Date:

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Improve paper presentation
Insufficient length
Add more headings
Work on math portion

Q2) Distinguishing the following terms:

i. RAM and ROM, ii, Network and internet iii, GPS and GIS. iv, Byte and nibble v, natural satellite and Artificial satellite.

1. RAM and ROM:

Ram and Rom are both integral types of computer. Ram stands for Random Access Memory and Rom for Read-only Memory.

Ram: Ram is volatile memory and the data is lost when the power is turned off. It is for temporary storage. It allows for faster reading and writing operations. Best for multitasking. Example is DDR2, DDR3 and DDR4.

Rom: Rom is a non-volatile memory and the data are present in it even the power is turned off. It contains permanent instructions and can't be removed by normal computer operations. It is filled with instructions that are important during boot-up. Examples are Bios and firmware.

2. Network and internet: Both are

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used for computer connectivity.

NETWORK: Network is a pool of collection of devices that are interconnected, such as computers, printers, routers etc. Networks use wire or Ethernet cables for connectivity. LAN and WAN are two broader methods of connectivity. LAN is for local and WAN is for wide area.

Internet: The internet is a global connection using wire to connect the devices of millions world wide. It allows access to wide range of services, such as Emails, websites and other file sharing or vide streaming site. It is not owned by a single entity and maintained by internet service providers. Broadband, DSL, cable and fibers are used for connectivity.

2. GPS and GIS: used for spatial data and location-based applications.

GPS: Global Positioning System is used for tracking objects on the Earth's surface. It relies on a satellites that orbits the earth. used in vehicle tracking mapping and surveying.

GIS: Geographic information system is system used for capture, store, manage and analyze data. GIS allows various types of data including 2D maps, satellite imagery and tabular data.

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GIS is used in urban planning, environmental management, emergency response and business intelligence

4. Byte and Nibble: These are units of digital information

Byte: It is a unit of digital information and storage in computing. It is composed of 8 binary digits. Bytes are used to do represent characters, numerical values and other data type in computer system.

Nibble: It is comparatively smaller. It has 4 binary digits, used to represent hexadecimal values.

5. Natural and Artificial Satellite:

Both are orbiting the Earth but the differences are:

Natural Satellite: It is a celestial object that orbits around larger celestial body, such as planets. Natural Satellites are formed through natural process. Examples are, Earth's moon, Jupiter's moons, Saturn's moon etc.

Artificial Satellite: made by men and placed intentionally to orbit Earth or other celestial body. They are used for many functions, such as communication, navigation, scientific research and space exploration. Examples are, Satellites for Weather, Scientific Satellite, Space probes etc.

6. Note on optical fibre:

A revolutionary invention in the field of communication.

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It provides high speed internet and data transmission using light signals.

Structure: optical fibre is a thin, flexible strands made of transparent glass or plastic. They guide light along their length. Cladding layer surrounds the core of the fibre with a low refractive index.

Advantages: High data capacity and enabling fast data transmission and low latency. They are a secure medium and difficult to tap.

Disadvantages: It is expensive and the disruption once occured takes time to repair.

c. Ans

Water Soluble and Fat Soluble vitamins

Water Soluble vitamins are Vitamin C and Vitamin B. Vitamin C is used for wound healing and immune function. It is available in lemon, kiwi etc. vitamin B is also water soluble and functions in many ways. improves nerve function, blood cell formation skin health etc.

Fat Soluble:

Vit A, D, E, K are fat soluble. Vit A is best for vision and cell growth, Vit D is for calcium absorption and bone health. Vit E helps in protecting the cell's structure and Vit K is essential for blood clotting and bone health.

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Moreover, water Soluble vitamins are not stored in the body and fat Solubles are stored in the body's body's fat tissues.

D. Working of Kidney in human Physiology.

The Kidneys in human plays an important role, such as filteration, fluid balance and hormone regulation.

1. Filteration: The Kidney filters the blood and remove wastes, excessive water and other substances. Kidney contains nephrones which consist of glomerulus.

2. Fluid balance: The Kidney helps to regulate the body's fluid and B.P. The Kidney produces renin which triggers a reaction and balance the salt and water.

3. Hormonal balance: The Kidney works hard to balance the hormonal activities. It secretes erythropoietin, which stimulates the production of red blood cells in the bone marrow.

So, Kidneys monitor and balance the parameters of various functions in the body to maintain homeostasis.

Q2. a- How Black Hole is formed from stars?

The Black Hole formation is done through a process called Stellar evolution. The steps in Black Hole formation are:

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2. Star formation: Stars are born from clouds and gases. Gravity causes the star to collapse and then protostar is formed.

2. Nuclear fusion: When protostars reach to certain temperature at its core, nuclear fusion begins.

3. Stellar Evolution: During this phase the fate of the star is determined by its mass. The fusion process decreases and the hydrogen fuel is released and the star expands into a red giant phase, and further become a dwarf.

