**Q.1) Consider the following statements regarding dust particles in atmosphere:**

1. Dust particles are a pollutant and are originated from anthropogenic sources only
2. Convectional currents may carry dust particles to height in the atmosphere.
3. Dust particles help in the formation of clouds.

**Which of the above statements are correct?**

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

**Q.1) Solution (b)**

Atmosphere has a sufficient capacity to keep small solid particles, which may originate from different sources and include sea salts, fine soil, smoke-soot, ash, pollen, dust and disintegrated particles of meteors. Dust particles are generally concentrated in the lower layers of the atmosphere; yet, convectional air currents may transport them to great heights. The higher concentration of dust particles is found in subtropical and temperate regions due to dry winds in comparison to equatorial and polar regions. Dust and salt particles act as hygroscopic nuclei around which water vapour condenses to produce clouds.

**Q.2) Consider the following statements:**

1. Troposphere extends up to 18km at equator and 8 km at pole.
2. The temperature at tropopause over the equator is less than that the temperature of tropopause over the pole.
3. The height of stratosphere is constant across the globe.

**Which of the above statements are correct?**

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

**Q.2) Solution (d)**

The troposphere is the lowermost layer of the atmosphere. Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator.
The zone separating the tropsophere from stratosphere is known as the *tropopause*. The air temperature at the tropopause is about minus 800C over the equator and about minus 45oC over the poles. The temperature here is nearly constant, and hence, it is called the tropopause.
*The stratosphere* is found above the tropopause and extends up to a height of 50 km.

**Q.3) Which of the following statements are incorrect about Mesosphere?**

1. Mesosphere lies above the stratosphere and temperature increases with increase in altitude.
2. The ionosphere lies from 80km to 400km above the Mesosphere.

**Select the code from below:**

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

**Q.3) Solution (a)**

*The mesosphere* lies above the stratosphere, which extends up to a height of 80 km. In this layer, once again, temperature starts decreasing with the increase in altitude and reaches up to minus 100°C at the height of 80 km. The upper limit of mesosphere is known as the *mesopause*.
*The ionosphere* is located between 80 and 400 km above the mesopause. It contains electrically charged particles known as ions, and hence, it is known as ionosphere.

**Q.4) Amongst the following gases, which one has the highest concentration in the atmosphere?**

a) Carbon dioxide
b) Argon
c) Hydrogen
d) Helium

**Q.4) Solution (b)**

Argon is the 3rd largest gas in the atmosphere with 0.93% volume.

**Q.5) Which of the following factors control the insolation received at a place:**

1. Rotation of the earth
2. Angle of inclination of sun's rays
3. Transparency of the atmosphere
4. Albedo of the surface

**Select the correct code from following:**

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

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

Albedo is the amount of radiation reflected back to the atmosphere directly from the surface. This comes into play once the insolation has struck the surface. It has no effect on the insolation received at a place.

**Q.6) The transfer of heat though horizontal movement of air is called:**

a) Convection
b) Advection
c) Conduction
d) Radiation

**Q.6) Solution (b)**

The transfer of heat through horizontal movement of air is called *advection*.

**Q.7) The average temperature on earth remains constant. This is because:**

a) Earth retains the sun's heat and the net heat radiated by earth back to space is less than the heat received by the earth from sun.
b) The net heat radiated by the earth back to space is equal to the heat received by the earth.
c) The net heat radiated back by the earth is more than the heat received by the earth.
d) None of the above statements are correct.

**Q.7) Solution (b)**

The net heat balance of earth is zero. The amount of heat received by the earth is equal to the amount radiated back by the earth to the space.
Had there been a residual heat, the planet would have constantly become warmer.

**Q.8) Consider the following statements regarding Temperature inversion:**

1. Surface Temperature inversion promotes unstability in the lower layer of the atmosphere.
2. In hills and mountains night temperature inversion takes place due to air drainage.

**Which of the above statements are correct?**

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

**Q.8) Solution (b)**

Surface temperature inversion promotes unstability in the lower layer of the atmosphere.

**Q.9) The atmosphere is mainly heated by the:**

a) Short wave solar radiation
b) Long wave terrestrial radiation
c) Reflected solar radiation
**d)** Scattered solar radiation

**Q.9) Solution (b)**
Direct question from NCERT

**Q.10) Consider the following the statements:**

1. Coriolis force is due to the rotation of earth and acts perpendicular to the direction of the flow of wind.
2. Friction force on air is due to the undulations on earth and acts in the direction of the motion of the wind.

