

1 - Linear Questions

- A. Kirchoff's Law:- The Physics-concept, that associates the rate of radiation by a body to its temperature.
- B. AYUSH → acronym of Ayurveda, Yoga, Unani, Siddha, Homoeopathy, the traditional medicine system promoted by AYUSH Ministry
- C. GSLV:- Geo-Synchronous Launch vehicle, that lifts the heavier satellites to geosynchronous enormous transfer orbit at around 36,000 kms from earth.
- D. TRIMS:- WTO-compliant Trade related Investment Measures are a set of guidelines to promote International Investment across Business.
- E. Cloning:- Technology of creating two identical progeny from a somatic parent cell. Cloning in India is regulated under Dept. of Biotechnology.

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F. Vikram Sarabhai:- The Indian space-scientist who is instrumental in promotion of India's space program along with chief of India's Atomic Commission. He established Physics Lab of National Importance in Gujarat.

G)

H) Periodicity:- The oscillatory motion, to and fro motion is periodic in nature & is called Periodicity of motion.

I) Amplitude:- The magnitude of displacement of wave-particle from its mean position during wave-motion.

J) Marasmus:- Protein deficiency disease, that causes under-nourishment, low-body weight in children.

K) Osmosis:- A physical phenomenon of Total Internal Reflection in desert, where water is appeared at distant place, but not present in reality.

L) COBOL:- It is the Computer-program language. It is used by programmers to design applications & user interface.

M) Bookmarks:- A feature in Internet Browser to mark the important visited website or web-page. Easy to access feature.

N) R R G A T

O) N R S C

100 words Questions

A) IRNSS program is Indian Regional Navigation Satellite System now known as NAVIC

features:-

- i) Regional Coverage of India & 1500 kms Surrounding
- ii) 4-geosynchronous and 3 geostationary satellite system.

## Advantages of NAVIC / IRNSS

i) Standard navigation and special navigation services to Indian citizens and army respectively.

ii) Assist in adoption of indigenous GPS system

iii) The development of Application of mobile like 'Train-locator' depend on it.

iv) Making India Atmanirbhar.

B) Cricket is an outdoor game, where two batsman play with the ball and fielders field.

### Techniques used :-

i) Ball Tracker :- To simulate ball trajectory for LBW - cricket

ii) SNICKO :- To identify that ball-edged the bat.

iii) Infra-red Cameras for finding image of ball contacting bat

iv) Cameras in stumps, outside field.

v) Microphone in stumps etc...

The game of cricket is evolving fast  
feedback, beginning of Day-Night Test

is an example:

c) Nuclear Energy :- The process of release of energy during nuclear fission or fusion is called Nuclear Energy.

### Advantage of Nuclear Energy

- i) Less polluting
- ii) Reliable source of energy.
- iii) CO<sub>2</sub> emissions is negligible.
- iv) Can be used for future energy needs.

### Potential Hazard

- i) Nuclear Disaster like Chernobyl
- ii) Susceptible to Natural Disasters like Fukushima Disaster (2011)
- iii) Radioactivity related harmful radiations from fission reactors.

D) RLV-TD is a sub-part of Indian Space Mission called 'SAGARAYAN'. The Indian Astronauts will stay in space for 3-4 days and return back to Earth on same space-craft.

## Features of RLV-TD

- i) Stable in space conditions and atmospheric re-entry.
- ii) Space Capsule Recoverable
- iii) Can be used ~~of~~ for multiple space-mission launch.
- iv) Saves a lot of money, economical missions to space.

E) Human Robots are Human shaped Robots like ASIMO of Japan, that can perform intelligent, cognitive, mathematical and manual works based on Artificial Intelligence.

## Enhance Quality of Life

- i) They can perform redundant jobs like switching of lights.
- ii) They can perform hard calculations.
- iii) They promote autonomous transport systems etc...
- iv) The primary jobs of human can be tackled by them.

Thus, they are important for old-age childhood education, job assistance etc.

F) Quantum computers are based on the work-mechanics of photons. They use qubits instead of bits and can assume any value between 0 and 1 simultaneously. They are very fast than any super-computer on earth.

### Causes of Environment Degradation

- i) Urbanisation :- Bellandur lake fire in Bangalore is due to eutrophication of lake.
- ii) Development work :- large hydroelectric dam projects.
- iii) Industries :- Effluents from industries like lead, zinc, polute land, water.
- iv) Transport :- CO<sub>2</sub> emissions.
- v) Unsustainable economic growth.
- vi) Sustainable development means development with sustainable use of resources that do not threaten future.

Purpose and need of Sustainable Development:-

i) Purpose is to create an inclusive, just, fair socio-economic system of world.

Eg. least developed countries to be assisted in development.

ii) Need:- Rising Natural Disasters like Ochi cyclone, urban floods (Kadarnath, 2013), decreasing soil fertility in Punjab etc...

The achievement of Sustainable Development Goals 2030 is important for human survival.

