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Name : Muhammad Shahzaib  
LMS ID : 27925  
Roll no : 329-CSS24-NOA-ISB1-2528  
Batch : 329-CSS24-NOA-ISB1  
Campus : Islamabad Campus 1

## Section II

Good for math portion  
Insufficient length  
Insufficient headings  
Draw diagrams

### Question 6 (a)

Given data:

Votes of candidate A = 15,000

Votes of candidate B = 10,000

Votes of candidate C = 8000

Required data:

Percentage of the total votes of  
winning candidate

$$\begin{aligned} \text{Sum of total votes} &= A + B + C \\ &= 15000 + 10000 + 8000 = 33,000 \end{aligned}$$

finding the percentage of the total  
votes of winning candidate =

$$\frac{15000 \times 100}{33000}$$

$$\frac{15 \times 100}{33} = \frac{1500}{33} = 45.45\%$$

So, the percentage of ~~win~~ the total  
votes of winning candidate is;

45.45%



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### Question 6 (b)

Given data:

Ratio of angles of a triangle = 3:4:5

Required data:

Find each angle

Solution:

As we know that,

Total sum of Angles =  $180^\circ$

$$3:4:5 = 180^\circ$$

lets assume,

$$3x + 4x + 5x = 180^\circ \rightarrow \text{eq (1)}$$

$$12x = 180^\circ$$

$$x = 15$$

Now putting the values in eq (1)

$$3(15) + 4(15) + 5(15) = 180^\circ$$

$$45^\circ + 60^\circ + 75^\circ = 180^\circ$$

### Question 6 (c):

Given:

Combination of group = 4 boys 6 girls

Number of girls = 102

Required:

Number of boys = ?

Solution:

Total number of girls = 102

Each group consist of 6 girls

So, finding the number of groups

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$$= 102 \div 6 = 17$$

So, 17 groups would be formed

And,

Each group consist of four boys.

So,

$$17 \times 4 = 68$$

So,

Number of boys required = 68

**Question 6 (d):**

**Given:**

Ratio of Present ages of A and B = 6:7

Ratio after 5 years = 7:8

**Required:**

Present ages of A and B = ?

**Solution:**

Their present ages = 6:7

lets assume

$$6x+5 : 7x+5 = 7 : 8$$

$$\frac{6x+5}{7x+5} = \frac{7}{8}$$

Cross Multiplication, to solve

$$(6x+5) 8 = (7x+5) 7$$

$$48x + 40 = 49x + 35$$



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$$48x = 49x + 35 - 40$$

$$48x = 49x - 5$$

$$48x - 49x = -5$$

$$-x = -5 \quad (\text{Xing by } -1)$$

$$x = 5$$

So, the present age of

$$A = 6 \times 5 = 30$$

$$B = 7 \times 5 = 35$$

Question 8 (a):

Given:

Sum of three consecutive odd numbers = 273

Required:

Three odd numbers = ?

Solution:

Lets assume that three consecutive odd numbers are

$$x, x+2, x+4$$

As,

$$x + x + 2 + x + 4 = 273$$

$$3x + 6 = 273$$

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$$3x = 273 - 6$$

$$3x = 267$$

$$x = 267 \div 3$$

$$x = 89$$

So,

$$x = 89$$

$$x+2 = 89+2 = 91$$

$$x+4 = 89+4 = 93$$

So,

Three consecutive odd numbers are

89, 91, 93

Q8 (b)

(i) 4, 16, 36, 64, 100, 144

(ii) 30, 29, 27, ~~24~~, 20, 15

(iii) 1, 7, 15, 25, ~~37~~, 51

(iv) 0, 2, 6, 12, 20, 30, 42

(v) 48, 24, 72, ~~36~~, 108, ~~54~~

35<sup>x</sup>



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### Question 8 (c)

- ① ~~SHIRT~~ SHIRT
- ② GARDEN
- ③ STOMACH
- ④ LONDON
- ⑤ HOLIDAY

### Question 8 (d):

Solution:

