GSA
(Section A)

Q2 a)

The doctor of the future will no longer ------ Explain

Answer :-

The statement envisions a paradigm shift in healthcare where a greater emphasis is placed on preventive and holistic approaches, particularly utilizing nutrition as a fundamental component of maintaining health and preventing diseases.

Here is explaination of envisioned future of healthcare:

Preventive healthcar Focus.

* Nutrition as a foundation for prevention from disease.
* Educating individuals about the impact of a balance diet on health.

Diet as Medicines :-

* Nutrient-rich diet act as preventively and therapeutically.
* Tailored diets suppeat the body's healing processes.

Personalized Nutrition Plans:

* Customized diets based on genetics, lifestyle, and health status.
* Precision in dietary recommendations for preventing

diseases.

Management of Chronic Diseases:-

* Dietary interventions for managing and reversing chronic condition.
* Regulating blood sugar, blood pressure, and weight through nutrition

Promotion of Gut health:-

* Nutrition's role in maintaining a healthy gut microbiome.
* Gut health linked to immune function, mental health and digestion.

Nutrition plays a key role in managing chronic diseases, offering interventions that can regulate vital health markers such as blood sugar and blood pressure. It also contributes to promoting gut health, a factor increasingly recognized as crucial for overall well-being. By prioritizing nutrition, the reliance on pharmaceuticals may reduce, allowing for a more holistic and sustainable approach to healthcare. Educational initiative will be vital, empowering individuals to make informed dietary choices and lead healthier lives. Ongoing research will refine our understanding of the profound impact nutrition has on our health, forming the basis of evidence-based nutritional recommendations and interventions

Question No. 2 Part b:-

Distinguish composting [illegible] management.

Answer

Composting	Incineration PROCESS	Pyrolysis
It is a biological process that uses microorganism (bacteria, fungi) to break down organic waste into nutrient-rich compost.	It is a thermal process that uses high Temperatures (800–1000°C) to convert waste into ash, gases and heat energy.	Pyrolysis is a thermal process that occurs in the absence of oxygen, converting organic materials into liquid and gaseous products
INPUT MATERIALS		
Primarily organic waste (food scraps, yard timing) can be composted.	All types of waste, including organic and inorganic materials, can be incinerated.	Various organic materials (plastic, rubber, biomass) can be subjected.
OUTPUT		
Produces compost, a valuable soil conditioner and fertilizer, beneficial for agricultural and gardening.	Produces ash (inorganic residues) heat energy, and gases (partly recoverable for energy). Ash needs proper disposal.	Yields bio-oil, syngas, and char. Bio-oil can be used as a fuel, syngas for energy, and char for various

Composting	Incineration	Pyrolysis
ENVIRONMENTAL IMPACT		
Low emissions and environmentally friendly promoting recycling of organic waste and reducing landfill	Can generate air pollutant (e.g CO_2, CO, NO_x) and require stingent emission control systems to minimize environmental impact.	Lower emission compared to incineration; bio-oil can be a renewable fuel source.
ENERGY RECOVERY		
Does not focus on energy recovery.	Focuses on energy recovery through the combustion process, generating heat energy.	Emphasizes energy recovery through the conversion of waste into valuable fuels.
SUSTAINABILITY		
Ideal for managing biodegradable waste and promoting a circular economy.	Suitable for waste reduction, energy recovery and handling non-recyclable waste	Suitable for converting a wide range of waste materials into valuable fuels.
Community Acceptance		
Generally well-accepted by communities	May face opposition due to concern about emissions and potential	Generally favourable

Question 2

Part(C):-

Role of kidney in Urine formation:

The kidney's role in urine formation includes several stages:-

Filteration :-

Blood is filtered in the glomerulus, allowing water, ions, and waste products to enter the renal tubules.

Reabsorption :-

Renal tubules reabsorbs essential substances (water, glucose, electrolytes) back into the bloodstream to prevent loss.

Secretion :-

Certain substances are actively transported from blood into a the tubular fluid for elimination or regulation.

Concentration :-

The loop of Henle helps in concentrating urine by reabsorbing water and creating a concentrated medullary interstitium.

Excretion :-

Urine, formed after filtration, reabsorption, and secretion, is collected in the renal pelvis and excreted through urethra.

Question No 4 Part (a)

Land Pollution:-

Land pollution is the contamination or degradation of the Earth's surface caused by human activities and natural phenomena. It includes the introduction of harmful substances or alteration of land composition, negatively impacting the environment and ecosystems.

