilometers or 0.93 miles vertically) should be 13 °C (23.4 °F) lower than the temperature of the air at the surface. Lake-effect occurring when the air at 850 millibars (85 kPa) is much colder than the water surface can produce thundersnow, snow showers accompanied by lightning and thunder (caused by larger amounts of energy available from the increased instability).

79. **Correct Answer is : (a) 1 only**

Nearly 97% of the atmosphere lies within 29 km of the surface of the earth although its outer edge lies at about 10,000 km.
Ozone layer is a zone within the atmosphere, generallt between 20 and 50 km. The ozone layer prevents ultraviolet radiation from reaching the ground surface and so it protects the earth's life.

80. **Correct Answer is : (a) peneplain**

Peneplain is one of the most discussed subjects in geomorphology. It implies a nearly plain fairly extensive surface underlain by bedrock whose erosion has given birth to the plain. Its level, altitude and slope have been controlled by the grand base-level or sea-level towards is gently inclined. Between the upper surface and the bedrock there is generally a layer of sediments called saprolite. The harder elements of the bedrock may appear above the peneplain surface as residuals called by such names as monadnocks or other local names.

The form of these residual hills will vary even within small distance, depending on the structure, lithology, jointing aspect vegetation cover and distance from the streams or base level. Apart from residual hills the divide regions which are likely to coincide with harder lithological elements will form rise or low uplands or

ridges. In peneplains one cannot expect the equality in altitude of residual summits or intervening surfaces. The level of the surface as a whole rises to several hundred metres if the distance from the sea is long Peneplanation extends progressively inland from the coast. The detailed fashioning of the surface is such that the drainage and accompanying waste is naturally removed.

One of the important characteristics of a peneplain is supposed to be the dominant convexity of slopes. Downwasting or weathering and erosion from above is believed to characterise peneplains as against side-wasting which is dominant in pediments and pediplains. Downwasting is a process, which in itself will guarantee convexity.

But neither vertical nor horizontal wasting is exclusive. Both matters occur simultaneously. The latter, however, may be dominant in arid and semi-arid regions where chemical weathering contributing to downwasting is negligible. If it is difficult to point out the existence of peneplains, as is claimed by L.C. King, it is probably not easy to establish the existence of pediments outside arid and semi-arid areas.

81. **Correct Answer is : (c) Emissivity**

The actual amount of insolation received at a place on the earth varies according to the conditions of the atmosphere as well as the seasons. The following astronomical and geographical factors govern the amount of insolation received at any point on the earth's surface:

(1) Angle of incidence (2) Duration of sunshine

(3) Solar constant (4) Distance between the earth and the sun

(5) Transparency of the atmosphere.

Not all of the solar radiation received at the periphery of the atmosphere reaches the surfaces of the earth. This is because the earth's atmosphere plays an important role in selectively controlling the passage towards the earth's surface of the various components of solar radiation.
A considerable portion of solar radiation is reflected back into outer space upon striking the uppermost layers of the atmosphere, and also from the tops of clouds. In the course of penetration through the atmosphere, some of the incoming radiation is either absorbed or scattered in all directions by atmospheric gases, vapours, and dust particles. In fact, there are two processes known to be involved in atmospheric scattering of solar radiation. These are termed selective scattering and non-selective scattering. These two processes are determined by the different sizes of particles in the atmosphere.

Albedoza (/æl'bi?do?/), or reflection coefficient, derived from Latin albedo "whiteness" (or reflected sunlight), in turn from albus "white", is the diffuse reflectivity or reflecting power of a surface. It is defined as the ratio of reflected radiation from the surface to incident radiation upon it. Being a dimensionless fraction, it may also be expressed as a percentage, and is measured on a scale from zero for no reflecting power of a perfectly black surface, to 1 for perfect reflection of a white surface.

82. **Correct Answer is : (a) Virga**

In meteorology, virga is an observable streak or shaft of precipitation that falls from a cloud but evaporates before reaching the ground. At high altitudes the precipitation falls mainly as ice crystals before melting and finally evaporating; this is usually due to compressional heating, because the air pressure increases closer to the ground. It is very common in the desert and in temperate climates. In North America, it is commonly seen in the Western United States and the Canadian Prairies.

