

Good for theory

Keep length equal for all answers

Enough length

Enough headings

Fine diagrams

Work on math portion

General Science

Day: _____

and Ability

Question no 2(a)

Introduction :-

Climate change is a grave environmental threat the world is facing today. It is one of the great macro problems that unite the world together and huddle a solution for it which has been immensely facilitated through globalization. The case of climate change had been a bone of contention between global North and Global South and this controversy was laid to rest during COP21 or Paris Agreement which eventually paved the way for COP28. COP28 resulted in few renowned achievement in a way to fight against climate crisis.

COP28 : The Anticipated COP :-

The COP28 which started on 28 November 2024 was one of the most anticipated cops firstly for being held in UAE - one of the world's largest oil producer country and secondly for great expectations being hung upon the COP to pave a way for a resilient preparedness to combat climate crises.

Key Features of COP 28 held in Dubai :-

Key features of COP28 included the landmark kickstart of COP28 in Dubai, UAE as on the very first day there was a development of Loss and Damage Fund which was a key agenda set for COP28. Loss and Damage Fund was one of chief demands of developing countries like Pakistan who suffered a lot by carbon emission despite only contributing negligible share of carbon emission. The goal set for Loss and Damage fund was \$100bn which actually stood at \$771m with UAE being the most contributor followed by other countries.

Moreover, COP28 was the first COP28 who openly shove for 'phasing out of fossil fuels' which was one of its chief features. Despite the fact that COP was unsuccessful to agree on complete phasing out of fossil fuels, but all countries eventually agreed on the necessity to transition away from fossil fuels including Saudi Arabia.

Additionally, COP 28 took other financial measures to keep the global temperature upto 1.5°C .

Conclusion :-

COP 28 has been deemed as a successful COP for phasing out of fossil fuels initiatives to a joint agreement towards the transition away from fossil fuels. It made the development of Loss and Damage funds and was a grand COP with more than 30,000 persons who attended COP making it a successful COP for realizing its aims.

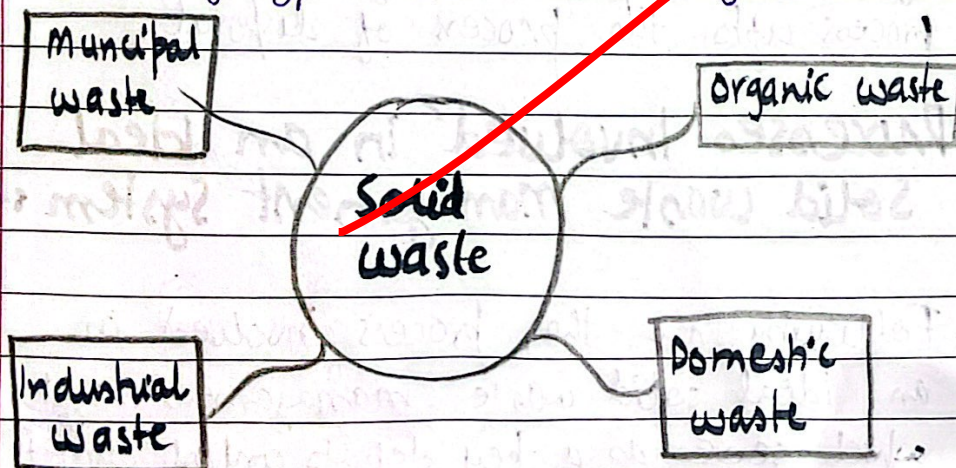
Question 2 (b)

Solid waste :-

Solid waste refers to the combination of solid and semi-solid waste which contaminate the air, water bodies and land eventually triggering climate crisis in the world.

Classification of Solid waste:

Solid waste can be classified into following types on the basis of its sources



Date: _____

Day: _____

1. **Organic waste** : Organic waste is the waste that can be organically decomposed. e.g plant waste, animal waste etc.

2. **Domestic waste** : Domestic waste is the waste that comes from domestic chore or use.

3. **Municipal waste** : Municipal waste is quite similar to domestic waste. Its waste also come from municipal and domestic sources.

4. **Industrial waste** : Industrial waste is the waste that comes from industries e.g textile industry, pharmaceutical industry etc.

