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Section-II.

Q. No. 6 (c)

Diameter of circle = 6cm. -D

Radius of circle = $\frac{D}{2}$ = R.

$R = \frac{[6cm]}{2} = 3cm.$

We have to find:

i) circumference of circle

Circumference of circle = $2\pi r$.

r = Radius of circle $\pi = 3.14$.

circumference of circle = $2 \times (3.14)(3)$.

Circumference of circle = 9.42cm.

ii) ~~Radius~~ Area of circle

~~Rad~~ Area of circle = πr^2

where, r = radius of circle = 3cm and

$\pi = 3.14$.

Area of circle = $(3.14)(3)^2 = (3.14) \times 9$.

Area of circle = $28.26cm^2$

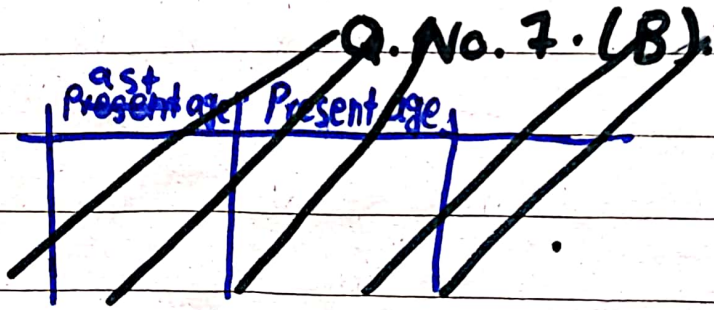
Q. No. 6 (d)

i) 13, 24, 46, 90, 178, ——

In this number series, every number is obtained by multiplying the difference between previous numbers with "2" and addition of that result to obtain next number.

Difference between 13 and 24 is of "11". Difference between 24 and 46 is of "22" which is obtained by multiplying 11 with 2. On a similar pattern, difference between 46 and 90 is of "44" obtained by multiplying "2" with "22". Difference between 90 and 178 is "88" obtained by multiplying "44" with "2" In a similar way, we will multiply "88" with "2" which is equal to "176". By adding "176" in "178", the next number will be "354."

Q. No. 7. (B).



Q. No. 8 (B).

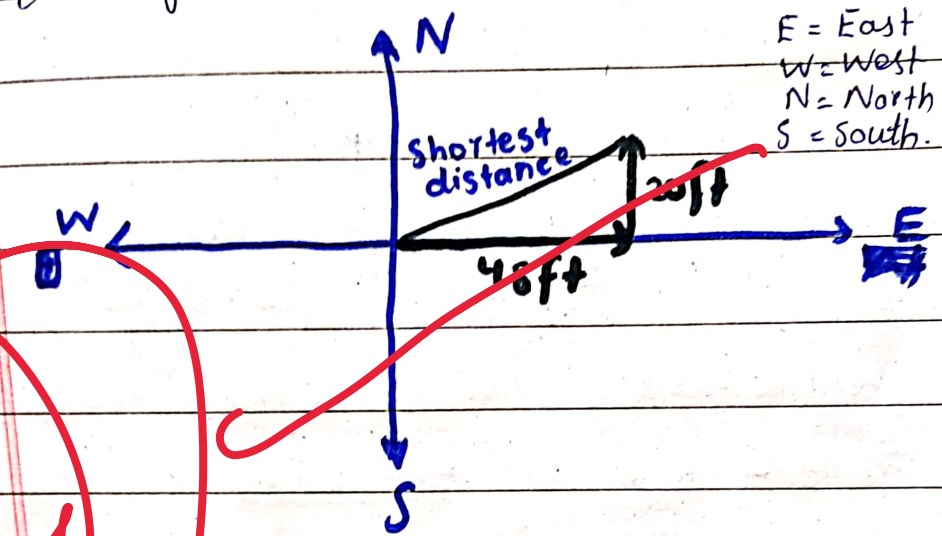
veena journey towards east = 48ft.

veena journey towards North = 20ft.

