

Section 1

Objective

Q1: B Q2: C Q3: C Q4: D
Q5: D Q6: A Q7: D Q8: A
Q9: A Q10: A Q11: C Q12: B
Q13: A Q14: A Q15: B Q16: B
Q17: A Q18: A Q19: D Q20: D

Q2

- a) Artificial intelligence can be described as the replication of intuition, judgement, interpretation, co-ordination, logical deduction and other human traits associated with intellect, by silicon-based computer systems.

Artificial intelligence is as revolutionary as electricity for its ways in which it will change human society. AI can replicate many human jobs with

Goldman Sachs predicting over 200 million jobs at risk by 2030.

Thus significantly less humans will be needed to ensure economic success.

AI will lead to significant increases in productivity. For example in 2024 AI has been used by medical researchers in the U.S to discover 12 new antibiotics effective against anti-biotic resistant bacteria.

This allows progress to be done very quickly in areas that would have taken years and decades.

The Creation of Artificial General Intelligence could lead to the advent of conscious life besides humans. Top researchers have predicted AGI potentially before 2027.

This will redefine what we consider living and be the 2nd intelligent conscious life after humankind.

AI will make our role questionable in a Society where AGI can do almost anything. Questions like the future of human work will have to be answered

AI can be the end of human civilization. 'The Paper Clip Maximizer' thought experiment lists out what a misaligned AGI could potentially do.

b) A Computer Processing Unit or (CPU) operates as the Centre of logical processing within a computer. It consists of a microprocessor that computes and processes information in fractions of a second.

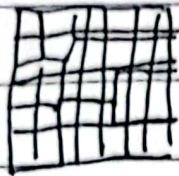
The microprocessor is the brain of a computer like the brain of a human. Much like our pre-frontal cortex

b

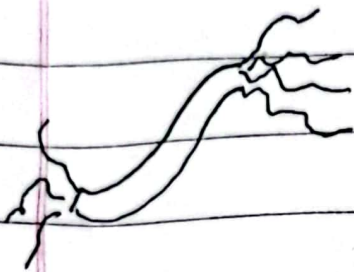
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involved in logic, a CPU also logically deciphers information. Micro transistors and Smaller Nanometer Chips Can be compared to human neural connections that facilitate communication



Pathways in a Chip



Neurons in the Brain

CPUs also receive information from other parts of a PC, or Computer in order to process. This information is transmitted to the CPU in binary and the resulting computation is also delivered in binary to produce a result e.g., Program Creation.

The human brain also communicates two-ways, receiving information from our senses e.g., eyes to produce data e.g. image, which is interpreted by other parts of the brain.

(A balanced diet refers to a pattern of consumption and food intake that provides the body with all the essential nutrients, vitamins, minerals and substances for effective operation and existence.

Vitamin A plays a role in eyesight and can be obtained from sources such as carrots. Deficiencies in Vitamin A can lead to night blindness and poor vision.

Vitamin B or B complex is a range of 12 different subtypes that play a range of roles in the body. Examples include folic acid and biotin. Deficiencies in folic acid can lead to pregnancy complications and malaise while a lack of biotin can impact hair, skin, and nail health.

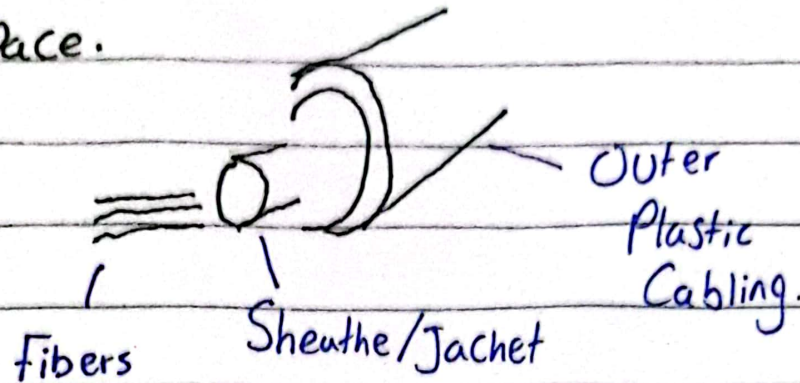
Vitamin C plays an important role in immune and body health. It can be obtained from citrus fruits such as oranges and lemons.