Definition of Solid waste Management :-

Solid waste Management is the supervised handling of the waste from the process of collection point through the recovery process upto the process of disposal.

Processes Involved in an Ideal Solid waste Management System :-

Following are the process involved in an ideal solid waste management system which serves as a key step to control climate

crisis.

Processes / Methods of Solid waste management

- (1) ~~Collection Process~~
- (2) ~~Recovery Process~~
- (3) Disposal Process

(1) **Collection Process**: Collection phase of solid management is the backbone of the entire system and is considered as most expensive step. It refers to the collection of waste from the sites. It is done either through government measures or through hiring of private stakeholders. It requires following two factors:-

- (a) Trained staff / crew
- (b) Large or small scale vehicles

(2) **Recovery Process** :- Recovery process is the second stage of recovering the solid waste. It refers to the temporary stay of solid waste in transfer stations which are built in the center of the cities. Waste stays there for few hours and recycling of waste takes place here in which waste that can be recycled is taken aside and rest is sent for disposal.

(3) **Disposal Process :-** Disposal process is the last stage of solid waste management. It comprises of following four methods.

(a) Open Dumping :- Open dumping of the waste. However, it was strongly discouraged in Rio Declaration 1992.

(b) Decomposition :- It refers to the biological decomposition of the waste.

(c) Incineration :- It refers to the controlled decomposition of industrial waste in incinerators. e.g. medical waste.

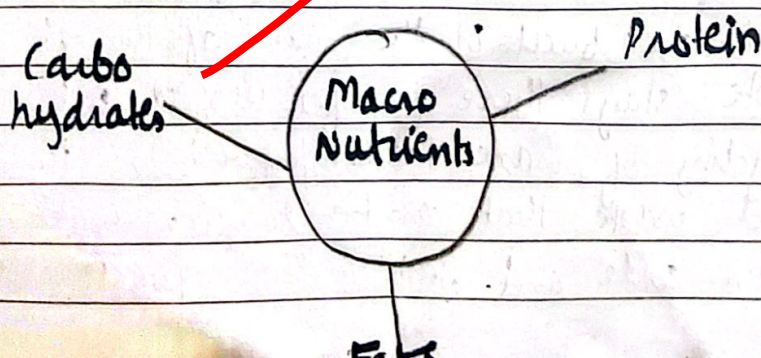
(d) Land Filling :- It is also discouraged as it can lead to other environmental problems.

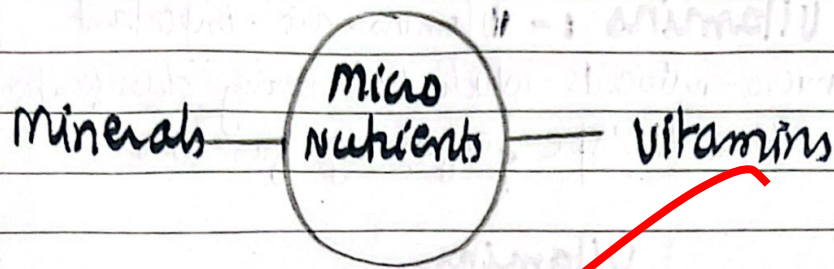
Question 2 (c)

Balanced Diet :-

Balanced diet refers to the healthy and quality in take of food but in rightful manner and taken upto the optimum level.

Balanced diet composed of two major kinds of nutrients: Macro nutrients and micro-nutrients.





(1) **Carbohydrates** :- Carbohydrates is an important macronutrient for the survival of human life.

Source : Egg, milk, fruits, pulses, vegetable, etc

Function : Efficient for the functioning of organelle

Excessive : Excessive intake causes obesity and other health crises

(2) **Protein** :- Protein is another macronutrient important for healthy diet.

Sources : Egg, milk, chicken, pulses

Function : Keeps bones, teeth and organ strong and important for organic function.

