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(GSA) - Part - 11

(Q no. 2) (a) The statement that the doctors will start relying more on nutrition rather than drugs reflects a perspective that emphasizes the importance of nutrition in healthcare and suggest a shift towards more holistic and preventive approach to medicine. The idea seems somewhat idealistic but it does highlight some important points that are given below:-

Prevention vs. Cure:-

Importance of nutrition and highlighting the timeless "Prevention is better than cure" statement directly helps us understand the importance of nutrition in healthcare. By provision of sufficient nutrients to the body, one can keep themselves safe from many chronic diseases, such as obesity, diabetes, heart diseases etc. It can also lead to prevention of these diseases in the first place if healthy eating lifestyles are promoted.

Role of nutrition in health:-

Nutrition plays an important role in overall well-being since it provides the body with many essential nutrients. The deficiency of these nutrients can lead to many

health problems which can be avoided by use of the nutritionist approach.

Complementary approach:-

We don't necessarily have to think about nutrition and drug use in health as opposing forces or competing phenomas. They can both complement each other as well. Just as nutrition is important to prevent diseases and to strengthen the immune system, some drugs are also vital to save patients from terminal/non-terminal illnesses that may arise due to environmental or other inevitable factors.

While the statement suggests that nutrition will play the central role in healthcare, its important to recognize that pharmaceuticals will continue to be the focus when we talk about diseases that make use of the significant strides that drug therapies and other medicinal management systems have made.

(Q2)(b) Composting, incineration and pyrolysis are waste management techniques for different types of solids. All of these techniques have

their unique advantages, terms of procedure and environmental impacts. Each of these processes ② are discussed separately below:-

Composting	Incineration	Pyrolysis
→ It is a biological process that involves decomposition of solid waste.	→ A thermal treatment process that involves burning solid waste at high temperatures in controlled environment.	→ Thermal treatment process where waste is heated in the absence of oxygen, leading to breakdown.
→ Used for organic wastes such as foodscraps, yard waste & agricultural residue.	→ Includes treatment of municipal solid waste and other hazardous waste, etc.	→ Used for waste like plastic, rubber & certain hazardous materials.
→ It is an environmentally friendly and stable method and it has minimal environmental impacts.	→ It has environmental concerns such as air emissions (including pollutants and green house emission gases and the need for proper waste sorting.	→ Less environmentally ~~friendly~~ damaging than incineration and has some benefits as well, such as waste reduction, energy recovery.

In summary, composting is a biological process, incineration is heat treatment with oxygen and pyrolysis is heat treatment without oxygen. The choice of waste management methods depends on the type of waste, environmental factors and desired utilization outcome.

(Q2)(c):- Role of kidneys in Urine formation:-

Kidneys play a crucial role in the formation of urine as part of the excretory system. The steps involved in this. physiological process are :-

(i) Filtration:-
Blood from renal arteries enters the nephrons where it is filtered under pressure through a cluster of capillaries called glomerulus.

(ii) Reabsorption:-
Filtrate enters renal tubules where reabsorption begins. Selective transport of glucose, filtered water and other essentials is carried out back into the blood stream.

(iii) Secretion:-
Renal tubules actively transport toxins from blood stream to tubules. Body's pH is regulated and maintained here.

(iv) Concentration & dilution:-
Depending on body need or hydration status, loop of Henle produces urine that is either concentrated or diluted.

(v) Formation of Urine:-
These processes continue to modify the composition of the filtrate and it eventually enters the renal pelvis and flows to ureter and stays there until elimination.

In short, kidneys play a vital role in urine formation by filtering blood to remove waste products and excess substances. The formation of urine is a highly regulated and dynamic process that is essential for the establishment of homeostasis and elimination of metabolic waste from the body.

(Q2)(d)

N-type S.C	P-type S.C
→ majority charge carriers are electrons, with few holes or vacancy.	→ Majority charge carriers are holes o/r vacant electron positions.
→ Achieved by introducing impurity called donor impurity.	→ Achieved by introducing impurity called acceptor impurity.
→ Examples include P, As, Sb added to Ge or Si.	→ Examples include B, Al, Ga.

The interaction of N-type & P-type semiconductors is essential for operations of devices such as transistors and diodes. Semi-conductors serve as the foundation for electronic components such as IC's, etc. Therefore, the statement "Semi-conductors are brain of modern electronics" is a well-founded & apt observation.

(Section - II) :-

Qno. 6) (a) Series identification :-

    (i) 10, 100, 200, 310, ... -

The given series is a geometric series where the sum difference of each consecutive $\underset{\text{term}}{\text{is}}$ increasing by 10.

So, the next term would be $\boxed{430}$ and onwards.

(ii) 3, 7, 23, 95, _____

The series does not form any immediate series. However, the next term could be $\boxed{351}$ if we look at the ratios.

Qno. 6) (b) Perimeter of rectangle = $2(L + W)$

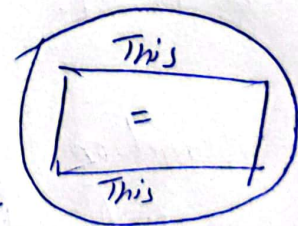Here, $L = 2x + y$, $W = 2x - 3$.

$114 = 2(2x + y + 2x - 3)$

$114 = 8x + 2y - 6$.

$8x + 2y = 120$, also $\Rightarrow$ $\begin{cases} 3x - y = 2x + y \\ 3x - 2y = y + y \\ x = 2y \\ x - 2y = 0 \end{cases}$

$\begin{array}{r} 8x + 2y = 120 \\ + \quad x - 2y = 0 \\ \hline 9x = 120 \end{array}$

$x = \dfrac{\cancel{120}^{40}}{\cancel{9}_3} = \dfrac{40}{3}$

Putting $x = \dfrac{40}{3}$ in $x - 2y = 0$

$\dfrac{40}{3} = 2y \implies y = \dfrac{40}{6}$

$x = \dfrac{40}{3}, \quad y = \dfrac{40}{6}$

Area $= L \times W = (2x + y)(2x - 3)$

$= 4x^2 - 6x + 2xy - 3y$

$= 4\left(\dfrac{40}{3}\right)^2 - 6\left(\dfrac{40}{3}\right) + 2\left(\dfrac{40}{3}\right)\left(\dfrac{40}{6}\right) - 3\left(\dfrac{40}{6}\right)$

$= 4\left(\dfrac{1600}{9}\right) - \dfrac{\overset{80}{\cancel{240}}}{\cancel{3}1} + \dfrac{80}{3}\left(\dfrac{\overset{20}{\cancel{40}}}{\cancel{6}3}\right) - \dfrac{120}{6}$

$= \dfrac{6400}{9} - 80 + \dfrac{1600}{9} - \dfrac{\cancel{120}\;\overset{20}{\cancel{6}}}{\cancel{6}31}$

$= \underline{\hspace{6cm}}$

C. *Let Nisha's present age $= x$

Nisha = Romi age + 15

5 years ago $\implies$ Nisha present $- 5 =$ Romi. p $- 5$

let Romi age $= y$

Nisha $= x$

$x = y + 15 \implies xy - y = 15$

$(x - 5) = 3(y + \cancel{5})$

$-\cancel{x} - 3y = 5$

$\cancel{x}\;_{+1}$

$2y = 10 \implies y = 5$

Therefore, Rumi is 5 years old and Nisha's present age is 15.