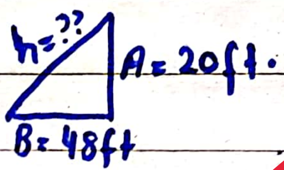
Distance covered from point of start

to end point = ??

Drawing ~~coo~~ directions.



E = East
W = West
N = North
S = South.



h = hypotenous
B = Base
A = Altitude.

Applying Pythagoras theoram

$(Hypotenous)^2 = (Base)^2 + (Altitude)^2$

$(\text{~~Hypoteo~~} \ h^2 = (48)^2 + (20)^2$

$h^2 = 2304 + 400.$

$h^2 = 2704.$

Taking "$\sqrt{\ }$" on both sides.

$\sqrt{h^2} = \sqrt{2704}$

$h = 52 \text{ ft}$

Thus, if verona had run from starting to the end point directly, he would have covered 52ft.

تاریخ: / /

M T W T F S

Q. 8. (c)

Given: Average marks of 40 students = 52.15.

we know that:

$$\text{Average} = \frac{\text{Sum of observations}}{\text{Number of observations}}$$

Average = 52.15. Number of observations = 40.

$$52.15 = \frac{\text{Sum of observations}}{40}$$

$52.15 \times 40 =$ Sum of observations

$2086 =$ sum of observations in first condition.

According to 2nd condition. one of observation was interpreted as 49 instead as 85 ⇒

Difference between 49 and 85 = 85 − 49 = 36.

If we add "36" in number of observations, it will augment the difference.

$2086.00 + 36 =$ new sum of observations

$2122 =$ new sum of observations

To find, new average.

$$\text{New Average} = \frac{2122}{40}$$

New Average of class = 53.05

تاریخ: ___/___/___ M T W T F S

Q. 8 (d).

Given:

People like vegetable pizza = 37.

People like chicken pizza = 25.

People liking neither = 3.

Total number of people = 37+25+3

= 65.

Probability (CE) = ~~Number~~ likely chance of event / Possible outcomes.

~~Probability~~ **To Find**

Probability (of liking chicken pizza)

$= \frac{25 = \text{People liking chicken pizza}}{65 = \text{Possible outcomes.}}$

$= \frac{5}{13}$

Thus, Probability of person liking chicken pizza is $\boxed{\frac{5}{13}}$

Q. No. 2(a).

Defination of lipids:

Lipids are biomolecules made up of fatty acids and triglycerides alongwith their derivatives.

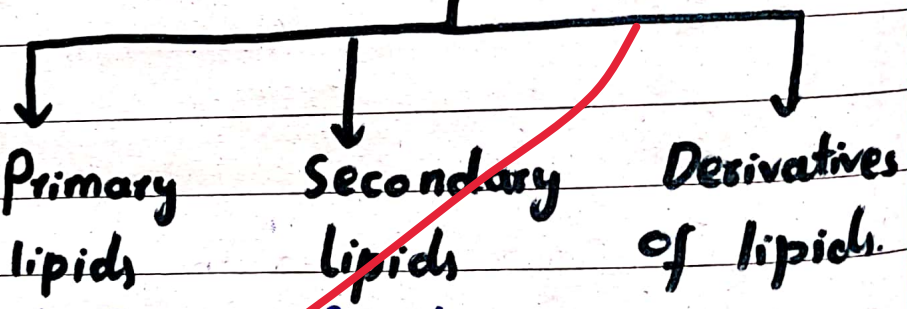
Explanation about lipids.

- Fatty acids are organic compounds

containing a glycer·carbonyl group.

- Triglycerides are made up of three glyceral molecules. These triglycerides molecules forms a bond with fatty acid group to form a unit of lipids.
- When carbon and hydrogen alongwith other molecules are attached to these unit, a versatile range of lipids including ghee and oil are produced.

Types of lipids.



i) Primary lipids:

These are the types of lipids in which carbon and hydrogen are only attached, in a chain, to the backbone of fatty acid and glyceral.

