

Mock-2 General Science & Ability

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Part-II Section-I

Question . 2

(a) Benefits

1. Improved Diagnosis Accuracy
2. Predictive Analytics
3. Virtual Assistants
4. Operational Efficiency

Challenges

- Data Privacy Concerns
- Bias in AI Algorithms
- High cost of Implementation
- Dependency on Technology

Impact on Patient Care

- Faster Diagnosis and personalized treatment
- Remote monitoring and Telemedicine
- Reduction in human error

(b) Big Bang Theory

The Big Bang theory explains the origin of the universe from a singular, extremely hot and dense point approximately 13.8 billion years ago.

Significance

- Explains the expansion of universe.
- Basis for cosmology and astrophysics.

- Provides framework for understanding cosmic background radiation, galaxy formation.

Supporting Evidence

- Redshift of galaxies
- Cosmic Microwave Background Radiation
- Abundance of Light Elements
- Large-scale structure of the Universe.

(C) Primary Causes of Global Warming

1. Greenhouse Gas Emissions

CO_2 , CH_4 , N_2O and Fluorinated Gases

2. Deforestation

Trees absorb CO_2 . Their removal reduces this absorption and releases stored carbon.

3. Industrialization and Urbanization

Increased energy consumption, transportation, and waste production.

4. Agricultural Practices

Overuse of fertilizers, rice cultivation, and animal farming release CH_4 and N_2O .

Effects of Global Warming

Rising temperatures, Melting Ice, & Rising Sea levels, Extreme Weather Events, Ecosystem disruption, Agricultural impact.

Role of Human Activities

Burning Fossil Fuels, Transportation and Industry, Land use changes, Overconsumption of energy and unsustainable lifestyles.

Mitigation Strategies

Shift to renewable energy, afforestation and reforestation, Energy efficiency, sustainable transport, Carbon Tax and regulations and public awareness.

(d) Key components of a Disaster Management Plan

- | | |
|------------------------|------------------|
| 1. Risk Assessment | 2. Preparedness |
| 3. Response | 4. Recovery |
| 5. Mitigation | 6. Communication |
| 7. Resource Management | |

Importance of Preparedness, Response and Recovery

- Preparedness ensures a swift, organized reaction when disaster strikes.
- Response limits casualties, damage and loss.
- Recovery rebuilds society and infrastructure, reducing long-term suffering.

Examples of Successful Strategies

1. Japan's Earthquake Preparedness

Earthquake resistant building, early warning systems, public education.

2. Pakistan's NIDMA

coordinates disaster response, especially during floods and earthquakes.

3. Bangladesh Cyclone Shelters

community shelters and alert systems saved thousands in recent cyclones.



Question .4

(a) Characteristics of Tropical Cyclones

low pressure center with calm weather, surrounded by a spiraling system of thunderstorms, strong winds, heavy rainfall and storm surges, counter clockwise rotation in northern hemisphere and clockwise in southern hemisphere.

Formation Process

Warm ocean water, Evaporation, Condensation, Pressure drops, Coriolis Effect, Cyclone formation

Factors influencing Intensity

Sea surface Temperature, Atmospheric moisture, Wind shear, Ocean heat-content, geographic conditions

Impact on coastal communities

Storm surges, wind damage, loss of lives, salinization of farmland, displacement and health crisis.

(b) Remote sensing ~~and is~~ the acquisition of data about earth surface without physical contact, typically via satellites or aircrafts using sensors.

Applications in Environmental Monitoring
land use changes, vegetation monitoring, climate tracking, disaster management.

Advantages

Wide coverage, frequent observations, non intrusive, multispectral data

Limitations

High initial costs, weather dependency, resolution limits, requires expertise

(c) Types of Vitamin

Fat Soluble $\rightarrow$ A, D, E, K

Water Soluble $\rightarrow$ B-complex, C

Contribution to human health

Vitamin A $\rightarrow$ vision, immune health, skin

Vitamin C $\rightarrow$ Collagen production

Vitamin D $\rightarrow$ Bone and calcium

Vitamin E $\rightarrow$ Protects cells, skin health

Vitamin K $\rightarrow$ Blood clotting

Vitamin B-complex $\rightarrow$ Metabolism, nerve health, red blood cell production

Consequences of deficiencies

Night blindness, Scurvy, Anemia, heart thinning and rashes etc.

(d) Polio is a highly infectious viral disease that affects the nervous system, potentially causing paralysis or death.

Importance of Vaccination

Builds herd immunity, prevents outbreaks, eradicates virus reservoirs, crucial for a polio free world.

↔ Section - II

Question . 05

(a) $x = \text{Below 8} + 8 \text{ years olds} + \text{Above 8}$

$$x = 0.2x + 48 + 32$$

$$x = 0.2x + 80$$

$$x - 0.2x = 80$$

$$x = \frac{80}{0.8}$$

$$x = 100$$

(b) let Rashid's current age = x
 Father Age = $x + 3x = 4x$

After 8 yr

$$\text{Father age} = 4x + 8$$

$$\text{Rashid age} = x + 8$$

$$\text{Given} \rightarrow 4x + 8 = 2.5(x + 8)$$

$$4x + 8 = 2.5x + 20$$

$$x = 8$$

$$\text{Father's current age} = 4x = 32$$

$$\text{Rashid's age} = 8$$

After further 8 years

$$\text{Father} = 32 + 16 = 48$$

$$\text{Rashid} = 8 + 16 = 24$$

$\Rightarrow$ 2 Times older The father is.

$$(c) \text{ Total favorable} = 15$$

$$\text{Total outcomes} = 6 \times 6 = 36$$

$$P = \frac{15}{36} = \frac{5}{12}$$

(d) Total age of team

$$11x = 26 + 29 + 9(x - 1)$$

$$11x = 55 + 9x - 9$$

$$11x = 9x + 46$$

$$2x = 46$$

$$x = 23 \rightarrow \text{Average age of team}$$



Question . 6

(a) let Cost price = x

Original selling price = y

$$\text{Profit} = y - x$$

If S.P is doubled $\rightarrow 2y$

$$\text{new profit} = 2y - x$$

$$2y - x = 3(y - x)$$

$$2y - x = 3y - 3x$$

$$-y + 2x = 0$$

$$y = 2x$$

So,

$$\text{S.P} = 2x, \text{CP} = x, \text{Profit} = x$$

(b) let Y's wage = y

$$X's \text{ wage} = 120\% \text{ of } y = 1.2y$$

$$y + 1.2y = 550$$

$$y = 250$$

$$(c) \text{ Area} = l \times b = 216$$

$$\frac{3b}{2} \cdot b = 216$$

$$3b^2 = 432$$

$$b^2 = 144$$

$$b = 12$$

$$l = \frac{3 \times 12}{2}$$

$$l = 18$$

$$(d) \text{ Total possible} = 20$$

$$\text{Total multiples of 3 or 5} = 6 + 4 - 1 = 9$$

$$P = \frac{9}{20}$$