Virga can cause varying weather effects, because as rain is changed from liquid to vapor form, it removes heat from the air due to the high heat of vaporization of water. In some instances, these pockets of colder air can descend rapidly, creating a dry microburst which can be extremely hazardous to aviation. Conversely, precipitation evaporating at high altitude can compressionally heat as it falls, and result in a gusty downburst which may substantially and rapidly warm the surface temperature. This fairly rare phenomenon, a heat burst, also tends to be of exceedingly dry air.

83. **Correct Answer is : (c) Crepuscular rays**

Crepuscular rays (/kr?'p?skj?l?r/; also known as God's rays), in atmospheric optics, are rays of sunlight that appear to radiate from a single point in the sky, specifically, where the sun is. These rays, which stream through gaps in clouds (particularly stratocumulus) or between other objects, are columns of sunlit air separated by darker cloud-shadowed regions. The name comes from their frequent occurrences during crepuscular hours (those around dawn and dusk), when the contrasts between light and dark are the most obvious. Crepuscular comes from the Latin word "crepusculum", meaning twilight.

84. **Correct Answer is : (d) A-2, B-1, C-4, D-3**

Vatsa: The kingdom of Vatsa was situated roughly at the location of present day Allahabad in Uttar Pradesh. The capital of Vatsa was Kaushambi, which was a very prosperous city. The ruler of Vatsa was known as Udyana and Vatsa

had a very powerful ruler, known as Udyana, adopted Buddhism as the religion in his kingdom.

According to the Puranas,Ayodhya was the capital of Kosala during the reign of Ikshvaku and his descendants. Shravasti was the capital of Kosala between 6th century BCE and 6th century CE.

The Chedis, Chetis or Chetyas had two distinct settlements of which one was in the mountains of Nepal and the other in Bundelkhand near Kausambi. According to old authorities, Chedis lay near Yamuna midway between the kingdom of Kurus and Vatsas. In the mediaeval period, the southern frontiers of Chedi extended to the banks of the river Narmada. Sotthivatnagara, the Sukti or Suktimati of Mahabharata, was the capital of Chedi. The Chedis were an ancient people of India and are mentioned in the Rigveda. A branch of Chedis founded a royal dynasty in the kingdom of Kalinga according to the Hathigumpha inscription of Kharvela.

Matsya (Sanskrit for "fish") were one of the Indo-Aryan tribes of Vedic India.

By the late Vedic period, they ruled a kingdom located south of the Kurus, and west of the Yamuna river which separated it from the kingdom of Panchalas. It ssroughly corresponded to former state of Jaipur in Rajasthan, and included the whole of Alwar with portions of Bharatpur. The capital of Matsya was at *Viratanagara* (modern Bairat) which is said to have been named after its founder king Virata. In Pāli literature, the Matsya tribe is usually associated with the Surasena. The western Matsya was the hill tract on the north bank of Chambal.

85. **Correct Answer is : (c) Samvada-sukta**

The following two are also part of Akyana Suktas or Samvada Suktas from Rigveda considered as popular subjects/stories for Indian theater. Although like Samvada Sukta as the one above, they cannot be considered to “destroy the causes of misunderstandings and quarrel between couples and establish peace and harmony in the family” as attributed to Samvada Sukta.

86. **Correct Answer is : (d) A-4, b-1, C-2, D-3**

A stalactite is a type of formation that hangs from the ceiling of caves, hot springs, or manmade structures such as bridges and mines. Any material which is soluble, can be deposited as a colloid, or is in suspension, or is capable of being melted, may form a stalactite. Stalactites may be composed of amberat, lava, minerals, mud, peat, pitch, sand, and sinter. A stalactite is not necessarily a

speleothem, though speleothems are the most common form of stalactite because of the abundance of limestone caves.

The corresponding formation on the floor of the cave is known as a stalagmite.

Solonchak is pale or grey soil type found in arid to subhumid, poorly drained conditions. The word is Russian for "salt marsh" in turn from Russian sol, "salt". designation of an object that has the property.

