

Areej Farooq

Batch - 53

MOCK EXAMS

GSA

Part - II

SECTION - I

Q NO 2:

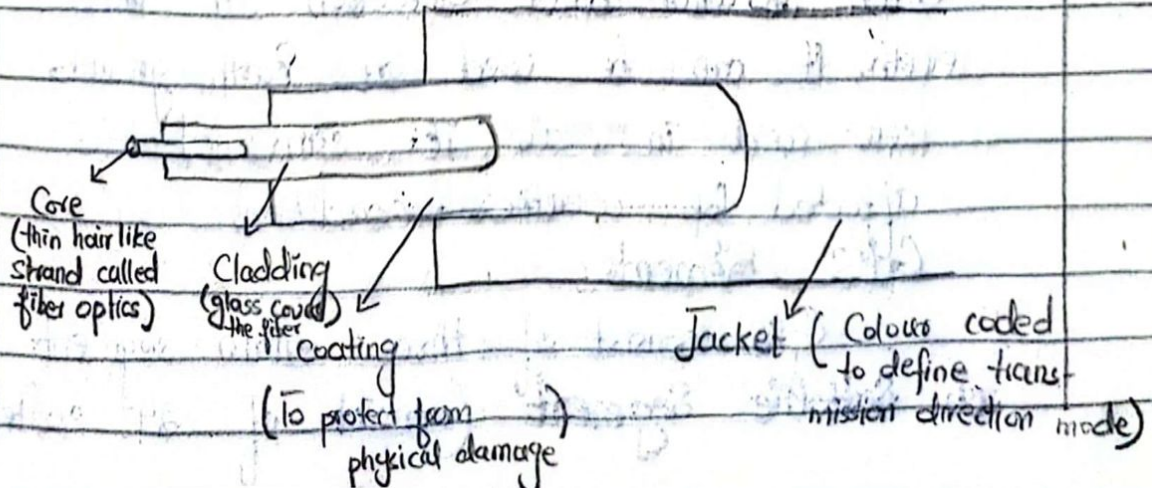
Qb " ~~Artificial~~ In Discuss working of optical fibers. What is GPS? How 2D and 3D locations are measured by satellites?

Optical fibers:

Optical fiber is a medium for transferring information from one point to another point. It is a thin thread like strand, that is used as medium for telecommunication. Example (gating) email, data sharing and many other.

Working of Fiber Optics:

Before understanding working of optical fibers there is need to understand its structure first.

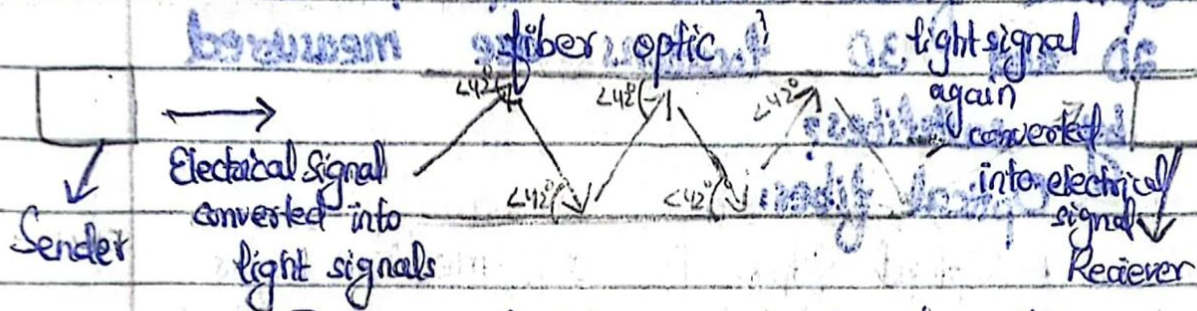


Now, as we are familiar with the fiber optics structure now understanding working of fiber optics.

Principle of Total Internal Reflection:

According to this - light travels internally and send data.

Critical angle: light $< 42^\circ$



Therefore, light signal travel within the fiber optic and passing through medium it reaches to its destination.