Deficiencies in Vitamin C can lead to a disease called Scurvy which can lead to bleeding gums, Malaise and a compromised immune system. It was common among sailors of pre-modern times.

d Optical fibres are a means of transmitting information using light rather than electricity found in copper cables. Optical fibres allow for more information to be transmitted in a finite space and/or time.

Optical fibres are wrapped in a cable, usually of plastic to ensure safety of fibres. The fibres are made of glass and a mix of .

Other Substances, using ensuring light is transmitted and not reflected outside the space.



GPS or General Positioning Systems are optical ~~imagery~~ systems that operate through Satellites above the Earth's Surface. Satellites capture ~~images~~ ^{data} from above and transmit them in data form to receiving Stations/Systems. This data pertains to the location of Objects on the Earth's Surface or in its atmosphere. For example, Aircrafts, Mobile phones, Missiles, Vehicles.

Data is Measured through triangulation, Using a host of Satellites and the transmitted signal to determine

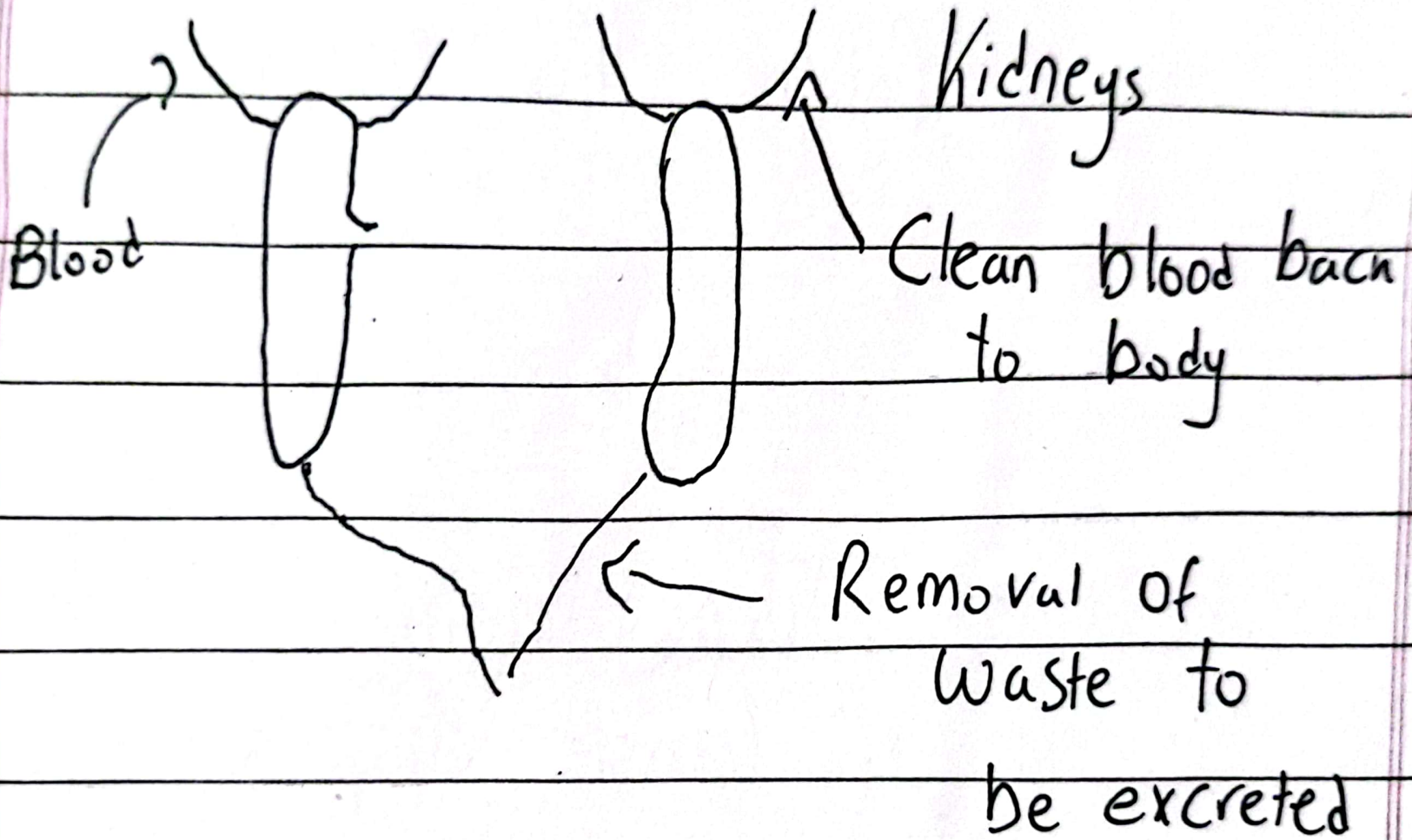
the location, whether on or above the ground.

