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up ability

Section I

Q. Question 1.

Artificial Intelligence (AI)

Artificial Intelligence (AI) is revolutionizing the healthcare industry by improving diagnostics, treatment planning, and operational efficiency. However, alongside its advantages, it poses several ethical, legal, and social challenges.

1) Potential Benefits

faster and Accurate Diagnosis
AI algorithms help in analyzing medical images (X-rays, MRIs) and lab results quickly and accurately.

Personalized treatment Plans.

AI uses patient's history and genetics to recommend tailored treatments.

Remote Monitoring of Patients.
wearable AI devices track
heart rate, glucose levels,
and oxygen saturation in real time

Efficient Data Management:
AI streamlines electronic health
records, reducing human error.

2) Challenges

Data Privacy and Security:
Storing and processing personal
medical data raises ethical
and legal concerns.

Costly Systems:
Buying and running AI technology
is expensive for hospitals in
developing countries.

Lack of human feelings.
AI can't show care or emotional
support like human doctors

Job fears:
many workers worry that AI
will take over their jobs.

Impact on Patients.

patients get better care because AI finds diseases early and reduces waiting time. But human doctors are still very important for final decisions and emotional support.

Question (2)

1) Big Bang theory.

The Big Bang theory says that our universe started from a very small, hot, dense point. Then it exploded and started growing. This happened about 13.8 billion years ago.

This theory was proposed by George Lemaitre and advocated by George Gamow. According to big bang theory, universe was created in gigantic explosion called big bang. Universe came into existence is 13.8 billion years ago. There was no time and space before big bang.

2) Importance

It helps us understand how the

time) and matter started.
it tells us how stars, planets &
galaxies were formed
it supports many space studies
& modern physics.

3) Proofs of the Big Bang theory

Cosmic Radiation:

A weak light called "cosmic microwave Background Radiation" is found every where in space. it is leftover heat from the Big Bang.

Redshift of Galaxies:

when scientists looked at galaxies they saw the most of them are moving away from us. This shows that the universe is expanding.

simple elements.

Hydrogen and Helium were the first elements formed. we still find them in the same amount the theory predicted.

Galaxies structure:

The way galaxies are spread in space matches the model

of an expanding universe.

Question (3)

Global warming.

Global warming means the Earth is getting ~~hotter~~ hotter over time. This is mostly because of human action that increase greenhouse gases in the air.

1) Causes of Global warming

Burning fuel:

Using coal, oil, and gas in factories, cars, and power station release carbon dioxide.

Cutting trees:

Forest clean the air, but deforestation reduces this benefit.

Factory and farm gases.

factory and farm gases give off harmful gases like methane and nitrous oxide.

2 Effect of Global warming

Melting of Global Ice and
Rising Seas:

Glaciers are melting and ocean
levels are going up, flooding
coastal areas.

Bad weather:

more droughts, floods, heatwaves
are happening around the world.

Less food water:

Crops doesn't grow well in
extreme weather, causing food
shortages.

Harm to animal and plants.

some to animal are going
extinct because their natural
homes are disappearing.

5) Role of Human Body

use clean energy
solar, wind, hydro power
can replace coal and oil.

Plant more trees.

Trees help absorb carbon
dioxide from the air.

Recycle and save resources

Less waste and smart energy use can reduce pollution.

Global Cooperation.
Countries must work together, like in the Paris Climate Agreement to reduce emissions.

Question (4)

Disaster.

Disaster like floods earthquakes and fires can cause great harm.
A disaster management plan help to reduce damage and save lives before, during and after a disaster.

Key Parts of Disaster management:

Mitigation (Risk Reduction)
Building stronger homes, flood barriers and enforcing safety laws to prevent damage.

Preparedness:
Teaching people what to do during emergency drills and

setting up warning system.

Response:

Rescue ~~teams~~ teams, medical help, and food supply during the disaster.

Recovery:

fixing roads, homes and helping affected people return to normal life.

Examples:

2005 Earthquake in Pakistan.
help from the army international NGOs and emergency shelters saved thousands.

Japan's Earthquake Plan:
Their schools and buildings are designed to handle quake.
regular drills keep people ready.

NDMA (Pakistan)

The national Disaster Management authority works to plan and respond to national emergencies.

Question (1)

Tropical cyclone.

A tropical cyclone looks like a whirlpool that is found out in the tropics. It looks like a huge mass of air that just rotates they are more like in shape than cyclones.

Characteristics of Tropical cyclone

- 1) Strong Rotating winds.
- 2) Eye of the cyclone
- 3) Heavy Rainfall & Storm surges
- 4) Low pressure

formation process:

Warm ocean water
cyclones form over oceans
with temperatures above 26°C

Warm air:

The warm air water heat
the air above which rise
and create low pressure.

cloud formation.

The moist air rises, it cools and forms storm clouds.

Rotation Due to Earth's Spin
The storm starts rotating
due to Earth's rotation.

Development of a Cyclone
if the system keeps gaining
energy and grows, it becomes
a full cyclone.

Factors influencing intensity.

Ocean temperature

wind speed and direction

moisture in the air

high pressure or low pressure
areas nearby.

Impact on coastal communities

flooding and destruction
of homes

loss of lives & injuries

infrastructure damage.

spread of waterborne diseases

Question (2)

Remote sensing means collecting information about Earth's surface without physical contact usually through satellites, drones or aircraft using cameras or sensors.

Uses in Environmental monitoring.

Tracking Land use
Vegetation Health
Climate Change observation
Disaster management.

Advantages.

Cover large and hard to reach areas

Provides up to date and repeatable data non-invasive and cost effective over time

Limitations.

