



NATIONAL OFFICERS ACADEMY
Mock-8 for CSS2024
January 2024
GENERAL KNOWLEDGE-I
GENERAL SCIENCE AND ABILITY

TIME ALLOWED: THREE HOURS

PART-II

MAXIMUM MARKS = 80

NOTE:

- i. Part-II is to be attempted on the separate Answer Book.**
- ii. Attempt ONLY FOUR questions from PART-II by selecting TWO questions from EACH SECTION. ALL questions carry EQUAL marks.**

PART-II
SECTION-I

Q. No. 2

- a. Discuss key features of COP-28 held in UAE in Nov-Dec.2023 in context of Loss and Damage fund and some other financial issues of developing countries.
- b. What is Solid Waste Management? Discuss different methods.
- c. Write a note on Balanced diet.
- d. Discuss any three renewable energy resources under CPEC.

Q. No. 3

- a. Discuss different parts of eye. How far-sightedness & short-sightedness can be corrected?
- b. How does a Kidney work? Explain with diagram.
- c. How Black Holes are formed?
- d. What are isotopes, isobars and isotones? Give examples of isotopes of Hydrogen.

Q. No. 4

- a. How earthquakes are generated? Distinguish with Tsunami.
- b. What is Coriolis force? How Hurricanes are generated?
- c. Distinguish Solar & Lunar Eclipses.
- d. What is doping in Semi-Conductors. Discuss different types of Ceramics.

Q. No. 5

- a. Distinguish between RAM and ROM. Also define Nibble and USB.
- b. How AI has revolutionized the world? Justify.
- c. How does an optical fiber work? Write some of its advantages.
- d. What is critical speed of a Satellite? Differentiate Geo-Stationary and Polar Satellites.

SECTION-II

Q. No. 6

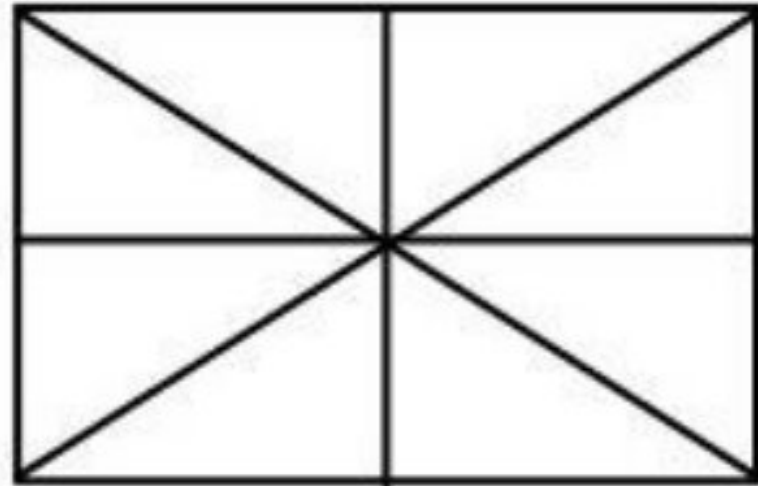
- a. Five years ago age of father was thrice the age of son. If son is 30 years old now .What is current age of father?
- b. Mean of 10, 30, Y, and 50 is 50. What is value of Y?
- c. Find the missing terms:
 - i. 2,6,18,54,_____.
 - ii. 3125,256,_____,4,1.
- d. If the product of two numbers is 320 and their ratio is 1:5. What is the difference between the squares of these two numbers?

Q. No. 7

- a. A woman sold two scooties for 96000 each. In the sale of the first scooty, he got 20% profit and in the sale of the second, he got 20% loss. What is the gain or loss percentage in total?
- b. 195 men working 10 hours a day can finish a job in 20 days. How many men are employed to finish the job in 15 days if they work 13 hours a day?
- c. If $A = \{a, e, i, o, u\}$, $U = \{a, b, c, \dots, z\}$. Find A' .
- d. A square pyramid has volume of 372 cm^3 & height is 3km., determine the perimeter of its base.

