

Mock Exam
GK-I
General Science & Ability
Part II

- Include diagrams and illustrations
- Use clear and concise language
- Label diagrams and graphs clearly
- Provide detailed explanations and examples
- Double-check calculations for accuracy
- Organize answers with headings and subheadings

Difference between a eukaryotic and a prokaryotic cell.

Eukaryotic cell

Prokaryotic cell

→ Eukaryotic cells are multicellular

→ Prokaryotic cells are unicellular.

→ They have two membranes

→ They have one cell membrane.

→ Eukaryotic cell is an organism consisting of many cells.

→ Prokaryotic cell is a bacterium.

→ Most common components are mitochondria and endoplasmic Reticulum.

→ Most common components are Peptidoglycan and cytochrome.

→ Example: Animal plants fungi algae protozoans

→ Bacteria and archaea are two types of Prokaryotes.

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b. What is global warming? what is Kyoto protocol?

Global Warming:- the rise in average global temperature due to increase in concentration of green house gases in the atmosphere.

→ A green house gas is the gas that absorbs and emit radiant energy in the thermal infrared range and cause green house effect i.e. trapping the heat in the earth's atmosphere and increasing the global temperature.

→ Most common green house gases include chloroflouro carbons (CFCs), hydrofluorocarbon (HFCs), carbon dioxide (CO_2) and methane (CH_4) etc.

Kyoto Protocol :-

→ Kyoto protocol is an international environment treaty signed in Kyoto Japan in 1997 ^{11 december} and implemented on February 16, 2005 by ^{the} countries.

→ Its main aim was to bring green house gases to 5.2% below the level it had in 1990s.

→ It aim at reducing deforestation and

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promoting Reforestation, avoiding the use of fossil fuels and shifting to renewable green energy sources.

c. Write a detailed Note on GIS.

~~Geographic Information System~~ is a conceptualised framework designed to capture, evaluate ^{store, display} and analyze all forms of geographical & spatial data.

→ ~~use for storing analyzing and visualize data for geographic positions on earth surface~~

→ ~~Allows users to understand patterns and relationships in the data, such as by displaying multiple types of data on a single map.~~

→ Some of the main functions include
→ data management: stores geographic locations

→ visualization: displays geographic data on maps

→ Analysis: spatial relationships and patterns

→ Data creation and editing: create new data & edit existing data.

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d. describe Antioxidants

Anti Oxidants:

→ Anti oxidants are compounds that inhibits oxidation, a chemical reaction that can produce free radicals and chain reactions that may damage the cell of organisms.

→ There are two types of Anti oxidants

→ 1) water soluble Anti oxidants

water soluble anti-oxidants reacts with oxidants in cell cytosol and blood plasma.

- They are water soluble, thus they can't be stored in the body.

- Examples include Ascorbic Acid (VC), Glutathione, lipoic Acid and Uric Acid.

→ 2) Fat-soluble Anti-oxidants: are lipid soluble anti-oxidants. protects cell membrane from lipid peroxidation.

- They are fat soluble, thus they can be stored in the body.

- Example include Vitamin E, Carotenes, Coenzyme Q

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Q no. 3

2. Explain and draw structure of the Sun.

Structure of Sun:-

Upper Chromosphere
10,000°C

Lower Chromosphere
4000°C

Photosphere
6000°C

Corona
1000,000°C

④ Convection Zone

③ Tachocline

① Core ② Radioactive Zone

Structure of earth consists of 4 parts

- ① Core
- ② The radioactive zone
- ③ Tachocline
- ④ Convection Zone

→ Core is the region where Hydro atoms fuse through nuclear fusion reaction into Helium atoms, the radioactive zone transports the energy produced by radioactive diffusion and thermal conduction, tachocline is a thin layer around the radioactive zone and convection zone, uses convection to transfer energy.

