

PART - II

SECTION - I

Q. No. 02

Ans (a)

Artificial Intelligence: (AI)

It is defined as the art and science of making intelligent machines. It involves around making such machines which are capable of thinking like humans.

Era of AI

This era of 21st century is commonly called as the era of AI. Because in this age AI has incorporated in almost every aspect of life. From large business to security and from making plans to consulting as the recipe of making rice. We are completely dependent on it.

How AI is the New Electricity?

Electricity is like an energy to compel us to work and to start a small industries to large electricity.

Instant Availability:

Like an electricity AI is also available at once to response to any command given to it. Within a part

if a minute it provides access to the
the required information.

AI Become a part of life like Electricity :

Like electricity has become a part and parcel of everybody's life in this way AI has also become a part of life. From charging a cell phone to making daily plans we all are dependent on AI.

AI act as an Energy by Giving Knowledge :

For the material things to move electricity provides an energy, for the human being to move, knowledge is essential which is provided by the AI.

As someone has rightly said:

'AI is the new electricity'



Ans (b)

Working of CPU :

CPU stands for the Central Processing Unit is a computer hardware. It operates on the instructions given to him in the form of inputs through the keyboard. Then search in the stored data and give a response. The response is based on the information / data which are put to it. Moreover it also regulates the whole working of the system.

Working of a Brain :

Human brain works on the responses which have given to it through the five senses. Then it interprets the situation and accordingly produce action or response. For instance if someone has touch heated rod then he/she suddenly pull off it. The hands give the instructions is sensed the situation and brain interprets it.

Resemblance of CPU with Human Brain

1. Receiving Responses

Like human brain, CPU accepts responses from the keyboard. The information is fed to it in any kind. The CPU give information accordingly to it.

2. Giving reactions on the basis of stored information when the information or raw data has been put into it. It interprets and produces response on the basis of stored information.

3. Control Working of Systems like human, brain, CPU controls the whole system. As all the data is stored in it and control the working of the whole system.



Ans (c)

Balanced Diet:

A diet containing all the essential nutrients necessary for the normal growth and development of a body is called balanced diet.

Composition of Balanced Diet:

A balanced diet is composed of adequate amount of following nutrients:

Proteins → muscle movement

Water → act as carrier

vitamins → regulate the reactions.

Carbohydrates → store energy

lipids → protect cell.

Deficiency symptoms:

Vitamin A:

- Vitamin A is present in the carrots.
- Its deficiency results in loss of vision.

Vitamin B:

- Vitamin B is mainly present in the green vegetables.
- Its deficiency leads to dementia and anaemia in human body.

Vitamin C:

- Vitamin C is present in pulses.
- Its deficiency leads to sickle cells.

Ans (d)

Optical fiber:

Optical fibre are the cables used to transmit information over a long distances in the form of light.

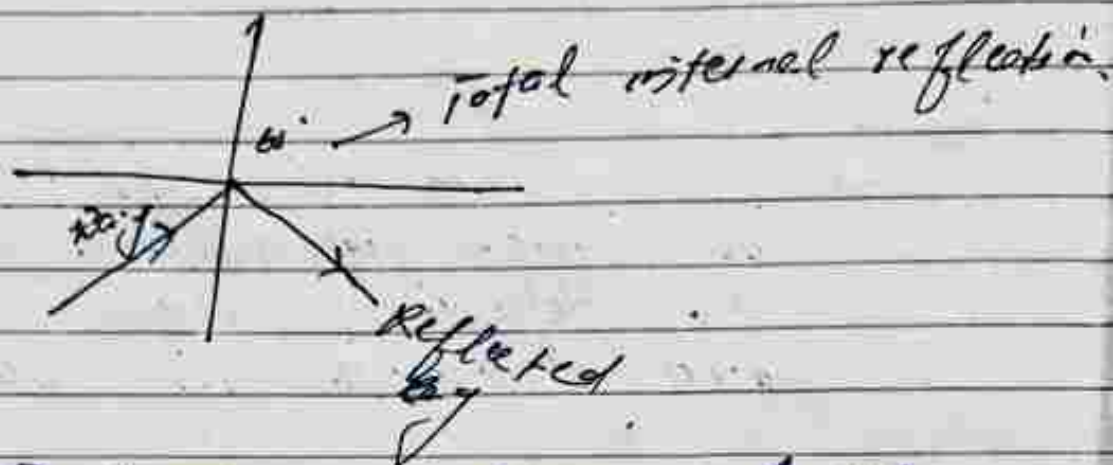
Composition of Optical fibre.