Examples: It include ghee (animal fat) and oil (Plant fat).

ii) Secondary lipids:

These are the types of lipids

which contains different chains of carbon and hydrogen, of varying length attached with backbone of fatty acid and glycerol.

Examples: fatty glyceral, diglycerrides etc.

iii) Derivatives of lipids:

These are the lipids which are attached with other biomolecules.

Examples:

Phospholipids, lipoproteins etc.

Functions of lipids:

There are different functions of lipids.

i) lipids provide insulation:

Lipids provide insulation to the body against temperature variations.

ii) lipids are important for nervous function:

Lipids form myelin sheath of neurons. In addition, they form a large part of brain. Therefore, they are vital for nervous functioning.

iii) lipids are good source of energy:

lipids contain 9x more energy as compared to carbohydrates. However, first they are converted to carbohydrates to provide energy

iv) Lipids are essential for functioning of cell membrane:

In cell member, 50% of composition is constituted by lipids. Thus, they have integral role in functioning of cell membrane.

Q.No.2

(b).

Energy conservation has turned out to be an essential need, citing dwindling resources in rapidly increasing population. In order to conserve energy and ensure its sustainable use, following measures can prove to be effective:

i) Turning off lights whenever leaving the room:

Electricity is consuming a huge amount of energy. Therefore, it is

essential to turn off domestic appliances (lights, fridges etc.) whenever they are not in use.

ii) Switch to renewable energy sources:

Non-renewable energy sources are dwindling day by day. Therefore, there is an urgent need to switch from non-renewable sources of energy to renewable like solar, wind etc. It will help to conserve energy coming from non-renewable sources.

iii) Digitalisation of ~~energy usage~~ electric machinery:

Integration of technology with electric appliances can help to conserve energy. For example, IESCO, in 2024, implemented automatic metering system which shuts down the electricity, when exceeds in capacity.

تاریخ: / /

M T W T F S

Q. No. 2 (c).

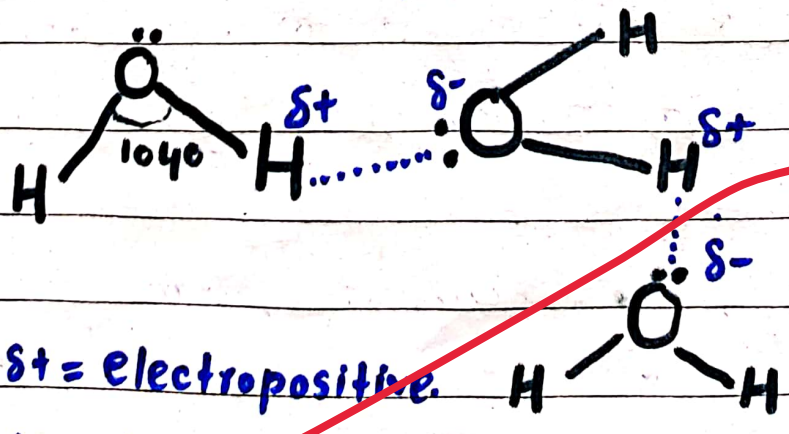
Defination of hydrogen banding:

A bond which is formed between hydrogen of one molecule and most electronegative element of other molecule is called hydrogen bond.

Reason of electronegativity:

In a molecule, when an atom contains a lone pair, it attracts the hydrogen atom in the other molecule, adjacent to that lone pair. It makes the first atom slightly negatively charged and ~~ox~~ hydrogen a slightly positively charge. Thus, the lone pair containing atom is referred as electronegative (δ-).

Structures of Hydrogen atom:



δ+ = electropositive.

: = lone pair of electrons.

تاریخ: ___/___/___

M T W T F S

Hydrogen Here, example of water molecule is taken to explain hydrogen bonding. Oxygen forms two bonds with hydrogen molecule to complete its octate. After bond formation, one pair of electron is not involved in bonding called ~~hyd~~ lone pair. This lone pair attracts the hydrogen of other water molecule, making that hydrogen electropositive and inducing electronegativity on oxygen. This attraction between molecules of water is called hydrogen bonding.