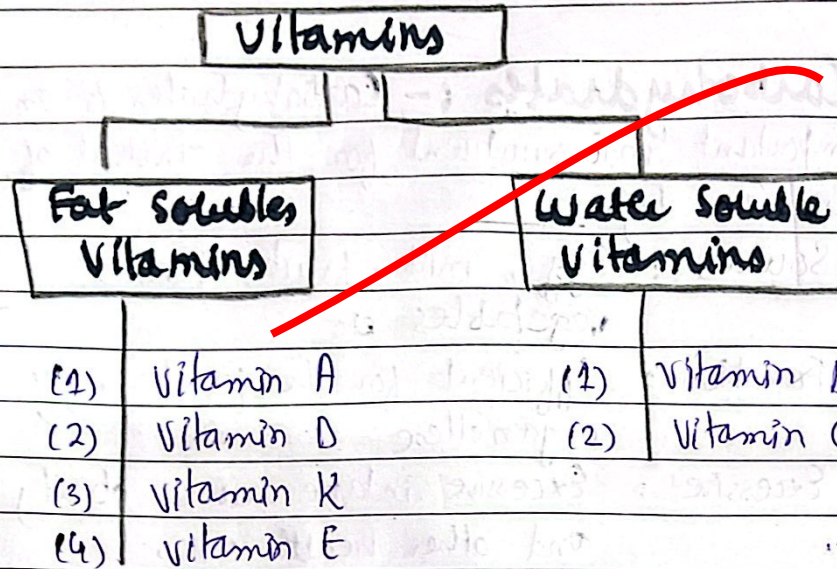
(3) **Fats** :- Fats is essential for many bodily functions.

Sources : Milk, mutton, meat, butter, oil etc.

Function : Important for the function of heat transport of food supply etc

However, its excess can increase cholesterol level, cardiac disorders and obesity

- (4) **Vitamins** :- Vitamins are important micro-nutrients which has many classification with each type performing functions.



- (5) **Minerals** :- Minerals along with water perform many metabolic activities and are important part of a balanced diet. To name a few, minerals include Magnesium, Potassium, Sodium, Iron, calcium etc.

Conditions for Balanced Diet :-

- (1) Conditions for balanced diet vary from person to person with no permanent intake measurement.
- (2) It also vary with the change of gender. women eat less in comparison with men.
- (3) It is important to take food in intervals and do not eat excess to cause health problems
- (4) 1000 calories are standardized to take in a day.

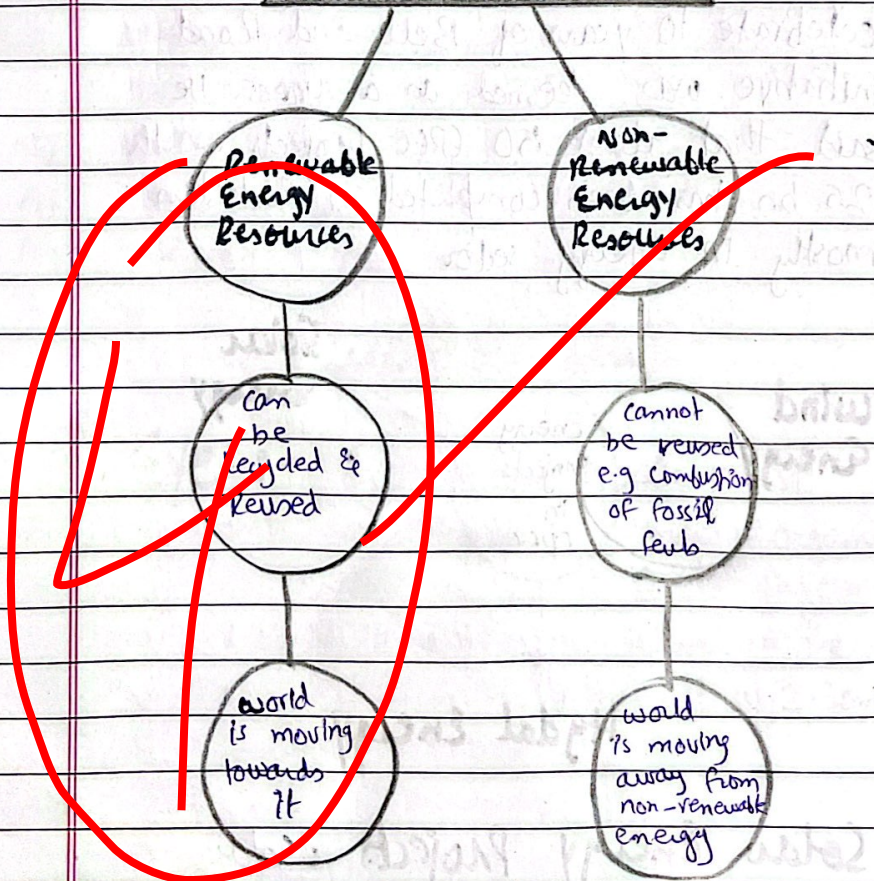
Question no. 2(d)

Energy Resources :-

Energy crisis is deemed as one of the most important crisis the world is dealing with today!