GPS:

GPS stands for Global Positioning System.

GPS is the navigation system. Navigation

is the process of finding direction and

reading the maps. It requires a satellite and receiver to determine the

exact location and direction on the

earth. It can be used on Earth ground,

seas and in air it can not be

affected by weather conditions.

GPS Elements:

GPS consist of three main segments.

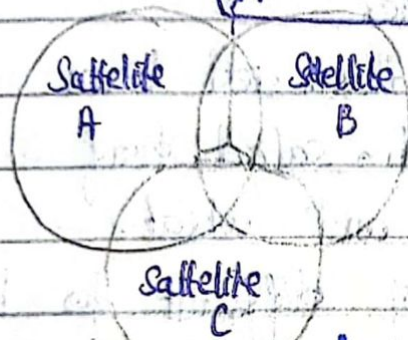
i) Satellite Segment (consist of 24 satellite)

orbiting around the earth with height of 12000 miles above earth surface).

(ii) User Segment: (consist of tools and devices that users keep or place in cars, ships and aeroplanes etc)

(iii) Control Segment: (Control segment consist of GPS stations that are monitoring the working and functioning of satellite properly).

One of these two point indicates a moving object's accurate position.



How 2D and 3D location are measured through satellite:

When 3 satellites signal are received it is called "2D fix"; we can get longitude, latitude and exact time but not height. With 4 satellite signals it makes called "3D fix", we can get longitude, latitude, time and height.

(c) What do you mean by a balanced diet? Deficiency of vitamin A, B and C can result into what type of imbalances in human body?

Balance diet:

Taking food that contains essential nutrient that are necessary for human body is called a balanced diet.

OR:

In take of food from the five basic groups (carbohydrates, fats, vitamins, minerals and fibre) provides essential nutrients to body for proper functioning. is called balanced diet.

Five Basic Groups:

Meat: Mince, Chicken, fish

Dairy: milk, curd, butter

Pulses and Beans: soya bean, red beans

Leafy vegetables: Spinach, salad leaf

Cereal: Bread, rice and wheat.

But it is very difficult for human to consume all these things on daily basis. So for that it is required to take any of these

- ① Carbohydrates, fats, protein
- ② Vitamins, minerals
- ③ Water, fibre

Therefore, for proper functioning of body it is necessary to take a balanced diet. Because unbalanced diet causes malnutrition.

Malnutrition causes diseases. Hence it is necessary to follow a balanced diet.

Deficiency of vitamins
human body,

Vitamins are essential compounds that are required in a minute quantity in the body for proper functions. Deficiency of vitamins lead to increase diseases. Excess of vitamins causes toxicity in body.

Vitamins Types:

i) Fat Soluble Vitamins: Vitamin A, D, E, and K are fat soluble vitamin.

ii) Water Soluble Vitamins:

B complex and vitamin C are water soluble.

Deficiency of Vitamin

Vitamin A

Deficiency of A causes night Blindness.

Vitamin B

Anemia

Vitamin C

Deficiency of vitamin C causes Scurvy diseases.

(b) CPU is brain of Computer, how it resembles with human brain in working?

CPU stands for Central Processing Unit. CPU is the brain of computer it resembles with human brain in working. Because brain plays important and central role for perform task. Information/ Instruction is given in the form of input and it performs tasks as an output. Similarly, CPU

takes input as set of instructions/
command and perform operations and
perform task to produce output.

CPU is called as brain of
Computer systems because the entire
working in computer system is
performed in CPU. All the operations
and tasks are performed by
CPU.

Just like human brain as human
brain have capability to store
information (e.g. memorising an event etc)
that is considered as data according
to computer system. CPU stores
data in Hard disk, floppy disk
and drives etc.

E.g. we want to calculate
like want to add two number
Set of instructions are given to
computer and to perform (d)
operations and result will be

$$1 + 1 = 2$$

$$1 \times 2 = 2$$

Computer understands binary language
(0, 1). Every instruction that is
given to computer is first
converted into binary language.
Calculation also performed in
binary language by CPU, then

converted into human language and displayed on the screen as our desired output. Therefore, this is the reason why CPU is called as brain of computer system and it resembles with human brain.