Q. No. 8

- a. A crow travels south 5km, and then 3km west, and then 4km north. Finally travels 2km south-east. How far is the crow from initial point?
- b. A pizza is divided into 8 slices in which 3slices contain raisin in it; Shiza picks a slice, what is the probability that she will pick a slice with raisin?
- c. Find the number of triangles in the following figure:



- d. Discuss the factors which can affect IQ.

***** *Good Luck for CSS2024******

Q1 Discuss different part of eye: ?

A The eye consist of various parts:

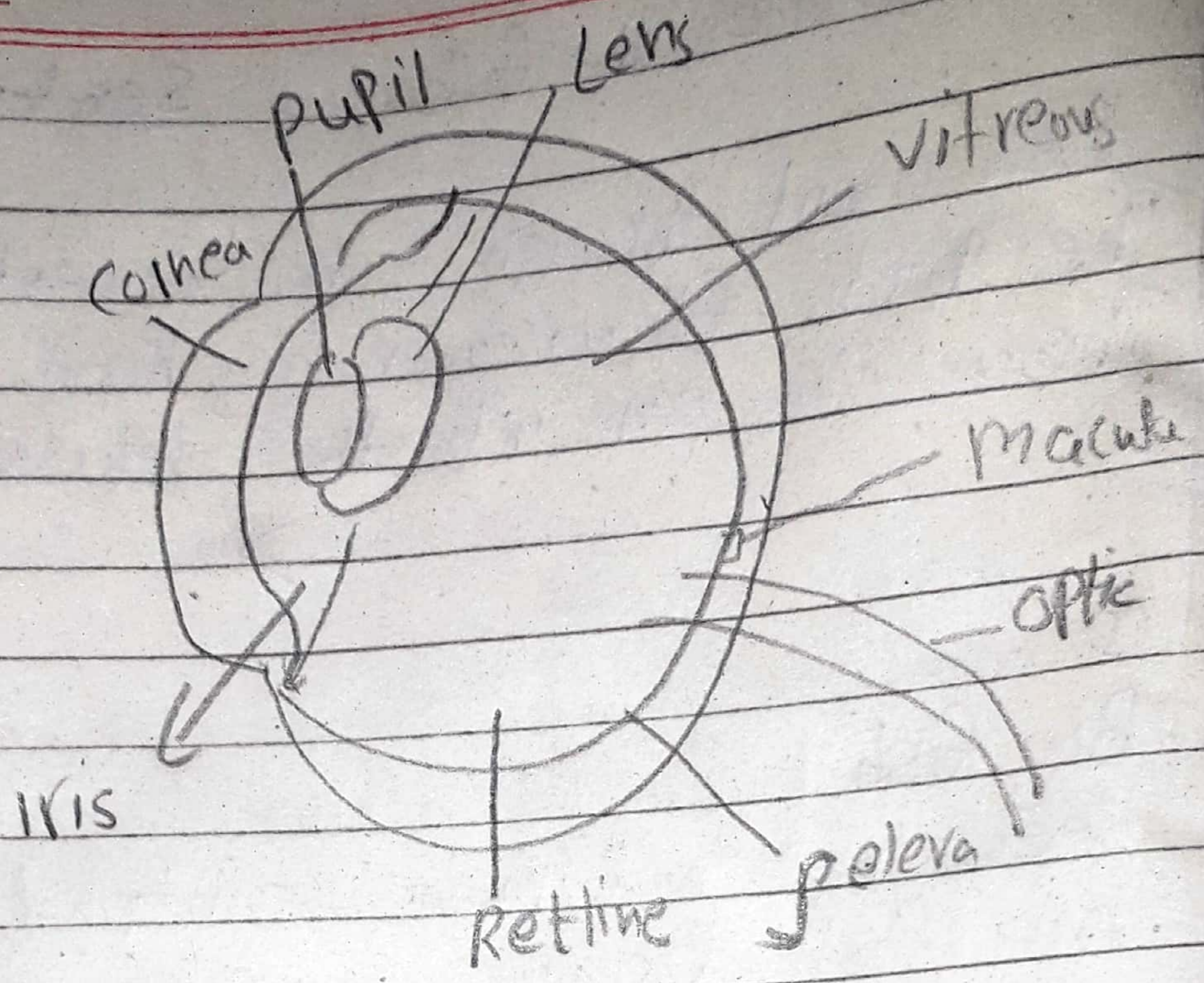
- 1 Cornea
- 2 pupil
- 3 Iris
- 4 Lens
- 5 Retina
- 6 Optic Nerve
- 7 Sclera
- 8 Conjunctiva.

