

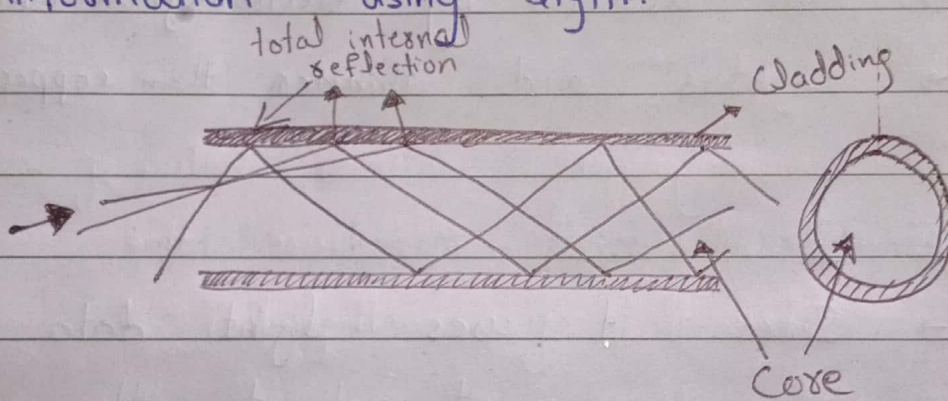
Part - II

Section - 1:

Q.No.4.

a. What are fiber optics, ----- transmission?

Ans. Fiber optics are thin strands of glass or plastic used to send information using light.



- Cladding is low refractive index
- Core is high refractive index

Working Principle:

- A laser or LED light send signals to the end of fiber.
- Light bounces ^{off} the wall again and again.
- Light doesnot escape the fiber.
- At the other end, a device reads

the light and turns them back into data.

Advantages over Copper wires.

- Uses light to send data fast.
- Faster than copper wires.
- Cannot lose signals over long distance.
- Not affected by electromagnetic interference.
- Lighter and thinner than copper.

Enables high speed data:

- Since it uses light, data can move at about the speed of light.
- They can carry a lot of data at once without slowing down.
- They are perfect for internet, TV, and other communications as they are much faster than other services.

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b. What are the ----- earthquakes?

Ans: Earthquakes happens when the earth's crust suddenly shakes because of movement under the ground.

Causes:

- i. Tectonic plates movement
- ii. Volcanic eruption or magma moving underground.
- iii. Human activities that is mining, building of large dams or explosions.

Effects:

- i. Buildings collapse.
- ii. Roads and bridges break
- iii. loss of lives
- iv. Fires, tsunamis, landslides.

Types of Seismic waves:

1. P-Waves : are fastest waves which travels through solids.

liquids and gases.

2. S-Waves = slower than P-waves, can only travel through solids.
3. Surface waves: travel along the earth surface, these are slowest but most damaging.

Measurement:

- i. Seismograph - records shaking of ground.
- ii. Richter Scale - Measure the strength of earthquakes.
- iii. Mercalli Scale - measures how much damage was done based on people's observation.

Earthquake - Resistant Construction:

- i. Strong buildings are designed to sway.
- ii. Use of flexible materials, deep foundations, and shock absorbers are installed in buildings.

Preparedness Measures:

- Emergency kits.
- Practice drills.
- Evacuation plans.
- Warning systems.

C. What is balance diet ----- diseases?

Ans: A balanced diet means eating the right kinds and amount of food from all foods so your body ^{gets} ~~goes~~ everything it needs to grow, stay strong and healthy.

It includes.

Carbohydrates.

Fats

Proteins

Vitamins etc.

Importance:

- i. Grow properly.
- ii. Stay strong and energetic
- iii. Fight off diseases.
- iv. Heal faster after injury.

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Macronutrients (needed in large amounts)

- Carbohydrates gives energies
- Proteins - build muscles and tissues
- Fats - stores energies.

Micronutrients (needed in small amounts)

- Vitamins - help body functions
- Minerals - Build strong bones,
carry oxygen.

Prevention from chronic diseases:

- Diabetes - controls sugar.
- Heart Disease - lowers unhealthy
fats and keeps BP normal.
- Obesity - keep weight in check
with proper portions.
- Anemia - Iron rich foods
prevents tiredness and
weakness.
- Weak bones - Calcium and
vitamin D keep
bones strong.

d. What are ----- communities?

Ans: Water pollution happens when harmful substances get into rivers, lakes, oceans, or ground water and make the water unsafe for drinking, swimming, fishing, or farming.

Sources:

- Industrial wastes.
- Sewage and wastewater.
- Agricultural runoff
- Plastic and garbage
- Oil spills.
- Household waste.

Impacts on Environment:

- Kills fish and aquatic life.
- Destroys ecosystems.
- Reduces oxygen levels.
- Harms plants and birds.

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Impacts on Human health:

- Causes diseases like
 - Cholera
 - Diarrhea
 - Skin infection
 - Liver and kidney problems
- Dirty drinking water
- Toxic chemicals can build up in body.

Prevention and Control:

- Do not throw trash into water bodies.
- Use less chemicals at homes and in farms.
- Fix leaky toilets and pipes.
- Build proper sewage systems.
- Plant trees and use green spaces.
- Educate others.
- Enforce strict laws.
- Regularly test water quality.
- Install water treatment plants.

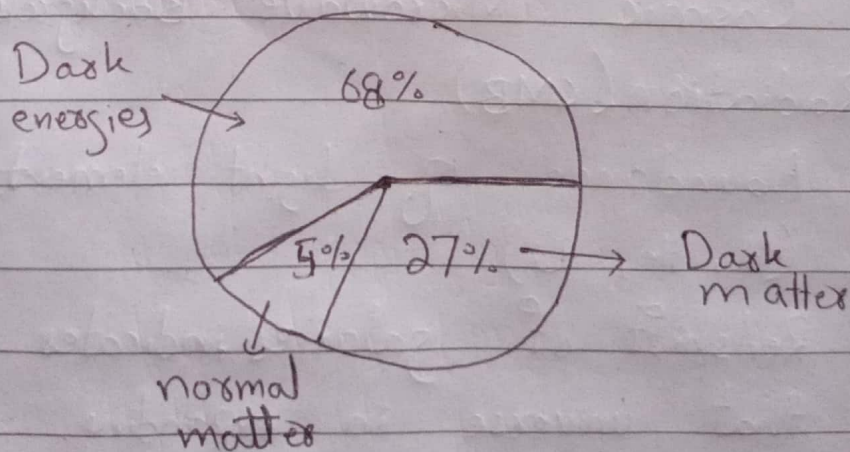
Q.No.2.

a. What is Big - - - - -

Answer: The Big Bang theory explains that the universe began as a singularity, an infinitely hot and dense point, around 13.8 billion years ago. This singularity expanded rapidly, and as it did, it cooled and formed subatomic particles, atoms, stars, galaxies, and the universe.

Role of Dark matter:

A type of matter that does not emit, absorb, or reflect light, making it invisible.



It plays a crucial role in the formation and evolution of galaxies by providing gravitational scaffolding for normal matter to clump around.

Role of Dark energies:

Dark energy is a mysterious component making up 68% of the universe's mass-energy content. It's thought to be responsible for the accelerating expansion of the universe.

Key evidence:

- Cosmic Microwave Background Radiation (CMB)
- Abundance of light elements (H, He, Li).
- Redshift of galaxies indicates that universe is expanding.