According to 5th assessment report of IPCC (Intergovernmental Panel on Climate change), only energy sector contributes to 35% of the combustion of fossil fuels. Energy resources are of two types:

Types of Energy Resources

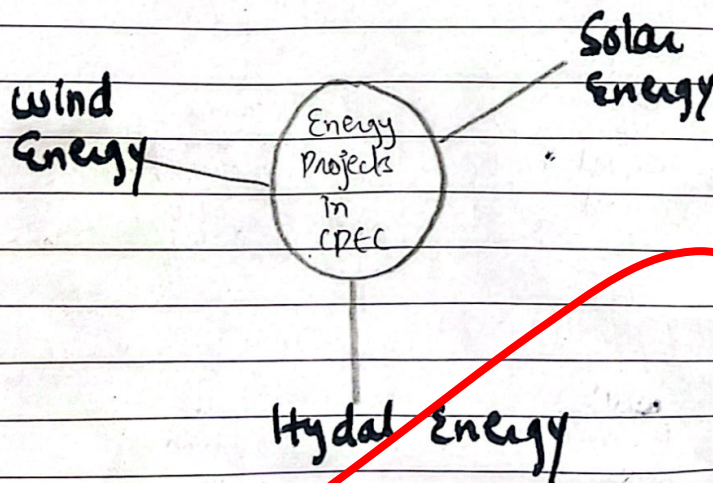


Renewable Energy Resources

Under CPEC :-

China - Pakistani Economic Corridor is the largest foreign investment in the history of Pakistan estimated around \$ 46 bn which was then extended to \$ 62 bn in 2017. Most of its projects are installed in energy sector.

PM Anwar-ul-Haq Kakar visit to Beijing in China in Oct 2023 to celebrate 10 years of Belt and Road initiative was deemed as a success. He said that about 50 CPEC projects worth \$25 bn has been completed in Pakistan mostly in energy sector.



(1) **Solar Energy Projects** : solar energy refers to the conversion of solar energy into electrical energy. The CPEC solar energy projects are

(1) 1000 MW Quaid-e-Azam Solar Park
Bahawalpur

(2) 600 MW in Gwadar

(1) **Wind Projects** :- Wind energy refers to the conversion of mechanical energy into electrical energy. The wind projects under CPEC are:

(1) 99 MW coastal belt of Thampur, Sindh

(2) Bordering area of Balochistan, with Iran and Afghanistan completed by 2027

(3) **Hydel Projects** :- Hydel projects refers to the production of energy through the flow of the water.