Q. No. 2 (d).

Defination of Nervous system:

An organ system in the body which is involved in reception, transmission of messages between different parts of body, thereby forming a coordination among body parts is called Nervous System.

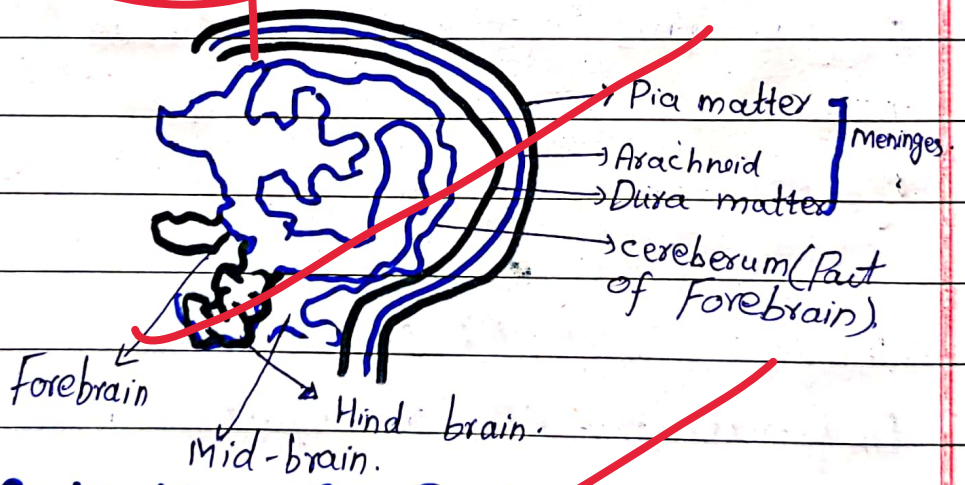
Nervous system ~~consists~~ does so with the help of neuron cells, extending within the body.

central Nervous System.

Brain **spinal cord.**

Nervous system consists of central Nervous system consisting of brain and spinal cord, while peripheral system of nerves.

Brain:



Protection of Brain:

Brain is encased in three coverings of cranium called meninges.

Parts of Brain:

our brain consists of Forebrain, Mid brain and Hind brain.

i) Forebrain:

- It further consists of limbic system and cerebrum.
- It is involved in learning, ~~re~~processing of sensory information, memory maintainance, controlling menustral cycle etc.

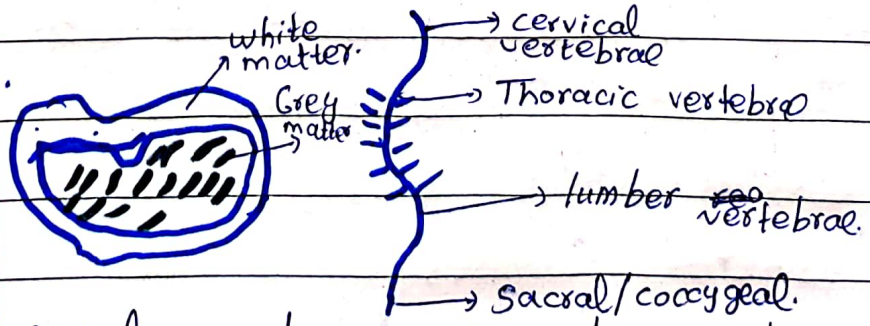
ii) Mid brain:

It is involved in storing sensory information between forebrain and hindbrain communication. Therefore it is called relay centre of brain.

iii) Hind brain:

- Hind brain consists of cerebellum and pons.
- It is involved in maintaining body balance and coordination.

b) Spinal cord:



Spinal cord is present inside the vertebral column.

- It is a butterfly shaped organ consisting of grey matter, surrounded by white matter.
- Spinal cord recieves information from body through sensory nerves, sends to brain via central nerves and sends from brain to body via motor nerves.
- It is involved in emergency responses to body, without consulting brain called reflex action.