(c) "Artificial Intelligence is the new electricity."

Justify with your opinion.

"Artificial Intelligence is the new electricity" as the world evolve the electricity became one of the most basic necessity of life. It is all because of technological advancement. Technology has changed the life styles of people. E.g. Bulb, house appliances, washing machine, oven, microwave, electric stove, vehicle, phones, offices, industries almost in every aspect of life we see technological equipment that are used to perform our day to day tasks. It has increased the need of electricity and demand of electricity.

In addition, technological advancement innovation has introduced artificial intelligence and the world is now moving towards Artificial Intelligence based systems. AI is the modern form of Information Technology. To think, learn and perform tasks.

Almost in every aspect of life AI is included ^{to} perform day to day work and tasks. Example gratia

- AI based Robots in car making companies
- AI based Robots in Industries
- AI based Robots: even in hospitals, restaurants for working ~~in~~ ^{as} waiters.
- AI based machines e.g home appliances cooker, electronic stove, fridges, oven and many more.
- AI in social media apps Meta AI in whatsapp, Snapchat AI, Meta AI in Instagram and Chat GPT etc.

Humans are becoming overly dependent on AI. Almost in every aspect of AI is introduced ^{same} as electricity is the ^{one} necessity of human now AI is also becoming need of human. Therefore, ^{in my opinion} in this context it is said that "Artificial Intelligence is the new electricity".

Q No 5

(a) Pakistan is the fifth most populous country of world. What are the causes of population explosion in Pak? What are the control measures?

Pakistan is the fifth most populated country of world. There are many causes of population explosion in Pakistan. Lack of education, excessive birth rates, no family planning, religious reasons and no active steps by the governments to control. These imigrate measures are family planning programs, educating especially womens, reform or change religious perspective of Ulema and government should take active and strong steps for the control of population.

Causes of Population in Pakistan:

There are many reasons that causes population explosion in Pakistan, as follows

- ① Excessive Birth rates
- ② Lack of Education
- ③ No family planning concept
- ④ Religious perspective of Ulema: (for growing muslim iemma in world) ^{as}
- ⑤ Government no active steps to control it

Impacts of Overpopulation in Pakistan:

Many severe impact would have to face Pakistan if it remains the same, as follows

- ① Shortage of food
- ② Shortage of Water
- ③ Shortage / Unavailability of basic necessities of life to people.
- ④ Bad and poor economic condition

⑤ It is unable to meet demand and supply

Immediate measure for Pakistan population control:

Pakistan needs to take immediate and strong action/measure to control expanding population through following;

- Family planning programs must/should be introduced.

- Spreading education/awareness through any medium related to population control.

- Ulkema perspective should be changed/reform.

- Use of Contracept or birth control pills should be introduced.

- Government can play good/vital role in population control by taking steps.

In a nutshell, any country will stay who have ability to meet demand and supply chain if it cannot be fulfilled then it would be alarming situation not only for the present generation but also for the upcoming and future generation. Therefore, Pakistani people needs to understand this thing and try to contribute for controlling population explosion in Pakistan.

(c) How earth quake occurs? How many people which jolted Turkiye?

How earth Quake Occurs?

Earth quake is shaking of earth crusts and that shaking of earth crusts happens due to the seismic activity. Seismic means earth's crust it is also called as plate tectonic. Therefore, the movement of plate tectonic causes earth quake to occur.

Plate Tectonic: Earth is divided into different plate tectonic e.g

- Oceanpacific Belt
- Pakistan, India - China, Iran, Turkiye, Afg and Indonesia belt
- Mediterranean Sea belt.

Plate tectonic movement is divided into

3 types

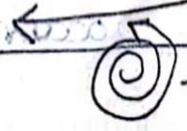
- (i) Convergent
 - (ii) Divergent
 - (iii) Transform boundaries
- (i) Convergent Plate tectonic: movement:

In convergent plate tectonic, the earth crust plates move towards each other due to their movement earth quake happens / occurs.