(1) Sukki Kinard project → 870 MW

(2) Kohala project → 1124 MW

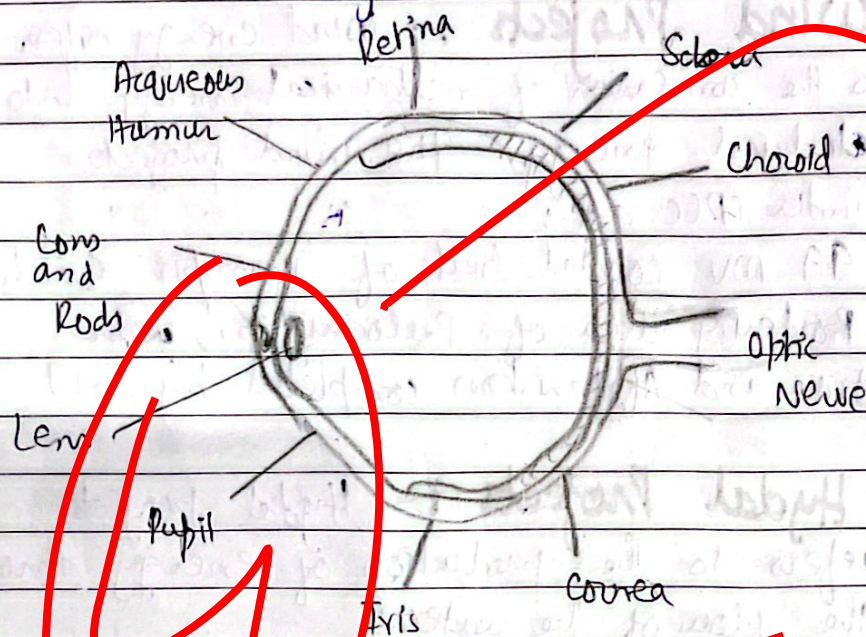
(3) Kavot project → 720 MW

Question 3(a)

Eye :- Eye is one of the most important and sensitive sensory organs of the human body. It sends information to the brain through optic nerve in the form of visuals and images. It is 2-3cm in diameter.

Different Parts of the Eye :-

Following are the different parts of the human eye :-



- (1) Sclera :- Sclera is the outermost layer that surrounds the backside of the eye. Sclera provides protection to the eye.
- (2) Choroid :- Choroid is the reddish part of the eye as it contains capillaries in it. It provides nourishment to the eye.
- (3) Cornea :- Cornea is the white part of the eye. Light first comes in contact with cornea.
- (4) Iris :- Iris is the pigmented part of the eye that controls the movement of the pupil.

(5) Pupil :- Pupil is the small hole part through which light enters the eyes.

(6) Lens :- Lens does the reception of the light and focuses the light on retina.

(7) Retina :- Retina is the most sensitive and protective layer of the eye. Retina contain Rods and cones which are photo receptors that convert light waves into an image. This 'visual or image' is carried to the brain through 'Optic nerve'.

(8) Aqueous humor & vitreous humor :- They are the fluid region of the eye and provides mechanical support and nourishment to the eye.

Short Sightedness :-

The scientific name of short sightedness is Myopia. Short sightedness occurs due to the steep of retina and light falls before the retina. It can be corrected through Concave Lens.

Far Sightedness :-

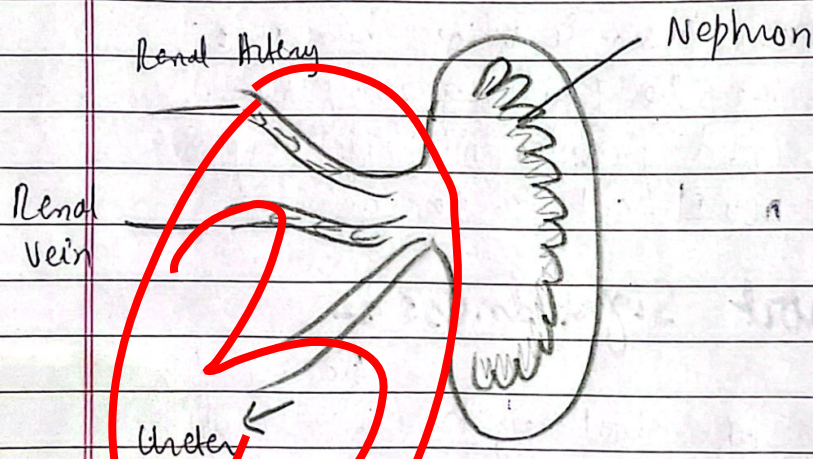
The scientific name of Far sightedness is Hyperopia. It occurs due to the enlarged size of retina and light falls behind the

Nephron. It can be corrected through convex lens.

Question 3 (b)

Kidney :-

Kidney is the chief and the major organ of human's excretory system. Human body possesses two kidney one on each side of the body. Nephron is the functional unit of kidney with a body containing 2 million nephrons with one nephron each.



Function of Kidney :-

Kidney contains millions of nephrons and filtration of the blood takes place in nephron.

Blood enters into the nephron through Afferent arteriole that further divides

to form a tuft of capillaries called glomerulus. It is the glomerulus where the filtration of blood takes place.

Glomerulus is supported by glomerulus capsule.

The filtered and cleaned blood goes out of glomerulus through efferent arteriole into Peritubular Capillaries which collides with DCT, PCT and loop of Henle.

In DCT, PCT and loop of Henle, the filtration of blood takes its final stage as here absorption of minerals and other nutrients take place. The cleaned blood is carried away from kidney by Renal vein and the filtrate called as urine enters into urinary bladder.