Optical fibre is composed of:

- Core → transmit signal
- Cladding → prevent losses
- Jacket → prevent physical losses
- Bulk → give fibres its recognition

Working of Optical Fibre:

Optical fibre operates on the principle of total internal reflection when light strikes the core at 60° angle. It bounces back in the core and travel in this way.

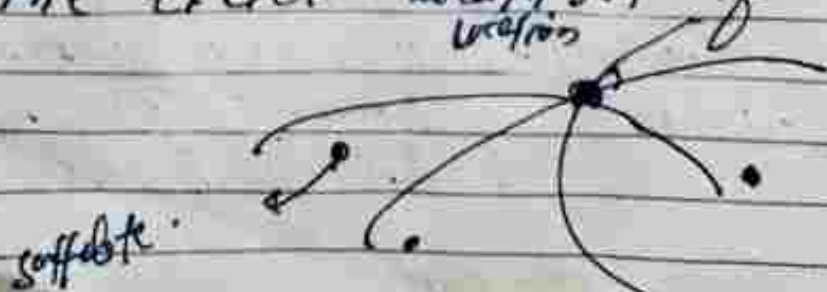


Global Positioning System: (GPS)

It is defined as the network of satellites used to locate the objects on the earth. It is helpful in mapping and used to know locations based on various businesses.

Measurement of 2D and 3D Locations:

When a person opens its location it comes under the location of many satellites. Various satellites started making circles. When the n th of the circle intercept at a place it is the exact location of that person.



Q. NO. 03

Ans (a)

Why atoms form chemical bonds?
Atoms form chemical bond because of following reasons:

1. To Gain Stability

Atoms in their loneliness are unstable because of the incomplete share of electrons. That's why form bonds with other atom to gain stability.

2. To Complete its valence shell

Most of the atoms have less number of electrons in their valence shell. They form bonds with other atoms to gain or lose electron. To complete its valence shell.

3. To Gain The Configuration of Noble Gases:

Noble gases are stable because they have complete their valence shell. So by making bonds the atoms gain the configuration of nearest noble gas and become stable.

Covalent Bond in a water molecule:

Water forms two covalent bonds between hydrogen and oxygen. Oxygen is carrying 2 lone pairs of electrons which is adjusted by the hydrogen molecule.



Water molecule has single covalent bond with other water molecule and a double covalent bond with the oxygen atom. These three atoms share electrons among themselves to form covalent bond.



Ans (b)

Doping:

Doping is the process of adding some impurity atoms in a pure semiconductor to increase the conductivity of that semi-conductor.

Ways to Do Doping?

Doping can be done in two ways

1. n-type dopant
2. p-type dopant

are added to form an n-type semiconductor.

Ceramics:

Ceramics are defined as pots and other articles made from the clay hardened by heat.

Types of Ceramics:

Porcelain
stoneware
Earthenware
Tile
Bone China
Brick
And many more—

Ans (c)

Global Warming:

Global warming is a phenomenon in which average risk of global temperatures happen by trapping of heat in the atmosphere.

Merits of Global Warming:

1. Ice age can be prevented.
2. Fewer deaths occurs due to arctic conditions.
3. Longer growing season mean the increase in agricultural productivity.
4. Previously untapped oil and gas might become available.
5. Different passages blocked due to the ice might be open.