Q4

a The liver is one of the largest organs by weight in the body having a range of functions such as producing enzymes. One such enzyme is bile.

Bile is stored in the gall bladder and is released after food has been digested in the stomach. It is released on the way to the small intestines. Its role is to break down fats into lipids that can be stored and utilized by the body.

b The kidneys are organs existing in a pair within the body. One of the primary functions of the kidney is to filter blood to remove waste, toxins from it to be excreted.



The kidneys receive unfiltered blood which it begins to clean. Waste such as dead blood cells, waste material, and toxins are extracted in folds of the kidneys.

These toxins are then directed to be excreted e.g., in the form of urea in urine. The failure of the kidneys in performing filtration can lead to excess waste and toxin accumulation leading to cell death, and can be fatal. Patients with kidney failure thus require dialysis.

C Solid Waste Management is a system of waste disposal involved in the collection of waste to transport and eventual disposal, storage, or incineration.

Collection of Waste



Storage in area wise Waste
dumps

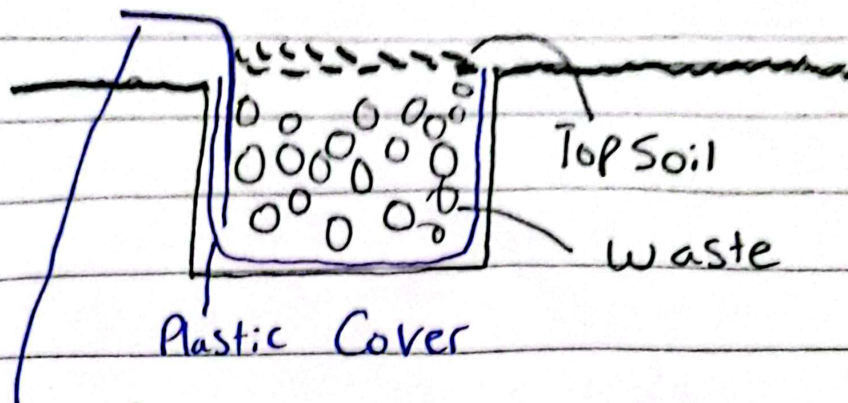


Transport of waste to
disposal facility



- Storage in Landfill
- Incineration
- Recycling

Solid Waste Can be disposed of in landfills. Here a layer of a Non permeable Material, usually Plastic is laid down, Waste Stored on top. Finally another layer of Non-permeable Material 'is' laid on top before being buried in top soil once the 'Zone' or 'Block' is full



Methane release
(Processable)

Waste can also be incinerated
turned into ash which can then be
disposed of. These plants can be
used to generate electricity by
using heat to generate energy by
using steam.

Waste can also be recycled.
Glass, plastic, paper can be recycled
to their raw materials to remould
glass, re-use plastic or break down
paper to cellulose or other products.

d

i) Anami Anaemia

Anaemia is used to signify a low red blood count. Individuals who are anemic do not have enough red blood cells to function optimally. They thus may suffer from shortness of breath or cloudy vision when standing. This is because not enough oxygen is able to circulate in the body.

Anaemia can be as a result of low iron used for haemoglobin or immune disorder/infections e.g., Malaria.

ii) Appendicitis

Appendicitis is the inflammation of the appendix caused often by bacterial overgrowth and subsequent infection and pus creation. It is located in the small intestine.

Appendicitis can be treated by antibiotics but often may require surgery called an appendectomy.

iii) Spleen

Is an organ in the body responsible for producing enzymes which aid in digestion. However man can live without a spleen.

iv) Myopia

It is a condition of the eye in which short-sightedness is a symptom. Myopia is caused by the misalignment of the lens.

v) Isotones

Day: _____

Date: _____

No Maths Portion