Chott el Djerid, also spelt Shatt al Jarid, Sciott Gerid, and Shott el Jerid, is a large endorheic salt lake in southern Tunisia.
The bottom of Chott el Djerid is located between 10 and 25 meters above sea level. Roughly in the shape of a tadpole, with a width of 20 km (12 mi) at its narrowest point, it reaches 250 km (160 mi) in overall length. At times, parts of it appear in various shades of white, green and purple. The narrow eastward inlet of the chott is also known as Chott el Fejej.

It is the largest salt pan of the Sahara with a surface area of over 7,000 km2 (some sources state 5,000 km2). Due to the extreme climate with annual rainfall of only 100 mm and temperatures reaching 50 °C, water evaporates from the lake. In summer Chott el Djerid is almost entirely dried up, and numerous fata morganas occur.

Some intrusive rocks solidified in fissures as dikes and intrusive sills at a shallow depth beneath the surface and are called hypabyssal. Those formed at greater depths are called plutonic or abyssal. As might be expected, they show structures intermediate between those of extrusive and plutonic rocks. They are very commonly porphyritic, vitreous, and sometimes even vesicular. In fact, many of them are petrologically indistinguishable from lavas of similar composition.

87. **Correct Answer is : (c) Ennore**

88. **Correct Answer is : (c) China**

Gondwana, also called Gondwanaland, ancient supercontinent that incorporated present-day South America, Africa, Arabia, Madagascar, India, Australia, and Antarctica. It was fully assembled by Late Precambrian time, some 600 million years ago, and the first stage of its breakup began in the Early Jurassic Period, about 180 million years ago. The name Gondwanaland was coined by the Austrian geologist Eduard Suess in reference to Upper Paleozoic and Mesozoic formations in the Gondwana region of central India, which are similar to formations of the same age on Southern Hemisphere continents.

89. **Correct Answer is : (b) A-1, B-2, C-3, D-4**

Chinook winds , often called chinooks, commonly refers to foehn winds in the interior West of North America, where the Canadian Prairies and Great Plains meet various mountain ranges.

The Chinook is a foehn wind, a rain shadow wind which results from the subsequent adiabatic warming of air which has dropped most of its moisture on windward slopes (orographic lift). As a consequence of the different adiabatic rates of moist and dry air, the air on the leeward slopes becomes warmer than equivalent elevations on the windward slopes.

As moist winds from the Pacific (also called Chinooks) are forced to rise over the mountains, the moisture in the air is condensed and falls out as precipitation, while the air cools at the moist adiabatic rate of 5°C/1000 m (3.5°F/1000 ft). The dried air then descends on the leeward side of the mountains, warming at the dry adiabatic rate of 10°C/1000m (5.5°F/1000 ft).

The turbulence of the high winds also can prevent the normal nocturnal temperature inversion from forming on the lee side of the slope, allowing night-time temperatures to remain elevated.

Quite often when the Pacific Northwest coast is being drenched by rain, the windward side of the Rockies is being hammered by snow (as the air loses its moisture), and the leeward side of the Rockies in Alberta is basking in a foehn chinook. The three different weather conditions are all caused by the same flow of air, hence the confusion over the use of the name "Chinook wind".

The Santa Ana winds are strong, extremely dry offshore winds that affect coastal Southern California and northern Baja California in autumn and winter. They can range from hot to cold, depending on the prevailing temperatures in the source

regions, the Great Basin and upper Mojave Desert. The winds are known for the hot dry weather (often the hottest of the year) that they bring in the fall, and are infamous for fanning regional wildfires.

A haboob is a type of intense duststorm carried on an atmospheric gravity current. Haboobs are regularly observed in arid regions throughout the world. They have been observed in the Sahara desert (typically Sudan, where they were named and described), as well as across the Arabian Peninsula, throughout Kuwait, and in the most arid regions of Iraq.

The mistral (Catalan: Mestral, Greek: ?a?st???) is a strong, cold and usually dry regional wind in France, coming from the north or northwest, which accelerates when it passes through the valleys of the Rhone and the Durance Rivers to the coast of the Mediterranean around the Camargue region. It affects the northeast of the plain of Languedoc and Provence to the east of Toulon, where it is felt as a strong west wind. It has a major influence all along the Mediterranean coast of France, and often causes sudden storms in the Mediterranean between Corsica and the Balearic Islands.