1) Liver:- Largest gland of human body.  
Its functions

- Secretes bile juice for digestion
- Deamination of amino acid, urea production
- Glucose metabolism
- Production of Heparin
- Production of Fibrinogen
- Store house of Iron, Copper, Vitamin
- It makes the food alkaline in duodenum



J. Metal and non-metal difference.

i) All metals are lustrous while not all non-metals are lustrous.

ii) Metals are Sonorous and ~~not~~ non-metals.

iii) They are solid at room temperature while non-metals are not.

iv) Most metals are ductile and malleable but not the non-metals.

k) Satyendra Nath Bose: - Indian origin Scientist who developed study on Bose-Einstein Condensate.

Homi-Jehangir Bhabha was the Chairman of Atomic Energy Commission in India.

He did a lot to persuade Jawahar Lal Nehru to have indigenous Atomic program.

h) Let cost price of table be ~~X~~ 100Rs.  
∴ Selling Price = 113 Rs.

1) S.P. of Table be 100  
Profit = 13%  
Cost Price be  $x$

~~$$\begin{array}{r}
 125 \\
 \times 113 \\
 \hline
 12500 \\
 12500 \\
 \hline
 14225
 \end{array}$$~~

If S.P. of table be  $100 + 25$   
Cost Profit = 18%

~~$$\begin{array}{r}
 100 + 25 = 1.18x \quad \text{--- (i)} \\
 100 = 1.13x \quad \text{--- (ii)}
 \end{array}$$~~

~~$$\begin{array}{l}
 125 \times 1.13x = 100 \times 1.18x \\
 142.25x = 118x
 \end{array}$$~~

Let the Selling Price be  $X$

$\therefore CP + 0.13CP = X$  --- (i) (C.P. = Cost Price)

$CP + 0.18CP = X + 25$  --- (ii)

i - ii

$$0.13CP - 0.18CP = 25$$

$$0.05CP = 25$$

$$CP = \frac{25}{.05} = \frac{525 \times 100}{5}$$

$$CP = 500$$

Thus Cost Price of table is Rupees 500

## 300 words Questions-

A) Waste refers to substance that are of no use in an economy and may contaminate the environment if left undisposed.

### Types of waste

i) Bio-degradable waste (that degrade quickly)  
E.g. Kitchen fruits-vegetable waste.

ii) Non-biodegradable waste :- that do not degrade in human life time.  
E.g. Polyethylene waste.

iii) Radioactive waste :- Residual of Nuclear reactors, can cause genetic mutation.

iv) Biological waste from hospitals

v) Municipal waste by Urban Local Bodies.

vi) Industrial waste :- E.g. Heavy-metals in rivers.

### 3R technique of Management

i) It means Reduce, Reuse, Recycle

- ii) It promote circular economy.
- iii) The extraction of heavy metals from e-waste
- iv) Sewage treatment (under Swachh Bharat Abhiyan).
- v) Selective Catalytic Reduction for Industrial Emissions.
- vi) Using Concept of Reduce Car BS-VI compliant vehicles etc...

The management of waste is a part of SDGs - targets of 2030 and India has various policies in place  
 e.g. Plastic waste, E-waste Persistent Organic Pollutant waste Construction and Demolition waste Policy of 2016

- B) Communicable diseases are Infectious diseases that spread through cough, human contact or vectors like Mosquitoes  
 E.g. COVID-19, flu, Swine flu, Ebola, Malaria Dengue, Zika etc...

Non-Communicable diseases are life-style related diseases that do not spread from one person to another.  
 e.g. Diabetes, Blood pressure, Respiratory ailment

Cardiac diseases, Cancer etc..

### Avoidance of Communicable Disease

- i) Killing of Mosquito through pesticides, insecticides  
(National Program on Malaria)
- ii) Maintain personal hygiene, Sanitation.  
Quarantine processes etc..
- iii) Use of proper Maintenance Regime for  
Environmental Cleaning

### For Non-Communicable Diseases :-

- i) FSSAI - Eat right Movement -
- ii) Regular Exercises - Fit India Movement -
- iii) Early diagnosis of the ~~same~~ condition.  
through Health and Wellness Centre.

National Health Policy 2017 talks about the tackling of both types of disease through Universal Health Coverage of Health and Wellness Centre

D Bio-technology is the use of biological processes in science to promote scientific objective.  
E.g. Bt-Brinjal is an living Modified organism is pest resistant.

Applications :-

- i) Climate Resistant crops :- Bt-cotton against pest.
- ii) High productivity of Crops.
- iii) Increase in nutrient in food . E.g. golden rice
- iv) Food fortification.
- v) Use for developing designer babies.
- vi) Medical treatment . gene therapy . CRISR-Cas9
- vii) Space Application :- Use of modified algae chlorella for food, fuel and oxygen etc.

The Government of India has promoted the National Bio-Technology Mission - 2017 under the guidance of the BIRAC research council to tackle the existing and emerging food and diseases related problems of India.