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Layers of Sun's Atmosphere:

There are four layers of Sun atmosphere i.e. corona the outmost layer with surface temperature of about $10,00,000^{\circ}\text{C}$, then the upper chromosphere with $10,000^{\circ}\text{C}$ temperature, the lower chromosphere with 4000°C temperature and the inner most layer photosphere with about 6000°C surface temperature.

- Corona gives off highly charged particles that travel away from Sun called Solar winds.
- The upper atmosphere of Sun consist of sunspots, coronal holes and solar flares.
- Corona gives off

b. What is tsunami? How it is generated?
Give example of a few recent tsunamis.

Tsunami: is a series of extremely long waves caused by a large and sudden displacement of the ocean.

- Tsunamis are usually caused by earthquake, landslide or volcanic eruptions, below or near the ocean floor.
- This creates waves that radiate outward in all directions away from their source sometimes crossing entire ocean basins.

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→ one of the few tsunamis occurred recently
↳ Hunga Tonga - Hunga Ha'apai volcano
erupted on January 15, 2022 and
produced a strongest tsunami ever
recorded.

→ In 2011, in Japan a 9.0 magnitude earth-
quake generated a tsunami observed
throughout the Pacific region causing
tremendous local devastation.

c. Discuss Environmental Pollution? what
could be its harmful effects?
Give a few measures to curb it.

→ The environmental degradation due to the
addition of harmful substances is known
as environmental pollution.

→ There are three kinds of environmental
pollution i.e. land, water and air.

→ Land pollution includes littering, and
waste material from industries and
sewage that degrades land surface both
above and below ground level. Its harmful
effects include soil erosion deforestation
and barren land.

→ Water pollution includes, oil spillage from
larges, sewage waste dumped into oceans
and seas, causing threat to marine life
and spreading disease, and contaminating

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drinking water.

→ Air pollution includes the addition of harmful gases into air like green house gases that are not only contributing to global warming, smog, Acid Rains but cause health hazardous like respiratory problems and even cancer.

→ A few measures that could curb environment pollution are clean and green practices like shifting to green energy sources and sustainable practices, utilizing the international platforms like COP for bringing the world leaders to adhere to these sustainable green practices and policy reforms.

SECTION-II

Qno: 6

a. Solution

Let 3 digit no. be

$$\overset{\text{H}}{\text{#}} \overset{\text{T}}{\text{U}} \Rightarrow {}^{\text{no}} x + y + z = 15$$

Sum of 10th and unit digit is 12

$$y + z = 12 \rightarrow \textcircled{1}$$

Difference of unit digit from 10th digit is equal to 2

$$y - z = 2 \rightarrow \textcircled{2}$$

Since $x + y + z = 15$ and $y + z = 12$

$$\text{The } x + 12 = 15 \text{ or } x = 15 - 12 = 3, \boxed{x = 3}$$

Now using Elimination Method,

$$y + z = 12$$

$$+ y - z = 2$$

$$2y = 14$$

$$\boxed{y = 7}$$

put y in equ (1)

$$y + z = 12$$

$$z = 12 - y$$

$$= 12 - 7$$

$$\boxed{z = 5}$$

Ans = ?

b. Solution:

No. of persons = 18

Ratio of slices of = 2:3:4

each size

weight of each slice = 40gm

price of small pizza = ₹320

price and weight of total pizza = ?

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$$\text{Total slices would be } 2x + 3x + 4x = 18$$