Causes of land Pollution:-

* **Improper waste disposal:-**

According to The World Bank's What a waste 2.0 report "

World generates 2.01 billion tonnes of municpal waste annually, 33% of that not managed in safe manner. And global waste generation is expected to increase by 70% in 2050.

* **Industrial activities:-**

According to UNEP Global Environment outlook 7 Report, 2022

"Industrial activities are responsibiled for an estimated 30-40% of all land popullation

* **Urbanization**

Rapid urban growth leads to increased construction, deforestation and inadequate waste management, putting excessive pressure on the land and resulting in pollution and loss of nature.

Question 4 Part b):-

Main Goals of COP-27:-

The main goals of COP-27 (conference of the parties to the UNFCCC) include:

1) Enhancing global climate action by encouraging concrete emissions reductions.

2) Implementing the Paris Agreement and achieving its objectives.

3) Addressing climate finance and support for vulnerable nations.

4) Promoting adaptation and resilience to climate change.

5) Ensuring a just transition and sustainable development

6) Facilitating technology transfer and innovation.

7) Engaging stakeholders and raising public awareness.

8) Building capacity for effective climate response.

Question No. 4 Part(c):-

GIS:-

Geographic Information System (GIS) plays a crucial role in environmental science by providing powerful tools to capture, analyze, model and visualise spatial data related to the environment. Here are the key roles of GIS in environmental science

Key Role:-

* Analyzing and visualizing spatial environmental data, such as land use, vegetation and pollution sources

* Real-time monitoring and modeling to understand environmental patterns and trends

* Effective management and planning of natural resources for sustainability.

* Mapping and analyzing habits, biodiversity, and ecosystems for conversion efforts.

* Assesing climate change impacts and aiding disaster management through modeling and analysis.

General Science & Ability
Section II

Question 6 Part (a) :-

1) 10, 100, 200, 310, ---

pattern here seems to involve adding multiples of 90, 100, and 110 successively.

10 + 90 = 100

100 + 100 = 200

200 + 110 = 310

310 + 120 = 430

So answer is 430

2) 3, 7, 23, 95, ---

The pattern here is multiplied by natural no. starting from 2 and then adding natural no

(3 * 2) + 1 = 7

(7 x 3) + 2 = 23

(23 x 4) + 3 = 95

(95 x 5) + 4 = 479.

So answer is 479

Question 6 Part (b):-

Area = length x width

$l = 3x - y$

$w = 2x + y$

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

$A = 6x^2 + 3xy - 2xy - y^2$

$A = 6x^2 + xy - y^2$ ⟶ (Area)

Question 6 Part (c):-

As Nisha is 15 years older than Romi

$N = R + 15 \longrightarrow (1)$

5 years back, Nisha was 3-times as old as Romi

$(N - 5) = 3(R - 5)$

$N - 5 = 3R - 15$

$N = 3R - 15 + 5$

$N = 3R - 10 \longrightarrow (2)$

putting eq (1) in (2) we get

$R + 15 = 3R - 10$

$R - 3R = -10 - 15$

$-2R = -25$

$2R = 25$

$R = 13$

now for Nisha's age

$N = R + 15$

$N = 13 + 15$

$N = 28$

Nisha = 28 years

Romi = 15 years

Question No. 6 Part (d)

Calculating L.C.M of 210, 252 and 294

$210 = 2 \times 5 \times 3 \times 7$

$252 = 2 \times 2 \times 3 \times 3 \times 7$

$294 = 2 \times 3 \times 7 \times 7$

2	210
5	105
3	21
7	7
	1

~~L.C.M = 2x3x7x2x3x5x7~~

$L.C.M = 2 \times 3 \times 7$

$G.C.D = 42$

2	252
2	126
3	63

now

Oranges $\frac{210}{42} = 5$ cartons

Apples $\frac{252}{42} = 6$ cartons

Pears $\frac{294}{42} = 7$ cartons

So largest pair of carton is for pairs

Question 7 part (a):-

as clerk accidently raised the prices by 20% instead of lowering so tag is

$1 + 0.20 = 1.20$ times than original price

also price on tag Rs 80 was too high. so

$$1.20P = P + 80$$

now

$$1.20P - P = 80$$

$$0.20P = 80$$

$$P = \frac{80}{0.20}$$

$$P = \frac{\overset{4}{\cancel{80}}}{\underset{1}{\cancel{20}}} \times 100$$

$$P = 400$$

So original price was 400.