**Select the correct statement:**

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

**Q.10) Solution (a)**

Friction force acts in the direction opposite to the direction of the motion of the wind.

**Q.11) Geostopic winds are high altitude winds which flows parallel to the isobars. Which of the following statements are correct about Geostopic winds?**

1. The net force on geostopic winds is zero.
2. The friction does not act on geostropic winds
3. The winds blow with a uniform speed.

**Select the code from below:**

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

**Q.11) Solution (d)**

The velocity and direction of the wind are the net result of the wind generating forces. The winds in the upper atmosphere, 2 - 3 km above the surface, are free from frictional effect of the surface and are controlled mainly by the pressure gradient and the Coriolis force. When isobars are straight and when there is no friction, the pressure gradient force is balanced by the Coriolis force and the resultant wind blows parallel to the isobar. This wind is known as the geostrophic wind.

**Q.12) Consider the following statements:**

1. An air mass is defined as a large body of air having little horizontal and vertical variation in temperature and moisture.
2. Air masses cannot be formed over oceans as a source region need to be homogenous.
3. Temperate cyclones are formed by convergence of two contrasting air masses.

**Which of the above statements are correct?**

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

**Q.12) Solution (c)**

Oceans are a source region for air masses.

**Q.13) Consider the following statements regarding Temperate Cyclones:**

1. Temperate cyclones causes winter rains in west European countries and are good for crops.
2. Torrential Rainfall is caused by cumulinimbus clouds.
3. These cyclones have an eye with calm weather.
4. They are formed only on the sea/ocean surface and are sustained by latent heat provided by condensation of water vapour.
5. These cyclone pushes westerlies which are responsible for winter rainfall in Northern India.

**Which of the above statements are incorrect?**

a) 1 and 5
b) 1,2,3 and 4
c) 2,3 and 4
d) 3 and 5

**Q.13) Solution (c)**

Statements 2,3 and 4 are the characteristics of Tropical cyclones.

**Q.14) In which of the following situations, condensation can take place?**

1. The temperature of the air is reduced to dew point with its volume remaining constant.
2. When both the volume and the temperature are reduced
3. When moisture is added to the air through evaporation.
4. When temperature is increased with constant volume

**Select the code from below:**

a) 1,2 and 3
b) 1 only
c) 3 and 4
d) 2,3 and 4

**Q.14) Solution (a)**

Condensation is influenced by the volume of air, temperature, pressure and humidity. Condensation takes place:
(i) when the temperature of the air is reduced to dew point with its volume remaining constant;
(ii) when both the volume and the temperature are reduced;
(iii) when moisture is added to the air through evaporation.
However, the most favourable condition for condensation is the decrease in air temperature.

**Q.15) Generally the Rainfall occurring in Western Ghats is –**

a) Orographic rainfall
b) Convenctional rainfall
c) Cyclonic Rainfall
d) None of the above

**Q.15) Solution (a)**

The moisture laden winds coming from the Arabian Sea are pushed upwards because of the Western Ghat mountains, which causes rainfall.

**Q.16) Which among the following statements is/are not correct?**

1) Infant mortality rate (IMR) is the number of deaths of children under one year of age per 1000 live births.
2) Neonatal death the death of a baby before or during birth after 28 weeks of gestation.

Choose the appropriate code:

a) 1 only
b) 2 only
c) Both
d) None

**Q.16) Solution (b)**

- Infant mortality: refers to deaths of young children, typically those less than one year of age.
- It is measured by the infant mortality rate (IMR), which is the number of deaths of children under one year of age per 1000 live births.
- Stillbirth: the death of a baby before or during birth after 28 weeks of gestation (according to WHO definition).
- Neonatal death: the death of a baby within the first 28 days of life. (so option 2 is wrong)