$$9x = 18, x = 2$$

$$\text{Slices of small pizza} = 2x = 4$$

$$\text{" " medium pizza} = 3x = 6$$

$$\text{large " } = 4x = 8$$

$$\text{Total weight of pizza} = 18 \times 40 \text{ gm} \\ = 720 \text{ gm}$$

$$\text{Price of small pizza per slice} = \frac{320}{2} = 160 \text{ Rs}$$

$$\text{Now price of medium pizza} = 160 \times 3 \\ = 480 \text{ Rs}$$

$$\text{Price of large pizza} = 160 \times 4 \\ = 640 \text{ Rs}$$

$$\text{Total price} = 320 + 480 + 640 \\ = 1440 \text{ Rs}$$

c. solution

$$\text{Diameter of a circle} = d = 6 \text{ cm}$$

$$\text{Circumference} = 2\pi r = ?$$

$$\text{area of a circle} = ?$$

$$A = \pi r^2$$

$$\text{Radius } r = \frac{d}{2} = \frac{6}{2} = 3 \text{ cm}$$

$$\pi = 3.14$$

$$\text{Circumference} = 2(3.14)(3) \\ = 18.84 \text{ cm}$$

$$\text{Area of a circle} = \pi r^2$$

$$\text{circle} = (3.14)(3)^2 \\ = 28.26 \text{ cm}^2$$

R.N

$$\begin{array}{r} 3.14 \\ \times 3 \\ \hline 9.42 \end{array}$$

$$\begin{array}{r} 3.14 \\ \times 9 \\ \hline 28.26 \end{array}$$

$$\times 2$$

$$18.84$$

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d. Identif the missing

i- 13, 24, 46, 90, 178, 354

ii- 5, 6, 9, 14, 31, 30

P.W

13

13

26-2

24

24

46-2

046

46

92

92

90

90

180

0.92

178

356

3) 15

x 0.6

90

00 x

900

Q.No. 8 a.

Solution:

width of a rectangular room is = 60% of its length

length of classroom = 15 ft

60% of 15 ft = $15 \times 0.6 = 9$ ft

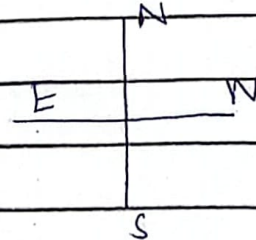
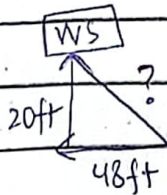
so, width of length classroom = 9 ft

Area of Rectangle = $L \times W$

$$= 15 \times 9$$

$$A = 135 \text{ ft}^2$$

b.



Right angle triangle

base = $b = 48$ ft

perpendicular = $p = 20$ ft

hypotenuse = ?

Apply pythagorus theorem

$$h^2 = p^2 + b^2$$

$$h^2 = (20)^2 + (48)^2$$

Taking square root

~~$\sqrt{a^2 + b^2}$~~

$$h^2 = p^2 + b^2$$

$$h^2 = (20)^2 + (48)^2 = 400 + 2304$$

$$\sqrt{h^2} = \sqrt{2704} = 52ft$$

If she (Veena) would have run straight there from where she started she would cover 52ft distance

c.

No. of students in the class = 40

Average marks = 52.15

marks of student mistaken 49 for 85

Average marks of student = $\frac{\text{Sum of all marks}}{\text{No. of students in the class}}$

No. of students in the class

Putting values, let sum of all marks be 'n'

$$52.15 = \frac{n - 49 + 85}{40}$$

$$52.15 \times 40 = n - 49 + 85$$

$$2086 = n - 49 + 85$$

$$2086 = n - 134$$

$$n = 2220$$

New Average marks of student = $\frac{n}{\text{Total no. of students}}$

Total no. of students

$$= \frac{2220}{40}$$

$$= 55.5$$

2704
352
376
336
169
R.W
40
100
2086
52.15
40
0000
208600
208600
(i) 85
49
134
2086
505
2220
40
2000
220

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d.

vegetable

People like pizza = 37

people like chicken pizza = 25

people like neither = 3

Total pizza people = 65

probability of people who like vegetable

pizza = $\frac{37}{65}$

Prob.^{of} people who likes chicken pizza = $\frac{25}{65}$

Prob. of people who like neither = $\frac{3}{65}$

Probability of chicken pizza lover = $\frac{25}{65}$

$$\frac{25}{65} = \frac{5}{13}$$