

Final-Mock

General Science and Ability

Part - II - A

Question # 2

a) Structure of ~~Big~~ the universe according to big bang theory

According to the Big bang theory, the universe began about 13.8 million years ago from a extremely hot, dense point called a singularity. It was hotter & denser. Then it suddenly exploded.

As the universe expanded and cooled;

- Subatomic particles formed first.
 - These combined to form atom, mainly hydrogen and helium.
 - Atoms formed stars, which grouped into galaxies
 - Galaxies formed clusters and supercluster.
- The universe still expanding till now.

b) urinary system and working of Nephron

Urinary System:

The urinary system removes waste products & excessive water from the body. It consists of:

- kidney
- ureters
- urinary bladder
- urethra

Working of Nephron:

Nephron is the functional unit of the kidney.

- 1) Filtration:- Blood is filtered in the glomerulus.
- 2) reabsorption:- useful substances (glucose, salt, water) are

reabsorbed in the renal tubules.

3) Secretion: waste substances are added to the tubule.

4) Excretion: Urine is formed and in the collecting duct.

c) Unbalanced Diet and its effect

unbalanced Diet;

A diet that lack one or more essential nutrients or contains them in excess. unbalanced Diet where Proportion are incorrect often leading to malnutrition.

Its effect,

- weak immune system
- Malnutrition
- obesity or under weight
- Poor growth and development
- Diseases like diabetes, anemia and heart problems.

a) Structure and Functions of Cell Components

1) Cell wall → structure: Rigid outer layer (Plants only), made of cellulose

→ Functions: ~~Protect~~ Protection, shape, support

2) Cell membrane → structure: Thin, Flexible, semi-permeable membrane

→ Functions: Controls movement of substances in & out

3) Mitochondria → structure: Double-membrane organelle with inner fold.

→ Functions: Produces energy (ATP); called the powerhouse of the cell.

Question #3

a) Reversal of Global warming

global warming can be reversed by ;

- Reducing fossil fuel use
- using renewable energy (solar, wind)
- Planting more trees (afforestation)
- Energy Conservation
- Reducing greenhouse gas emissions.
- ~~Recycling~~ Recycling and waste reduction.

b) Ceramics ;

Ceramics are organic, non-metallic materials made by heating clay or minerals at high temperatures.

Properties ;

- Hard and brittle
- Heat resistant
- Electrical insulators
- Chemically stable

Application ;

- crockery & tiles
- electrical insulator
- Bricks & pottery
- Engine and space components

c) working of optical Fibers & Mobile Phone

Optical Fiber: work on the principle of total internal reflection. Light signals travel through a thin glass fiber with minimal loss, allowing fast data transmission -

Mobile Phone: Convert voice into electrical signals, then into radio waves. These waves travel to a cell tower, which connects the call or data to another phone via a network.

c) 1) Food Additives

Substances added intentionally for technological purposes. Added to improve flavor, color or texture.
Ex: Food coloring, Flavor enhancers.

2) Food preservation

~~Aims~~ Aims to inhibit microbial growth and enzymatic activity. Substances that prevent food spoilage.
Ex: Salt, vinegar & Sodium benzoate.

3) Food Adulteration

Intentional debasing of food quality by adding inferior substances or removing valuable ingredients, mixing inferior or harmful substances with food.
Ex: Adding water to milk.

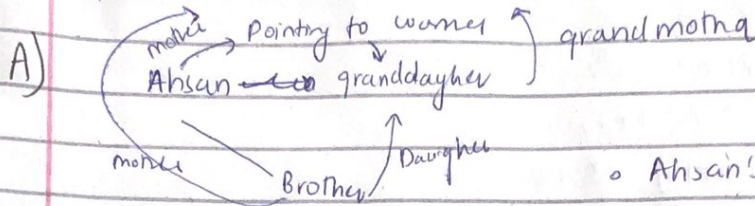
4) Food Contamination

~~Presence of harmful or inferior substances with~~
Presence of harmful microorganisms and chemicals in food.