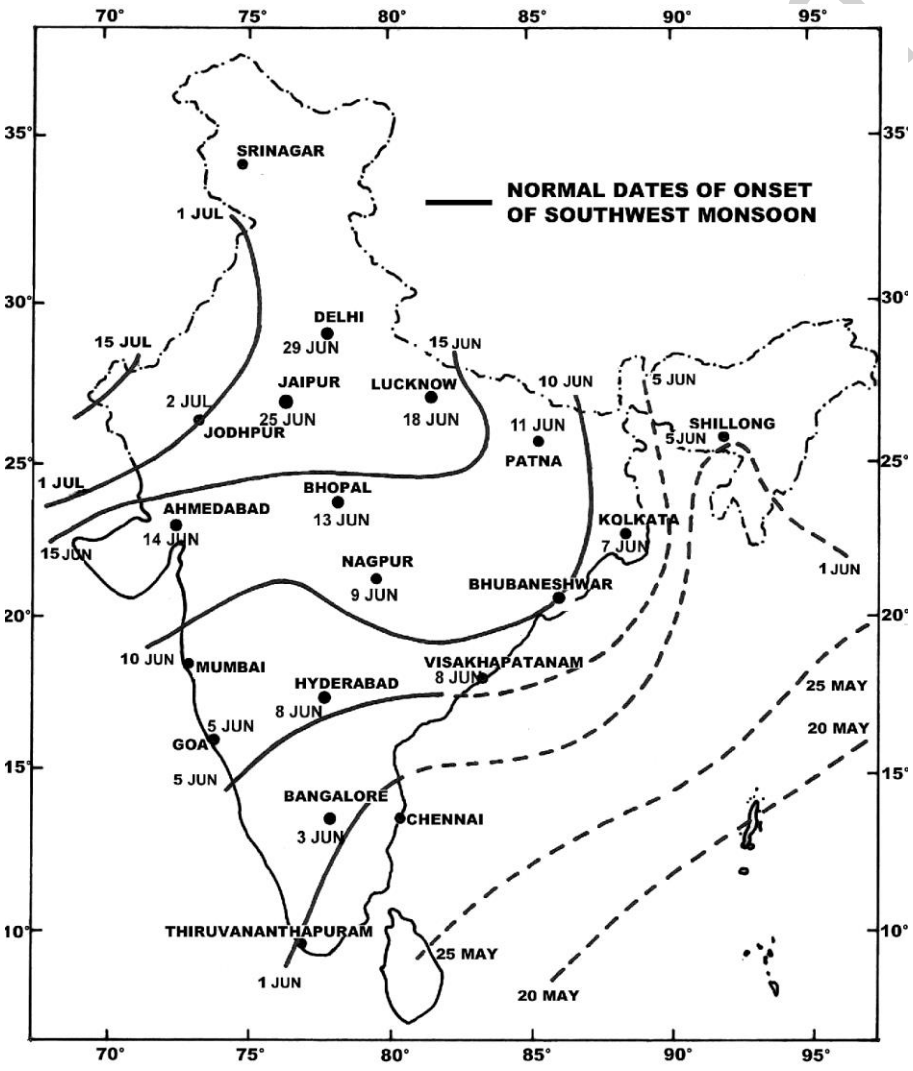
**Q.17) Arrange the following states according to first arrival of Southwest Monsoon rainfall to last to receive:**

1) Kerala
2) Meghalaya
3) Andhra Pradesh
4) Bihar

Choose the appropriate code from below:

a) 2-4-3-1
b) 1-3-2-4
c) 2-3-4-1
d) 1-2-3-4

**Q.17) Solution (d)**



**Q.18) India is progressing on acquisition and exploration of the 'Farzad-B' gas oilfields. In which country does this oil field belong to?**

a) Papua New Guinea
b) Iran
c) Turkmenistan
d) UAE

**Q.18) Solution (b)**

**Link: http://www.thehindu.com/business/Industry/farzadb-gas-project-deal-on-iran-gas-field-may-be-sealed-by-oct/article8687362.ece**

**Q.19) Which country is likely to set up an International Maritime Judicial Centre?**

a) Japan
b) USA
c) China
d) India

**Q.19) Solution (c)**

**Link: http://www.business-standard.com/article/news-ians/china-to-build-international-maritime-judicial-centre-116031300070_1.html**

**Q.20) Though India has one of the largest coal reserves in the world, but the extraction of Coal Bed Methane (CBM) is less than optimal because**

1) India lacks in CBM related services.
2) Lack of infrastructure and CBM related technology.
3) Low gas prices in domestic market.
4) Most of CBM reserves are in tribal areas.

Select the correct answer using the code given below.

(a) 1, 2 and 3 only
(b) 1, 3 and 4 only
(c) 2 and 4 only
(d) 1, 2, 3 and 4

**Q.20) Solution (d)**

- All the statements are correct – factual question

**Q.21) Pattachitra is**

a) A cloth-based scroll painting of Odisha
b) A traditional dance form of Odisha
c) Block painting of Buddhism faith
d) Paintings done on dry leaves and preserved

**Q.21) Solution (a)**

**Pattachitra paintings:**

- Depict stories of Jagannath and of the Vaishnava Sect
- Has earned a GI tag

**Q.22) What are 'Mithrim Montes'?**

a) Dust coming from beyond our solar system
b) Mission to explore the subsurface oceans of Saturn's icy moons
c) Mountainous ridges hosting Titan's tallest peak
d) Experimental aircrafts to test the green aviation technology by the industry

