

# CDS

**Exam.**

**(Combined Defence Services)**

**PREVIOUS  
YEARS'  
PAPERS**

**WITH DETAILED SOLUTIONS**

1. Which one of the following is considered as 'good cholesterol' with reference to individuals facing the risk of cardio-vascular diseases and hypertension?

- (a) High Density Lipoprotein (HDL)
- (b) Low Density Lipoprotein (LDL)
- (c) Triglyceride
- (d) Fatty acids

**Answer: B**

**Explanation:** LDL particles pose a risk for cardiovascular disease when they invade the endothelium and become oxidized, since the oxidized forms are more easily retained by the proteoglycans. A complex set of biochemical reactions regulates the oxidation of LDL particles, chiefly stimulated by presence of necrotic cell debris and free radicals in the endothelium. Increasing concentrations of LDL particles are strongly associated with increasing rates of accumulation of atherosclerosis within the walls of arteries over time, eventually resulting in sudden plaque ruptures, decades later, and triggering clots within the artery opening, or a narrowing or closing of the opening, i.e. cardiovascular disease, stroke, and other vascular disease complications.

LDL particles (though far different from cholesterol per se) are sometimes referred to as bad cholesterol because they can transport their content of lipid molecules into artery walls, attract macrophages, and thus drive atherosclerosis. In contrast, HDL particles (though far different from cholesterol per se) are often called good cholesterol or healthy cholesterol because they can remove lipid molecules from macrophages in the wall of arteries.

2. Which of the following pairs of vitamin and disease is / are correctly matched?

1.	Vitamin A	Rickets
2.	Vitamin B <sub>1</sub>	Beriberi
3.	Vitamin C	Scurvy

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

**Answer: B**

**Explanation:** Rickets is softening and weakening of bones in children, which is due to inadequate vitamin D. Beriberi is a disease in which the body does not have enough thiamine or vitamin B<sub>1</sub>. It is also a nutritional disorder and is characterized by impairment of the nerves and heart. Scurvy is a condition caused by a severe lack of vitamin C in the diet.

3. The rate of change of momentum of a body is equal to the resultant:

- (a) energy
- (b) power
- (c) force
- (d) impulse

**Answer: C**

**Explanation:** Newton's Second Law link to Newton's laws. The rate of change of momentum of an object is directly proportional to the resultant force applied and is in the direction of the resultant force. The resultant force is equal to the rate of change of momentum.

4. After a hot sunny day, people sprinkle water on the roof-top because:

- (a) water helps air around the roof-top to absorb the heat instantly
- (b) water has lower specific heat capacity
- (c) water is easily available
- (d) water has large latent heat of vaporization

**Answer: A**

**Explanation:** People sprinkle water on the roof because when this water evaporated they take up some of the heat from the roof for the process of evaporation. As some of the heat gets released the roof becomes cooler making the rooms also cool.

5. Consider the following map of India:



The areas marked in the map given above account for the production of which one of the following cash crops?

- (a) Cotton
- (b) Groundnut
- (c) Sugarcane
- (d) Tobacco

**Answer:** A

**Explanation:** In India, the states of Maharashtra (26.63%), Gujarat (17.96%) and Andhra Pradesh (13.75%) and also Madhya Pradesh are the leading cotton producing states; these states have a predominantly tropical wet and dry climate.

6. Pir Panjal Range in the Himalayas is a part of:

- (a) Shiwalik
- (b) Trans Himalaya
- (c) Central Himalaya
- (d) Lesser Himalaya

**Answer:** D

**Explanation:** The Pir Panjal Range is a group of mountains in the Inner Himalayan region, running from east-southeast (ESE) to west-northwest (WNW) across the Indian states of Himachal Pradesh and Indian administered Jammu and Kashmir and Pakistan administered Kashmir

7. Consider the following statements regarding laterite soils of India:

1. Laterite soils are generally red in colour
2. Laterite soils are rich in nitrogen and potash .
3. Laterite soils are well developed in Rajasthan and UP
4. Tapioca and cashew nuts grow well in this soil

Which of the statements given above is / are correct?

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

**Answer: C**

**Explanation:** Laterites are soil types rich in iron and aluminium, formed in hot and wet tropical areas. Nearly all laterites are rusty-red because of iron oxides.

8. Which of the following statements regarding Mediterranean and Monsoon climate is / are correct?

1. Precipitation in Mediterranean climate is in winter while in Monsoon climate it is mostly in summer
2. The annual range of temperature in Mediterranean climate is higher than the Monsoon climate
3. Rainy and dry seasons are found in both the climates

Select the correct answer using the code given below:

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

**Answer: C**

9. The handle of pressure cookers is made of plastic because it should be made nonconductor of heat. The plastic used there is the first man-made plastic, which is :

- (a) Polythene
- (b) Terylene
- (c) Nylon
- (d) Bakelite

**Answer:** C

**Explanation:** Thermosetting plastics once moulded, cannot be softened by heating. These plastics are poor conductors of heat and electricity. Due to these properties thermosetting plastics are used to make handles of cookers or switches.

Nylon is a thermoplastic

10. Methyl isocyanate gas, which was involved in the disaster in Bhopal in December 1984, was used in the Union Carbide factory for production of:

- (a) Dyes
- (b) Detergents
- (c) Explosives
- (d) Pesticides

**Answer:** D

**Explanation:** Methyl isocyanate (MIC) is an organic compound with the molecular formula  $\text{CH}_3\text{NCO}$ . Synonyms are isocyanatomethane, methyl carbylamine, and MIC. Methyl isocyanate is an intermediate chemical in the production of carbamate pesticides (such as carbaryl, carbofuran, methomyl, and aldicarb).