Cloud cover may block satellite view

Expensive equipment and skilled staff needed

may require ground verification for accuracy

Some areas with underwater

are harder to analyze.

Question (3)

Types of vitamins.

Fat-soluble V

fat soluble A, B, E, K
Stored in body fat.

Taken in small amounts.

Water-soluble V

Water-soluble B-complex
and C not stored in the
body need to be taken
daily

Roles in human health

V A Good, eyesight, skin repair

V B (B1-B12) Energy, brain
function, cell health

V C! Boost immunity help in
wound healing

V D Builds strong bones
and teeth

V E Protects skin and
cell from damage.

V K help in blood clotting

for skin hair, eyes

Vit C

keep skin soft
repair damage cells

VB7 (Biotin)

strengthens hair
and nails

VC

Promotes glowing skin
and hair growth

VA

help maintain sharp
eyesight

Deficiency

VA

Night blindness, dry

skin

VB

fatigue, memory problems

VC

Bleeding gums, weak
immunity

VD

Bone pain, rickets

VE

weak muscles

skin problem.

Question (4)

What is polio?

Polio is viral disease that
attacks the nervous system
It mainly affects children
under 5 years old and
can cause permanent paralysis

Or over death

Transmission

spread through contact with stool or saliva of an infected person, mostly spreads in areas with poor sanitation and dirty water

Global Eradication Efforts

World health organizations who partners started global polio eradication initiative GPEI in 1988

Vaccination campaigns in over 100 countries reduced Polio over 99%

Challenges: faced

misinformation and vaccine refusal in some communities
political instability and war zones

Remote or hard to reach areas

Low routine immunization coverage

Importance of vaccination

it is only the way to prevent polio.

polio has no cure, only prevention.

if vaccination stops, polio can return and spread, and it will destroy immunity protects entire communities.

Section II

Question 1

Let:

- D Cost Price = Rs 100
selling Price = Rs x
profit = $x - 100$

If selling Price doubled ($2x$) then profit becomes 3 times the original profit.

So

$$2x - 100 = 3(x - 100)$$

$$2x - 100 = 3x - 300 = 3x - 2x =$$

$$300 - 100 \Rightarrow x = 200$$

Original SP = 200

Profit = 200 - 100 = Rs 100

$$\text{Profit \%} = \frac{\text{Profit}}{\text{Cost Price}} \times 100$$

$$= \frac{100}{100} \times 100 = 100\%$$

Answer = 100% Profits

Question (2)

2) Let y's Pay = Rs. x
Then x gets = 120% of $x =$
 $\frac{120}{100} = 1.2x$

$$x + 1.2x = 550 \Rightarrow 2.2x = 550$$

$$x = \frac{550}{2.2} = 250$$

~~2nd~~ Question (3)

3) Let breadth = b , then Perimeter
 $= 5b$

Perimeter of rectangle = $2(l + b) = 5b$

$$2(l + b) = 5b \Rightarrow l + b = \frac{5b}{2}$$

$$l = \frac{5b}{2} - b = \frac{3b}{2}$$

Now Area = $l \times b = 216$

$$\frac{3b}{2} \times b = 216 \Rightarrow \frac{3b}{2} = \frac{216}{b} \Rightarrow b^2 = 144$$

$$= \frac{216}{3} = 144 \Rightarrow b = 12$$

$$\left(\frac{3 \times 12}{2} \right) = 18 \text{ cm length}$$

4) multiples of 3 = 3, 6, 9, 12, 15, 18, $\rightarrow$ 6 numbers

multiples of 5 = 5, 10, 15, 20 = 4 numbers

Common multiple (3 & 5) = 15 count once only.

$$6 + 4 - 1 = 9$$

Probability $\frac{9}{20}$

Question (2)

1) Student of 2 years of age = 48
 student of above 8 years = $2 \times 48 = 32$
 student below 8 years = $20\% \text{ of total students}$

Total student = Below + Exceeding + Above

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

$$x - 0.2x = 80$$

$$0.8x = 80 \Rightarrow x = \frac{80}{0.8} = 100 \text{ student}$$

2) father age $= 2x + 3x = 4x$

After 7 years

father age $4x + 7$

Rashid age $= x + 7$

$$4x + 7 = 2.5(x + 7)$$

$$8x + 16 = 5x + 40$$

$$8x - 5x = 40 - 16$$

$$3x = 24$$

$$x = 8$$

∴

Rashid current age $= x = 8$

father $4x = 32$

After further 7 years - 16 years

Rashid $= 8 + 16 = 24$

father $= 32 + 16 = 48$

father age $48 = 2 \times 24$ times

Rashid age 24

3) When two dice tossed

Each die has 6 faces

$$6 \times 6 = 36$$

Prime numbers (2, 3, 5, 7)

2 - (1,1) 1 way

3 - (1,2) (2,1) 2 ways

5 - (1,4) (2,3) (3,2) (4,1) 4 ways

7 - (1,6) (2,5) (3,4) (4,3) (5,2) (6,1) 6 ways

$$1 + 2 + 4 + 6 + 2 = 15$$

$$\text{Probability } \frac{15}{36} = \frac{5}{12}$$

$$\frac{5}{12} \text{ Answer}$$

4) total age all 11 players = 112

$$\text{Captain} = 26$$

$$\text{wicket keeper} = 26 + 3 = 29$$

$$\text{their combined age} = 26 + 29 = 55$$

$$9 \text{ players total age} = 112 - 55$$

$$\frac{112 - 55}{9} = 23$$

$$(112 - 55) = 9(23)$$

$$112 - 55 = 92 - 9$$

$$112 - 92 = 55 - 9$$

$$20 = 20$$

$23 = 23$ year average age
 term