Q2 How does a kidney work? Explain with diagram

A The kidneys play a crucial role in maintaining the body's internal environment

- 1 Filtration: Blood from the renal artery enters the kidney. where tiny blood vessels filter out waste products, excess salt, and toxins as filtrate
- 2 Reabsorption in the renal tubules essential substance such as glucose, water and ions are reabsorbed back into the blood system.
- 3 Secretion: Some substance like hydrogen ions.
- 4 Formation of urine
- 5 Excretion.

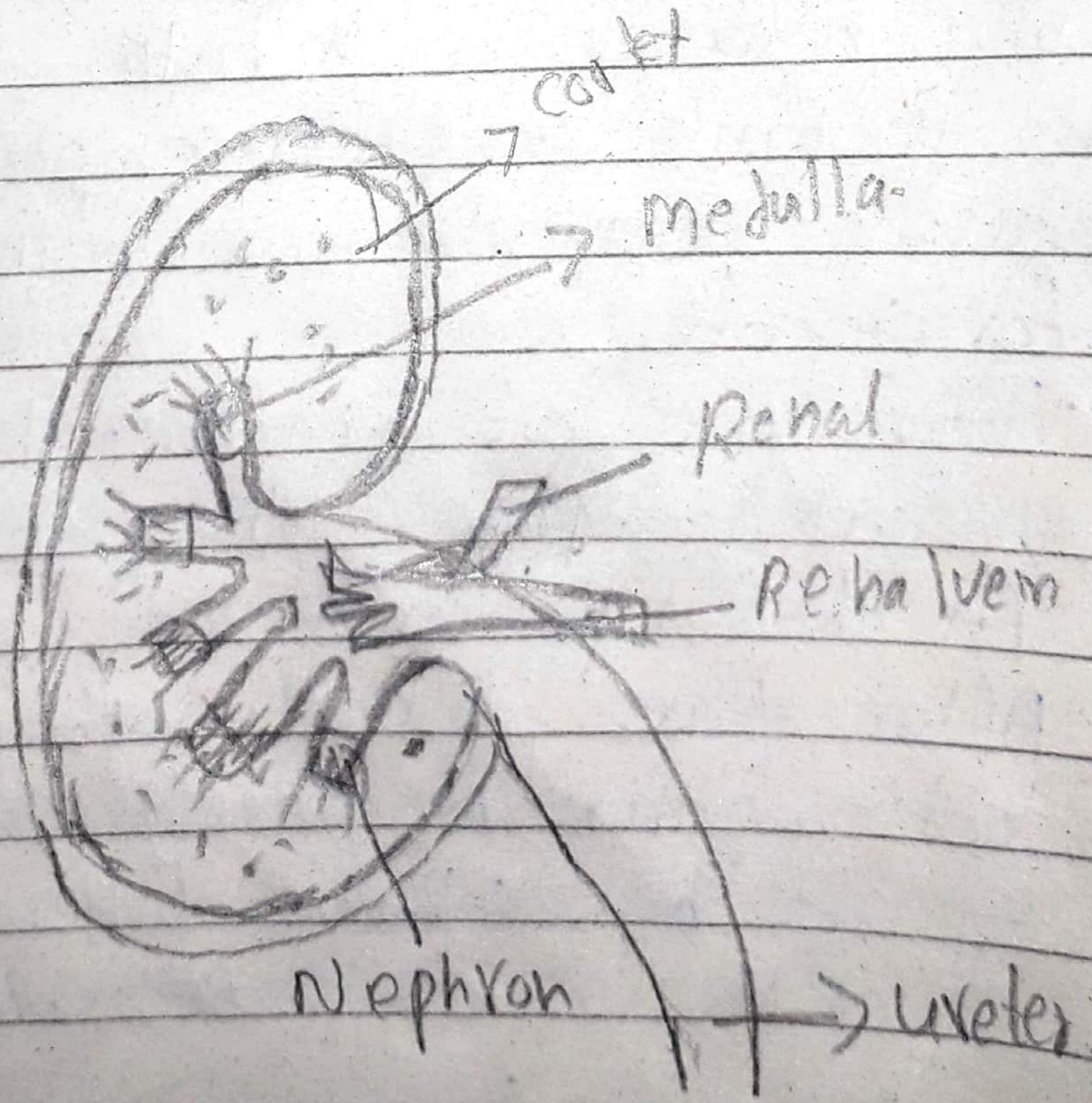
Eye.