Question 3 (c)

Black Holes :-

The word Black hole is of very recent origin and it was coined by an American scientist in 1969 by John Wheeler.

Stephen Hawking in his book 'A Brief History of Time' that John Mitchell was the one who speculated about the presence of black holes in space that can be a star with massive gravitational force and density that even light cannot

escape it. Even though humans cannot see them, but they can feel its gravitational force. Such objects were later called as black bodies.

Formation of Black Body ^{Holes} :-

Another name of black body is 'collapse star' which refers to the collapse of the star. Thus, it can be deduced that black holes are formed when the massive star die.

The formation of black hole could be understood through the analogy of a balloon. A star possesses hydrogen gas. A star is formed when a large amount of gas starts to collapse in on itself due to its gravitational attraction. However, eventually, star runs out of its hydrogen and other fuels, and the fuel it starts with, the sooner it runs out. Star explode and die leaving behind a very dense object, a black hole.

Question 3(d)

Isotopes :-

Atoms of the same element having the same atomic number but different mass number are called isotopes.

Isotopes of Hydrogen :-

There are three isotopes of Hydrogen

- (a) Protium
- (b) Deuterium
- (c) Tritium

(a) Protium :-

Protium is an isotope of hydrogen having 1 proton with no neutron.

(b) Deuterium :-

Deuterium is an isotope of hydrogen having 1 proton and 1 neutron.

(c) Tritium :-

Tritium is the last isotope of hydrogen having 1 proton and 2 neutrons.

Question no 7(b)

Men	hour	day
195	10	20
x	13	15

$$\frac{x}{195} = \frac{10}{13} \times \frac{20}{15}$$

$$\frac{x}{195} = \frac{10}{39}$$

$$39x = 10 \times 195$$

$$39x = 1950$$

$$x = \frac{1950}{39}$$

$$x = 50$$

50 men are required to finish the job in 15 days if they work 13 hours a day.

Question no 7(c)

$$U = \{a, b, c, \dots, z\}$$

$$A = \{a, e, i, o, u\}$$

$$A' = \{b, c, d, f, g, h, j, k, l, m, n, p, q, r, s, t, v, w, x, y, z\}$$

$$A' = U - A$$

$$A' = \{a, b, c, \dots, z\} - \{a, e, i, o, u\}$$

$$A' = \{b, c, d, f, g, h, j, k, l, m, n, o, p, q, r, s, t, v, w, x, y, z\}$$

Question no 8(b)

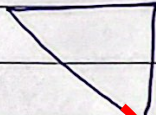
$P(E) = \frac{\text{possibility of events occurrence}}{\text{Total no. of possibilities}}$

$$P(E) = \frac{3}{8}$$

Question no 8(c)

10 no. of triangles

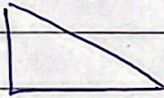
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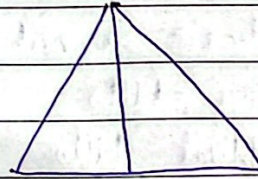
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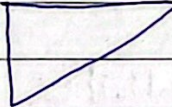
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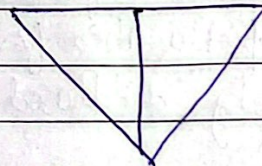
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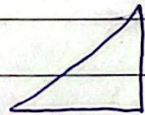
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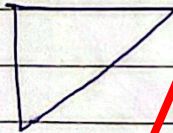
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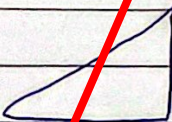
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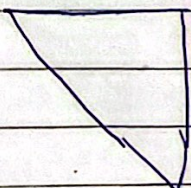
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⑥



⑦



Question (8) d

Intelligence Quotient :-

IQ or intelligence quotient is a measure of one's ability to reason and solve problems.

Factors affecting IQ :-

Following are the factors that can affect IQ :-

- (1) Environment
- (2) Educational base
- (3) Healthcare & nutrition
- (4) Memory skills
- (5) Perceptual skills
- (6) Practice of solving analytical activities
- (7) Opportunities for intellectual stimulation
- (8) Early childhood experiences.

Question 8 (a)