Convergent Plate tectonic

Plate A

Plate B



→ conventional current

- (i) Continental - Continental Convergent
- (ii) Oceanic - continental Convergent
- (iii) Oceanic - Oceanic Convergent.

(iv) Divergent plate Tectonic movement:

When plates of earth crust are moving away from each other it is called as divergent plate tectonic.

Divergent tectonic Plate



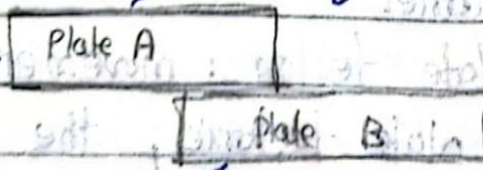
(i) Continental and Divergent

(ii) Oceanic Divergent

(iii) Transformed Boundaries:

When two plates are moving on each other / rubbed ^{with each other} due to movement is called as Transform boundaries.

Left lateral strike slip fault.



Right lateral strike slip

Therefore, this is how the fault-earth quake occurs due to the seismic activity.

In Turkiye severe earth quake occurred which took many

Innocent people's lives. Almost, 55000 people died in 2023, Türkiye earth quake. On the richter scale its intensity was 7.8, which jolted Türkiye.

(d) Define the following terms:

(i) Hypocenter

(ii) Epicenter

(iii) Eye wall of Hurricane

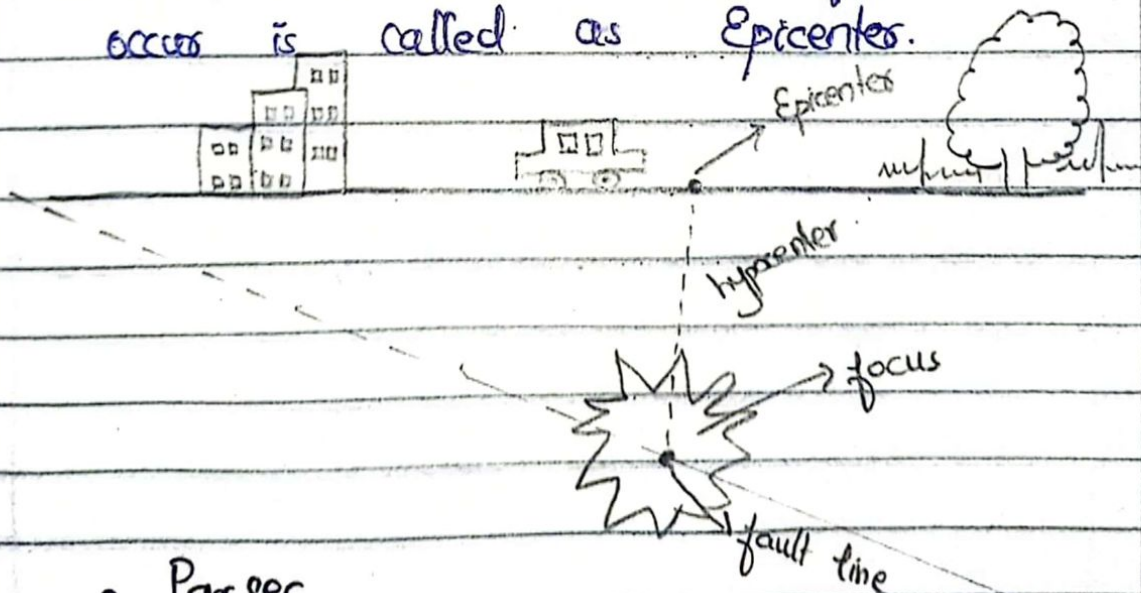
(iv) Parsec

• Hypocenter

The surrounded area near the focus is called hypocenter.

• Epicenter

Epicenter is the point above the earth crust where earth quake occurs is called as Epicenter.



• Parsec

It is the unit that is used in astronomy. It is used to measure the distance of galaxies and stars.