Ex: Bacteria in unwashed food.

Part - B

Question #6



• Ahsan's brother

only daughter = Ahsan's

~~niece~~

• The niece is granddaughter of the woman

• ~~mother~~ woman's mother of Ahsan's brother.

Ans → Ahsan's mother

B) ratio of Length : breadth = 3 : 2

Speed = 12 km/h

time = 8 min

Speed convert to min

$$= \frac{12 \times 1000}{60} = 200 \text{ m/min}$$

Find perimeter:

$$2(L+B) =$$

$$\text{Distance} = S \times T = 200 \times 8 = 1600 \text{ m}$$

$$2(L+B) = 1600$$

$$L+B = \frac{1600}{2} = 800$$

Use ratio

$$L = 3x, B = 2x$$

$$L = 480 \text{ m}$$

$$3x + 2x = 800$$

$$B = 320 \text{ m}$$

$$5x = 800$$

$$x = \frac{800}{5} = 160$$

$$\text{Area} = L \times B = 480 \times 320 = 153600 \text{ m}^2$$

- c) • unit digit exceeds ten digit by 2
• Product of the number $\leq$ sum of digits

Let

$$\text{Ten digit} = x$$

$$\text{unit digit} = x + 2$$

$$\text{number} = 10x + (x + 2) = 11x + 2$$

$$\text{sum of digit} = x + (x + 2) = 2x + 2$$

D) LCM Problem

$$\text{LCM} = 48$$

$$\text{ratio} = 2:3$$

Let the numbers be

$$2x \text{ \& } 3x$$

Since 2 & 3 are prime numbers

$$2x \times 3x = 6x^2$$

$$6x^2 = 48$$

$$x^2 = 8 \quad x = 4$$

$$2x = 8, \quad 3x = 12$$

$$8 + 12 = 20$$

$$\text{Answer} = 20 //$$

Question #7

- a) 40% of a number = two-third of another number

Let

$$\text{First number} = x$$

$$\text{Second number} = y$$

$$40\% \text{ of } x = \frac{2}{3} y$$

$$\frac{40}{100} x = \frac{2}{3} y$$

$$\frac{2}{5} x = \frac{2}{3} y$$

$$\frac{x}{5} \neq \frac{y}{3}$$

$$\text{Cross } 3x = 5y$$

$$\text{Ratio } x:y = 5:3$$

b) Selling Price of 17 balls = Rs 720

Loss = Cost Price of 5 balls

Cost of 1 ball = Rs. x

Cost price of 17 balls = $17x$

$$\text{Loss} = 5x$$

Selling Price = Cost Price - Loss

$$720 = 17x - 5x$$

$$720 = 12x$$

$$\frac{720}{12} = x$$

$$x = 60$$

Cost price of one ball = Rs 60

c) man = 24 Years older than his son

man's age will be twice his son's age = 2 years

Let son's present age = x

man's present age = $x + 24$

son's age = $2 + 2$

man's age = $x + 26$

$$x + 2 = x + 26$$

$$x + 26 = 2(x + 2)$$

$$x + 26 = 2x + 4$$

$$x = 22$$

Present age of the son = 22 years

d) Rashid:

$$32 \text{ pages in 6 hours} = \frac{32}{6} = \frac{16}{3} \text{ pages/hour}$$

Kamran:

$$40 \text{ pages in 5 hours} = \frac{40}{5} = 8 \text{ pages/hour}$$

~~Combined~~

$$8 \frac{16}{3} + 8 = \frac{16 + 24}{3} = \frac{40}{3} \text{ pages/hour}$$

Total = 120 pages

$$\text{Time} = \frac{120}{40/3} = \frac{120 \times 3}{40} = \frac{33}{4}$$

$$\frac{33}{4} = 8.25 \text{ hours}$$

Time required = 8 hours 15 min