Demerits of Global Warming:

1. Changes in ocean circulation and result in warmer temperature.

2. Higher sea levels resulting in the flooding of lowlands.
3. Deserts become drier leading to increased desertification.
4. Increase of spread of diseases.
5. Cultural and heritage sites are destroyed.

Ann (d)

Polio:

Polio is a viral disease resulting in the convulsions of joints especially in the babies.

Causes of Polio:

1. Viral infection
2. Lack of hygiene
3. Immigration from other countries.
4. Weak immune system.

Challenges in Eradication of Polio:

1. Misconception about vaccine.
2. Killing of the workers
3. Lack of awareness
4. Bad hygiene conditions
5. Insufficient cleanliness of the sewerage
6. Afghans coming from their native country
7. Insufficient taking of healthy diet
8. Weak immune system

Section II

Q. NO. 06

Ans (4)

Data:

Ratio of blocks

$$A : B : C : D = 4 : 7 : 3 : 1$$

respectively

To Find:

The number of B blocks = ?

Solution:

$$\text{Sum of shares} = 15$$

$$A's \text{ share} = \frac{4}{15}$$

$$B's \text{ share} = \frac{7}{15}$$

$$C's \text{ share} = \frac{3}{15}$$

$$D's \text{ share} = \frac{1}{15}$$

Equation:

$$A = 50 C$$

$$\frac{4}{15} = \frac{50 \times \frac{3}{15}}{15}$$

$$\frac{4}{15} = 10$$

$$4 = 10 \times 15$$

$$= \frac{10 \times 15}{\frac{4}{15}} = \frac{75}{2}$$

B's share:

$$\frac{7}{15} \times \frac{75}{2}$$

$$\frac{35}{2}$$

$$= 17.5$$

Ans. (d)

Date:

Original cost of pair of shoes = 80 ₹
Discount = 15%
Sales tax = 10%

To Find:

Final Price = ?

Calculation:

$$\text{Discount} = 80 \times \frac{15}{100}$$

$$= 12 ₹$$

$$\text{Sales Tax} = 80 \times \frac{10}{100}$$

$$= 8 ₹$$

$$\text{Final Price} = 80 + 12 - 8 = \boxed{84 ₹}$$

Ans (e)

Date:

Distance travelled by train = 42 km.

Speed = 36 km/hr.

Departure time = 4 p.m.

To Find:

Arrival time = ?

Calculation:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$= \frac{42}{36} = \frac{7}{6} = 1.17$$

28²⁰

Approx. 1 hr 20 minutes.

Then the train arrives it 4 + 1:20
= 15:20 pm

Ans (d)

(i)

SUPERINTENDED.

(ii)

WHITE

Q. NO. 07

Ans (a)

Data:

Radius of cylinder = 30 cm
Height = 1 m

To find:

Volume of cylinder = ?

Calculation:

$$V = \pi r^2 h$$

$$r = 30 \text{ cm} = \frac{30}{100} = 0.3 \text{ m}$$

$$V = 3.14 \times (0.3)^2 \times 1$$

$$V = 3.14 \times 0.9 \times 1$$

$$V = \underline{2.82}$$

Ans (b)

Data:

Avg. age of 3 dogs = 15 years
Ratio of ages = 3:5:7

To find:

Age of youngest dog: ?

Calculation:

Let

A's ratio = 3

B " = 5

C " = 7

Sum of ratios = 15.

$$A's \text{ age} = \frac{3}{15} = \frac{1}{5} = 0.2$$

$$B's \text{ age} = \frac{5}{15} = \frac{1}{3} = 0.33$$

$$C's \text{ age} = \frac{7}{15} = 2.2$$

Youngest age = 0.2 years

Ans (c)

(i)

Multiples series → Not a complete multiple.

(ii)

Prime number series.



End