**Q.22) Solution (c)**

**Q.23) What do you mean by 'Google Tax'?**

a) A tax council to act as an advisory body with a research unit initiated by the web giant 'Google'
b) An equalisation levy to ensure that the online businesses which are global in nature are taxed effectively
c) A special tax to be levied on foreign companies having their headquarters in India
d) The procedure enabling electronic filing of documents

**Q.23) Solution (b)**

**Google Tax**

**Q.24) Consider the following statements:**

1) Deposit amount on bank balance sheet (account book) is put under liability category.
2) Lent money is put under asset category

**Select the correct option/s:**

a) Only 1
b) Only 2
c) Both
d) None

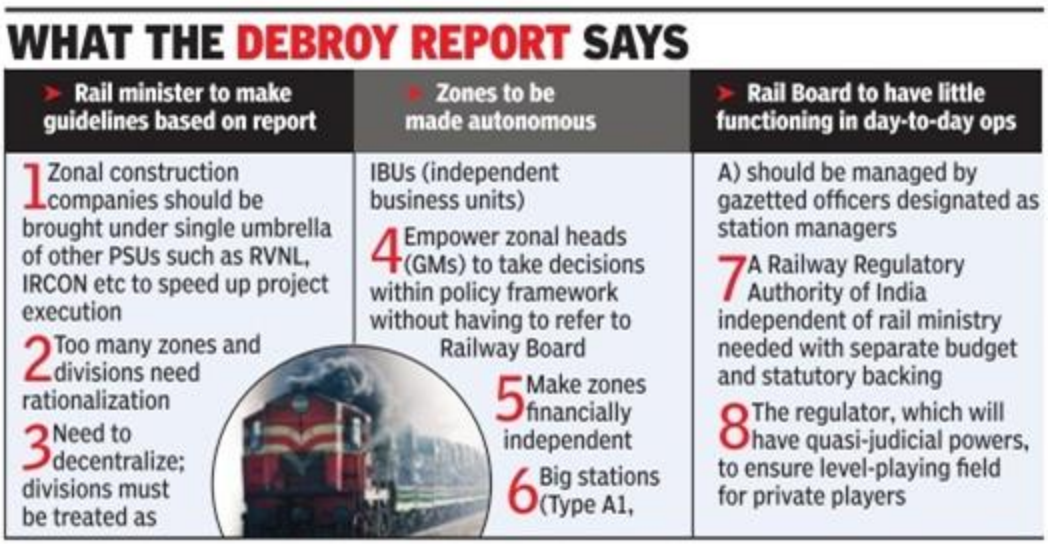
**Q.24) Solution (c)**

- Deposit amount on bank balance sheet is put under liability category as banks have to pay that amount back with interest.
- Lent money is put under asset category as it generates income for the bank in the form of interest.

**Q.25) Who has headed the panel on restructuring of the Indian Railways?**

a) Mr. Debroy
b) Mr. Khakodkar
c) Mr. Prakash Javdekar
d) Mr. Ashok Mehta

**Q.25) Solution (a)**



# DEBROY PANEL FLAGS OFF COURSE CORRECTION

**Improving Finances**
Must **focus on remunerative freight** segment and e-commerce segment

**Leasing of parcel vans** in trains through **auction** of carrying capacity/private parcel trains and concessioning of train services

Must encourage **on-board catering** through food chains & local restaurants on **payment of modest license fee**

**Separate activities** such as running of hospitals, schools, catering, security, real estate devpt, manufacturing of locomotives, coaches & wagons, **from core function of running trains**


**Schools**
Educational needs of children of railway employees could be met by **subsidizing their education in alternative schools, including KVs and private schools**

**Hospitals**
- Give GMs/DRMs & employees **choice** to opt for services such as **medical tests, pre-employment exam, safe water & food supply** at stations either through Indian Railway Medical Services or private empanelled practitioners
- For preventive & curative healthcare, choice may be **extended** to **CGHS framework; subsidized healthcare in private hospitals** should not be restricted to referral services

**Security**
State govts should be persuaded to bear entire cost of GRP and GMs/DRMs should have freedom to choose between private agencies and RPF for security of trains

**Accounting Reforms** | Set up responsive, transparent accounting and costing system

**Rationalizing Staff** | Amalgamate existing service into single unified railway service, OR second option is to create two sets of services to deal with technical and non-technical aspects

**Lateral entry of talents from outside Railways such as CAs, cost accountants, bankers, financial management experts etc**