90. **Correct Answer is : (d) Supercell**

Supercell is a thunderstorm that is characterized by the presence of a mesocyclone: a deep, persistently rotating updraft. For this reason, these storms are sometimes referred to as rotating thunderstorms. Of the four classifications of thunderstorms (supercell, squall line, multi-cell, and single-cell), supercells are the overall least common and have the potential to be the most severe. Supercells are often isolated from other thunderstorms, and can dominate the local climate up to 32 kilometres (20 mi) away.

91. **Correct Answer is : (b) Only 2 is correct**

In India, drought essentially occurs due to failure of south-west monsoon (June – September). Areas
affected by drought need to wait till the next monsoon, as more than 73% of annual rainfall in the
country is received during the SW Monsoon season.
The available data on rainfall indicate that –
ı 16% of the Country's total area is drought prone and annually about
50 million people in the country are exposed to the crisis of drought;
ı A total of 68% of sown area is subject to drought in varying degrees;
ı 35% of area receives rainfall between 750 mm – 1125 mm and is drought prone;
ı Most of the drought prone areas lie in the arid (19.6%), semi-arid(37%) and sub-humid(21%) areas

of the country that occupy 77.6% of its total land area of 329 million hectares.
ı Annual Average Rainfall is 1160 mm in India. However, 85% of rainfall is concentrated in 100-120
days (SW Monsoon)
ı 33%of area receives less than 750-mm rainfall and is chronically
drought prone;
ı 21% area receives less than 750 mm rainfall (large area of Peninsular India and Rajasthan)
ı Rainfall is erratic in 4 out of 10 years.
ı Irrigation Potential is 140 Million Ha (76 MHa Surface + 64 MHa Groundwater)

92. **Correct Answer is : (b) ITBP**

ITBP is given the responsibility of providing security/communication/medical cover to the pilgrims
during Kailash-Mansarover Yatra besides being the Nodal Agency Disaster Management in the Central
and Western Himalayan region. The ITBP has 29 battalions including four specialist battalions.

93. **Correct Answer is : (a) poverty**

The India, Brazil and South Africa (IBSA) Trust Fund was created in 2004 within the IBSA Dialogue Forum. The Fund, as an example of cooperation among three developing countries, constitutes a pioneer and unique initiative to enhance South-South cooperation for the benefit of the most needed nations. Its purpose is to identify replicable and scalable projects that can be disseminated
to interested developing countries as examples of best practices in the fight against poverty and hunger. Projects under the IBSA Trust Fund are carried out in collaboration and consultation with partner countries, through South-South Cooperation mechanisms. The IBSA Trust Fund operates through a demand driven approach. Governments requesting support by this fund initiate discussions with IBSA representatives around the world. They submit proposals to the IBSA Focal Points in the three capitals, for approval. Proposals that receive favorable indication are taken to the IBSA Fund Board of Directors, composed by the IBSA Deputy-Permanent Representatives for the United Nations. They meet every four months to develop, monitor, analyze and
approve project documents. The Special Unit for South-South Cooperation (SU-SSC) of the United Nations Development Program (UNDP), acting as the fund manager and the Board of Directors' secretariat, initiates contact with a potential executing agency to advance a project formulation, and to
facilitate the project's implementation. IBSA projects are executed through partnerships with local governments, UNDP or national institutions.

94. **Correct Answer is : (c) Both a and b**

The BrahMos Aerospace Thiruvananthapuram Limited (BATL) has now entered its second phase of development. It is about to have a full-fledged missile integration complex. The company is a wholly-owned subsidiary of BrahMos Aerospace that caters to product requirements in the country's defense aerospace and nuclear sectors. It is now going to produce the BrahMos supersonic cruise missile's liquid ramjet engine, thus making it the first Indian company to manufacture BrahMos engines. The BrahMos is an India-Russian joint venture. At present, the BrahMos engines are produced at Orenburg in Russia. The BrahMos Aerospace has India holding majority stakes, 50.5 percent, with Russia holding 49.5 percent.