4. Supernova: In this phase, the bigger stars continue their fusion reaction. When they run out of fuel, the core collapses due to gravity and it results in a supernova explosion.

5. Black hole formation: In this phase, if the stars' core has a mass greater than three times the mass of the sun, it becomes dense and even light can't escape from it due to gravitational pull. The collapse of the core is known as singularity. The object is then known as black hole.

Hence, the formation is due to gravitational force leading to singularity and any matter or energy that crosses is trapped.

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8 Cyclone Biparjoy and formation of cyclone:

Intro:

Biparjoy is a powerful tropical cyclone that formed over the east-central Arabian Sea. It originated from a depression and noted by world Meteorological Department. However, the cyclone is weakning due to flaring convection. And Biparjoy is equal to tropical cyclone of category 3.

Formation of cyclone:

Cyclones are powerful and destructive tropical storms that forms over warm ocean waters.

Warm waters: To form a cyclone, warm waters are necessary. warm water act as a fuel

Low pressure: It originates in low pressure areas and catalyst role can be played by atmospheric disturbance due interaction of trade winds and convergence of warm and cold water.

Spin: when low pressure develops. otter due to coriolis effect the Earth imparts a spin to the air.

The Eye: It is a calm and clear area at the center of the cyclone. However, the eyewall is an area with thunderstorms and powerful winds blow in it.

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Some common causes of floods?

The causes of floods are not only human induced but it can also be due to natural activities. There are many factors of floods:

=> Heavy Rain: Heavy rainfall, is a nature induced phenomenon. When rain continues for several day the Earth absorbing capacity is compromised and results in heavy floodings.

=> Snow melting: Snow when melts with a rapid pace, it causes devastation and the waters in rivers overwhelm it and cause floodings.

=> Deforestation: This is a man-made action which results in many natural calamities further. Deforestation causes the water to flow it directly without stopping it or slowing it down. Furthermore, it leads to runoff and floodings.

=> Climate change: Another anthropogenic practice which changed the shape of our world and now we are more prone to many natural Disasters. Rising temperature can result in intense rainfall which increases the risk of flooding.

Thus, floods can be caused by nature as well as human but the main catalyst is human. Land management and infrastructure planning are needed.

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Q. How energy is produced in the sun? What factors are responsible for gravity of sun? Definition of solar winds.

Ans.

Energy production in the sun:

Energy production in the sun is driven by nuclear fusion. Temperature reaching to millions of degree celsius, the core, hydrogen nuclei undergo fusion and form helium nuclei.

Proton-Proton chain:

i. Two hydrogen nuclei form a deuterium nucleus.

ii. A proton combines with the deuterium nucleus to form helium-3 nucleus

iii. Two helium-3 nuclei combines to form a helium-4 nucleus releasing two protons.

These fusion in the sun's core generates an immense amount of energy.

2. Factors responsible for gravity of sun.

The gravity arises from sun's mass. which is ~~330,000~~ 330,000 times bigger than Earth. We know that every object with mass exerts an attractive force on other. So, the sun mass is huge. Its gravitational pull keeps the gases and particles

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vidium its volume preventing from dispersing.

3. Solar wind:

Solar wind is the dispersion of charged particles (proton and electron) from the corona, into space. The intense activity occurring in ~~the~~ outer layers of results in Solar winds. The gyms fast propelling them outward in all directions. Moreover the Solar winds are not ~~the~~ a uniform flow but Solar winds are slower in areas close to the sun and faster in areas far from the sun.

Section "B"

Q2. i. Find the correct words from the jumbled spellings.

1. LNUGLGF = FLANGE
2. CKANS = SNAKE
3. CIREFE = FIERCE
4. LERAANMOGIP = ~~PENTAGON~~ MAGNETOPAUSE
5. MNIKPPU = PUMPKIN

ii. Distance from Ali's eyes to top of the tree = 15 ~~m~~ m

= Distance from Ali's eyes to his feet = 1.5m

= Distance from Ali to tree = 13.5 m

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we will use similar triangles

height of the tree = h

$h/10 = 15/1.5$

cross-multiply

$1.5h = 10 \times 15$

$1.5h = 150$

$h = 150/1.5$

$h = 100$

So, the tree height is 100 meters

(D) Find the volume of Egyptian pyramid, formula is:

= Volume = (1/3) × base area × height.

= Base area = (1/2) × base length × base width

⇒ Base area = (1/2) × 230.6 × 230.6 = 26,590.18 sm

⇒ Volume = (1/3) × 26,590.18 × 146.6

= V = 1/3 × 3,912,251.18

V = 1,304,077.04 cubic meter.

Hence, Egyptian pyramid is 1,304,077.04 cubic meters