Kid

Kid

Kidney



Q How Black holes are formed?

Black holes formed through the gravitational collapse of massive stars

1 Formation of Massive Stars:

Black holes are typically formed from massive stars that are at least several times more massive than our Sun

2 Depletion of Nuclear Fuel: As the star runs out of nuclear fuel, it undergoes various stages of fusion forming progressively heavier elements in its core.

Q What are isotopes, isotopbar, isotones:

3 Collapse.

When a massive star exhausts its nuclear fuel, it can no longer support the outward pressure against the force of gravity.

4 Supernova Explosion: The collapsing core triggers a dramatic event known as a Supernova.

Q What are isotopes, isotobar, isotones

A Isotopes: are atoms of same elements with the same numbers of protons but a different number of neutrons in their nuclei.
Example: Carbon-12

Isotobars

Isotobar are atoms that have the same mass number

Example: Carbon-12 and Nitrogen-12 are isotobar. because they have the same mass number (12) but different atomic no. numbers (6 for carbon and 7 for nitrogen).

Isotones

Example: Oxygen-16 and Fluorine-17 are isotones because they have the same number of neutrons (8) but different numbers of protons (8 for oxygen and 9 for fluorine).



Q 2,

b what is Solid waste Management?

Ans

Solid waste management involves the collection, disposal and recycling or reuse of solid waste generated by human activities. The goal is to reduce the adverse impact of waste on the environment and public health. The process typically includes the following stages

- 1 Collection
- 2 Segregation
- 3 Treatment and Processing
- 4 Disposal
- 5 Recycling and Reuse.

Q/ write a notes on Balanced diet?

A B A Balanced diet is one that provides the necessary nutrients in appropriate proportions to maintain overall health and well being. A balanced diet typically includes

- 1 Proteins
- 2 Carbohydrates
- 3 Fats
- 4 Vitamins
- 5 Minerals
- 6 Fiber
- 7 water.



d Discuss any three renewable energy resources under CPEC.

A Ans

Renewable energy has been a focus within the CPEC framework, aiming to address energy needs while promoting sustainable development.

1 Solar Energy.

Project: Several solar energy projects have been initiated under CPEC, harnessing Pakistan's solar potential.

2 Wind Energy.

wind farms, and the projects established in different regions of Pakistan with Chinese collaboration to national grid.

Date: _____

Day: _____

3) Hydropower:

& CPEC includes hydropower projects tapping into Pakistan's hydroelectric potential.



Section II

Q06

Five years ago age of father was thrice the age of son. If son is 30 year old now. What is current age father?

A Therefore, the current age of the father is 80 years.

(b) Mean of 10, 30, x , and 50 is 50. what is value of x . $\{ \frac{1}{4} (10 + 30 + x + 50) = 50 \}$

$$[90 + x = 200]$$

$$[x = 200 - 90]$$

$$[x = 110]$$

9) Find the missing terms

1 2, 6, 18, 54, 162

2 3, 125, 256, 125, 49,