95. **Correct Answer is : (b) 3, 2, 4, 1**

State Literacy Rate (2011)
1 Kerala 93.9
2 Mizoram 91.6
3 Goa 87.4
4 HimachalPradesh 83.8
5 Tripura 87.8
6 Maharashtra 82.9
7 Sikkim 82.2
8 Madhya Pradesh 70.6
9 Assam 73.2

96. **Correct Answer is : (d) Ajmer**

Charar-i-sharif counts amongst the most sacrosanct Muslim shrines in India It is situated approximately 40 km from Srinagar, enroute to Yusmarg near POK (Pakistan Occupied Kashmir). A wooden shrine, the Charar-i-sharif is approximately 600 years old. Popularly known as the Hazrat Sheikh Noor-ud-Din Wali, the shrine was built to commemorate Sheikh Noor-ud-Din Noorani, a Sufi saint. The life of the Sheikh is full of legends and tales. He was born as Nund Reshi or Sahazanand to Salar Sanz in 1377. It is said that he refused to drink milk till the third day after his birth, when a Yogini (female saint), Lal Ded fed him with her own milk. Later, she left the house after saying that
the child would be her spiritual heir. Sheikh Noor-ud-Din Noorani or Nund Rishi was the first one to start Rishism in the valley. Later, this Rishism got renowned as Rishi Mat, a Vishnav Mat.
The saint preached communal harmony, non-violence, vegetarianism and tolerance to the people. He gathered many followers who called him by different names. Some of the names conferred on the saint are Sheikh-ul-Alam, Sheikh Noor-ud-Din Noorani, Alamdar-e-kashmir, Sarkhel-e-Rishiya, etc. Apart from

preaching, the Sheikh made numerous contributions in the field of philosophy also, in the form of verses and poetry.

97. **Correct Answer is : (b) "Abode of Gods"**

Himachal Pradesh, renowned as the "Apple Land of India", and the "Abode of Gods", is a veritable paradise, a tourist's dream and delight. It is situated in the north-west corner of India, right in the lap of Himalayas. It is bordered by Jammu and Kashmir on north, Punjab on west and south-west, Haryana on south, Uttaranchal on south-east and by Tibet on east. Himachal became a full-fledged state on January 25th 1971, with Shimla as its capital. Himachal is India's18th largest state in area and 20th in population.
PLACES OF INTEREST
*BILASPUR: Caves, Temples, View of Anandpur Sahib, Lake.
*NAINA DEVI: Hindu pilgrim center.
*CHAIL: highest cricket ground in the world, Hill station, Palace, Woods ideal for trekking and bird watching, Fishing.
*CHAIL SANCTUARY: Birds and Wildlife.
*CHAMBA: Temples, Museum, Gateway to Tisa & Pangh valleys, Gardens, Murals and
Paintings.
*BHARMAUR: Ancient capital, Temples, 'Switzerland of India'.
*DALHOUSIE: Hill station, Handicrafts Picnic spot.
*DHARMSALA: Hill station, Tibetan handicrafts, Headquarters of Dalai Lama, Tibetan
monastery, Bhagsunag Temple.
*JAWALAMUKHI: Temple, festival of Flame Goddess.
*KALPA: Handloom shawls, Folk dances, Forest Flora and Fauna.
*KANGRA: Fort, Ancient town, Miniature paintings, Temples.
*KASAULI: Hill station.
*KHAJIAR: Lake-side valley, Golf.
*KHOKSAR: Gateway to the Lahaul and Spiti valleys, the Land of the Lamas.
*KYELANG: Buddhist monastery.
*TRILOKINATH: Buddhist pilgrim center, Monastery.
*KOTGARH: Orchards.
*KULLU: Orchards, Temples, Scenery, Trekking, Trout fishing.
*BAIJNATH: Pilgrim center, Temple, Scenic beauty.
*BAJAURA: Temples, Orchards.
*GOBIND SAGAR: Boating.
*MANIKARAN: Hot springs.
*NAGAR: Roerich's home now a museum, Temples.
*MANALI: Hill resort, Trekking, Temples, Himalayan Mountaineering Institute, Orchards,
Four tiered wooden temple with pagoda shaped roof.