11. The Germplasm is required for the propagation of plants and animals. Germplasm is the:

1. genetic resources
2. seeds or tissues for breeding
3. egg and sperm repository
4. a germ cell's determining zone

Select the correct answer using the code given below:

(a) 1 only

(b) 1,2 and 3

(c) 2 and 3 only

(d) 2 and 4

**Answer: B**

**Explanation:** Germplasm is the living genetic resources such as seeds or tissue that is maintained for the purpose of animal and plant breeding, preservation, and other research uses. These resources may take the form of seed collections stored in seed banks, trees growing in nurseries, animal breeding lines maintained in animal breeding programs or gene banks, etc. Germplasm collections can range from collections of wild species to elite, domesticated breeding lines that have undergone extensive human selection.

**12.** Dengue virus is known to cause low platelet count in blood of patient by:

1. interfering in the process of platelet production in bone marrow

2. infecting endothelial cells

3. binding with platelets

4. accumulating platelets in intestine

Select the correct answer using the code given below:

(a) 1 and 2 only

(b) 1 and 3 only

(c) 3 and 4

(d) 1,2 and 3

**Answer: D**

13. The SI unit of mechanical power is:

- (a) Joule
- (b) Watt
- (c) Newton-second
- (d) Joule-second

**Answer: B**

**Explanation:** The dimension of power is energy divided by time. The SI unit of power is the watt (W), which is equal to one joule per second. Other units of power include ergs per second (erg/s), horsepower (hp), metric horsepower or cheval vapeur (CV), and foot-pounds per minute.

14. Two -systems are said to be in thermal equilibrium if and only if

- (a) there can be a heat flow between them even if they are at different temperatures
- (b) there cannot be a heat flow between them even if they are at different temperatures
- (c) there is no heat flow between them
- (d) their temperatures are slightly different

**Answer: C**

**Explanation:** Two physical systems are in thermal equilibrium if no heat flows between them when they are connected by a path permeable to heat. Thermal equilibrium obeys the zeroth law of thermodynamics.

15. 'German silver' is used to make decorative articles, coinage metal, ornaments etc. The name is given because:

- (a) it is an alloy of copper and contains , silver as one of its components
- (b) Germans were the first to use silver
- (c) its appearance is like silver
- (d) it is an alloy of silver

**Answer: A**

**Explanation:** German Silver or Nickel Silver is a metal alloy of copper with nickel and often but not always zinc. It is named for its silvery appearance, but contains no elemental silver. Other common names for this alloy are Paktong, New Silver and Alpacca.

**16.** Plants contain a variety of sterols like stigmasterol, ergosterol, sitosterol etc., which very closely resemble cholesterol. These plant sterols are referred as :

- (a) Phytosterols
- (b) Calciferols
- (c) Ergocalciferols
- (d) Lumisterols

**Answer:** A

**Explanation:** Phytosterols, which encompass plant sterols and stanols, are steroid compounds similar to cholesterol which occur in plants. Calciferol or ergocalciferol is vitamin D<sub>2</sub>. Lumisterol is a compound that is part of the vitamin D family of steroid compounds.

**17.** With which one of the following countries, India has signed an MoU under the International Cooperation on Brahmaputra and Sutluj rivers?

- (a) Pakistan
- (b) China
- (c) Bangladesh
- (d) Nepal

**Answer:** B

**Explanation:** In the year 2002, the Government of India had entered into a Memorandum of Understanding (MoU) with China for five years upon provision of Hydrological information on Yaluzangbu /Brahmaputra River during flood season by China to India

Similar Memorandum of Understanding (MoU) signed during the visit of the Chinese Premier to India in April 2005 for providing hydrological information of one station i.e. Tsada on River Sutlej/ Langqen Zangbo during flood season. Chinese side is providing hydrological information in respect of their Tsada station on river Sutlej Langqen Zangbo.

**18.** Headquarters of which one among the following Railway Zones in India is situated at the highest elevation from the mean sea level?

- (a) East Central Railway
- (b) South Eastern Railway
- (c) South Western Railway
- (d) West Central Railway

**Answer:** C

**Explanation:** South Western Railway -: Hubli 2056 feet

**19.** Stalactites and stalagmites are features of

- (a) glacial topography
- (b) volcanic topography
- (c) karst topography
- (d) fluvial topography

**Answer:** C

**Explanation:** Karst topography is a landscape formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum. It is characterized by underground drainage systems with sinkholes and caves. It has also been documented for weathering-resistant rocks, such as quartzite, given the right conditions. Subterranean drainage may limit surface water with few to no rivers or lakes. However, in regions where the dissolved bedrock is covered (perhaps by debris) or confined by one or more superimposed non-soluble rock strata, distinctive karst surface developments might be totally missing.

**20.** Which one of the following is the correct sequence of the given planets in increasing order of their size (diameter) ?

- (a) Mars - Venus - Earth - Mercury - Uranus
- (b) Mercury - Mars - Venus - Earth - Uranus
- (c) Mercury - Mars - Venus - Uranus - Earth
- (d) Venus - Mercury - Mars - Earth - Uranus

**Answer:** B



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