Q.4.

(a).

origin of word "hepatitis"

"Hepa" refers to the liver and "itis" means inflammation.

Defination of hepatitis:

It is a disease associated with inflammation of liver due to infectious agents mainly including hepatitis viruses.

causes of hepatitis:

Causes of hepatitis are

varying from Hepatitis A virus (HAV), Hepatitis B virus (HBV) and Hepatitis C virus (HCV).

a) HAV: This virus is known to be found in faeces. It is transmitted because of unhygienic water and sanitation.

b) HBV: This virus is transmitted through infectious razors, towels, blades etc. It is more acute than Hepatitis A virus.

c) HCV: This virus is also transmitted due to unhygienic conditions. It is also transmitted by infectious serum, semen and other body fluids.

Symptoms of hepatitis.

a) Jaundice is the visible symptom of hepatitis. Eyes turn yellow, due to bilirubin.

b) Weakness and lethargy due to high concentration of bile in blood.

c) vomiting.

d) diarrhea.

e) water in soft tissues due to inability

liver to form albumin

Prevention from hepatitis.

a) Vaccination available for HAV and HCV which can prevent hepatitis.

b) Avoid using already used razors, towels etc.

c) Deal with blood of patients by using gloves.

d) Maintain hygienic conditions.

Q.4.(b).

There are a number of food preservation methods available including old and new methods.

Old methods of food Preservation:

Fermentation | salting. | Dehydration.

i) Fermentation:

Fermentation is a method in which bacteria and other microorganisms act on a food and produce ethanol and lactic acid, thereby increasing shelf-life of the food. This

method is used to preserve milk in form of yogurt and wine/Beer.

ii) Salting:

In this method, food is immersed in a salty covering. These salts disrupt the bacterial enzymes and kill them, thus increasing shelf-life of food. For example, fruits and vegetables can be preserved by this method.

iii) Dehydration:

In dehydration, water is expelled out of the food. Thus, bacterial cannot find ideal environment for replication, thus preventing food from deterioration. In ancient days, meet was preserved through this method.

NEW Methods of Food Preservation

canning Pasteurization Irradiation Freezing

i) canning:

In this methods product is stored in a tin can after heating. It prevents microorganisms entry in food.

for example, milk and meats canning.

ii) Pasteurization:

In this method ~~the~~ milk ~~o~~ is heated at 72°c to kill all microbes present in it. It was invented by Louis pasteur.

iii) Irradiation:

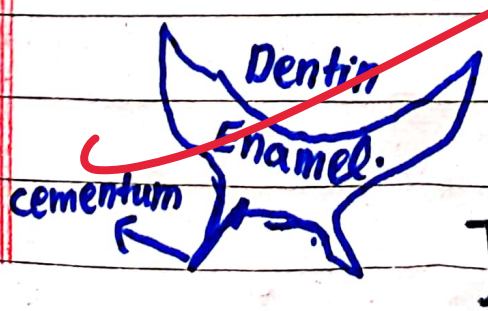
In this method, food is exposed to UV-rays and x-rays, which kills all the microbes present there. It is used to preserve fruits and meat.

iv) Freezing:

- In this method, food is stored below 0°c, which freezes cytoplasm of microbes and thus kill them.
- It is used to increase shelf-life of fruits and vegetables.

Q. 4.

(d)



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Human teeth mainly consists of crown and root.

Crown: It is the visible upper part of the teeth. It further consists of Enamel and dentin.

a) Enamel: It is the portion of teeth that recieves blood and nervous supply from ~~be~~ root.

b) Dentin:

It is the hardest part of teeth. It is 0.6cm thick part. It is used to chew the food.

Root:

It is the part of teeth which recieves blood supply and nerve supply beneath the crown. It consists of cementum.

a) Cementum: It is the portion of teeth in which is anchored the root.

Include diagrams and flowcharts for competitive edge.
Discuss practical applications of scientific concepts.
Show all steps and working for calculations.
Use diagrams and graphs