*BASHISHTA: Hot sulpur springs.
*MANDI: River-side hill station; Pilgrim center, Temples, Floating islands, Sculptures.
*REWALSAR: Sacred lake for Hindus, Buddhists and Sikhs.
*NAHAN: Hill station, Temples.
*NARKANDA: View of Himalayan Peaks.
*NURPUR: Fort, Handlooms.
*PALAMPUR: Hill stations, Plantations.
*PAONTA SAHIB: Sikh pilgrim center, Fort.
*RENUKA: Sacred lake, Lake-side Wildlife Sanctuary, Handicrafts.
*SHIMLA: Major hill resort of India, Year-round Holiday center, Meadows and forests,
Handicrafts.
*KUFRI: Winter sports.
*FAGU: Scenic beauty.
*MASHOBRA: Hiking, Picnic spot .
*NALDEHRA: Golf.
*TATTAPANI: Sulphur springs.
*THEOG: Trout fishing.
*WILD FLOWER HALL: Floral beauty.
*SOLAN: Hill station, Brewery.
*BAROG: Hill resort, Scenic Rly. Stn.

98. **Correct Answer is : (c) Ambala**

Ambala is known as city of scientific instruments. It is a major scientific products market and is a hub for products like glass apparatus, microscopes,laboratory equipments etc.Ambala constitutes nearly 34% of the total production of scientific instruments produced in India. Ambala is also famous for its clothes market, which draws shoppers from surrounding areas. The market possesses a wide range of custom-made clothes for men and women.

99. **Correct Answer is : (c) Both 1 and 2**

The Kaisar-i-Hind (sometimes misspelt as Kaiser-i-Hind) was a medal awarded by the British monarch between 1900 and 1947, to civilians of any nationality who rendered distinguished service in the advancement of the interests of the British Raj. The non-violent non-cooperation movement was started with the object of redressing the Pubjab and Khilafat wrongs and attainment of Swaraj. The movement captured the imagination of the people. The people were called upon to go through the ordeal, privation and suffering and to make the utmost sacrifices for winning Swaraj, which was promised within one year by Gandhi. There was intense activity and unprecedented cooperation between Hindu and Muslims. Several distinguished persons like Motilal Nehru, C.R. Das, Dr.

Jayakar, Rajendra Prasad, V.B. Patel, C, Rajgopalachari gave up their lucrative practice at the bar and plunged into the movement. Among the Muslim leaders Ali brothers, Dr. M.A. Ansari, Maulana Abdul Kalam Azad played important role.

Thousands of students boycotted government schools and colleges and joined the newly opened national schools and colleges such as Gujurat Vidypitha, Kasi Vidyapitha, Bihar Vidyapitha, Tilak Maratha Vidyapitha, the Bengal National University, Jamia Milia in Delhi and the National Muslim University of Aligarh. The Tilak swarajya fund was started to finance the movement. Seth Jamna Lal Bajaj gave up the title of Rai Bahadur and donated one lakh rupees to the fund. Women showed great enthusiasm and freely offered their jewellery. Swadeshi got great impetus and hand spinning was revived. Khaddar became the symbol of freedom. Huge bonfires of foreign cloth were organised all over the land. Besides boycott of foreign goods and use of Swadeshi goods, anti-liquor agitation was also launched. Gandhihimself surrendered his title of Kaisar-i-Hind and many others followed him.

100. **Correct Answer is : (c) Both 1 and 2 are correct**

Subhas Chanbdra Bose knew that there were many Indians in exile in Germany. Many Indian prisoners of war captured by Axis powers in North Africa were brought to Germany. There were a few eminent Indians like Habibur Rehman. W.G. Ganapuley, N.G. Swamy, M.R. Vyas and A.C.N. Nambiar whom Bose could gather together. With their assistance Bose established a Free India Centre in November 1941. This centre gave birth to Azad Hind Movement. The Azad Hind Movement gave to us the war cry ‘Jai Hind’ which is now adopted by us as an Indian form of greeting. Bose received the title “Netaji” during this time. Netaji with the help and cooperation of Indian youth and prisoners of war in Germany raised the ‘Indian Legion’ a national militia to struggle for India’s freedom. He christened the Legion as “Azad Hind Fauz”. The Legion was trained by the German Army in various fields of war.