Age of Sara =  $x$

Age of Sara's mother =  $6x$

Age of Sara's brother =  $2x$

After three years, their ages are

$$x + 3 + 6x + 3 + 2x + 3 = 72$$

$$9x + 9 = 72$$

$$9x = 72 - 9 = 63$$

$$x = \frac{63}{9} = 7$$

So,

Age of Sara = 7

Age of Sara's mother =  $7 \times 6 = 42$

Age of Sara's brother =  $7 \times 2 = 14$

$$7 + 42 + 14 = 72$$



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## Section - I

Question 2(a):

### Volcanic Eruption:

When hot lava or magma or sand and rocks erupt from the lower crust or upper mantle part of the earth is called volcanic eruption.

It is a geo-physical phenomenon mainly occurs after a series of earthquakes as it happened in Iceland.

Earthquake which occurred after movement of tectonic plates mainly leads to volcanic eruption as tectonic plates are present in the lower crust of the earth.

There are a number of types of volcanic eruption on the basis of its poisonousness. Magma, solid rocks along with gases come out from volcano with a very high temperature. In 1992, a volcanic eruption in Indonesia killed over 900 people which was the deadliest volcano ever in recorded history.



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## Question 2 (b):

### Big Bang Theory:

Big Bang Theory is a theoretical concept about the creation of universe. This concept was prevailed in the earlier 20<sup>th</sup> century which states that the universe was a mass of hot gases. Billions of years ago, a Bang occurred, and the universe expand to its present position.

This theory also states that the position of the universe is not static and it is expanding with the passage of time.

### Big Crunch Theory:

It is a theoretical scenario about the future of the universe. It states that one day the expansion process of the universe would stop and gravitational force would slow down and all the planets, stars and heavy bodies would come closer together and hence the universe would come to its original position before Big Bang.



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## Question 2 (c):

### Renewable Energy:

Renewable Energy is a form of energy which does not consume by itself like non-renewable energy. This form of energy is unlimited and can be reused again and again. Some of its sources are;

#### ① Solar Energy:

The energy comes from ~~the~~ sun in the form of light can be stored in photon cell batteries and then can be converted into electric energy. World has an unlimited capacity of using solar energy.

#### ② Wind Energy:

It is a form of energy which mainly present in coastal areas where wind blows every time. Turbines can be installed and then used as a source of energy.

#### ③ Hydel/Hydro-power:

It is the potential energy present in water due to its position. It can be used for running turbines which in turn produce electricity. The water can be used again and again for producing hydel energy.



④ Geo-thermal Energy:  
The amount of heat stored in the earth's surface can be used as a source of energy to produce electricity or heat

⑤ Bio-mass Energy:  
It is the energy that can be derived from organic substance like woods or animals waste.

### Question 2 (d):

#### Optical Fiber:

Optical fiber is a ~~small~~ thin and transparent cable that is installed to transmit electric signals in the form of light signals over long distances. It is a key technology in modern communication system. Optical fiber can be used for medical, communication and broadcasting purpose.

#### How it Works:

It transmit data ~~signals~~ using light signals. A transmitter converts electrical signals into light pulses which travel through the fiber core. A detector at receiving end converts the light signal back into electric signals for data receiving.



### Question 3(a):

#### Introduction:

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2023 was the hottest recorded year since the industrial age according to a report by Asian Development Bank.

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The limit set at Paris Climate Summit (COP 21) in 2016 of 1.5°C till 2050 is almost impossible to achieve. From November 30 to

December 12, delegates from over 190 countries gathered to discuss the issue of climate change. According to another report by World Economic Forum, climate related risks are the top risk for world in both short and long term.

#### Major Hurdles in Developing world:

Climate change is mainly caused by the human activities like fossil fuel burning, deforestation and ozone layer damage. Developing world blames the developed world for it as USA is the largest carbon emitter ever while China is the present largest carbon emitter. However, developed world countries deny these allegations and call for actions by developing world by themselves. The major hurdles for developing world are;



- ① Lack of finance and funding
- ② Bad governance
- ③ Lack of commitment and policy formation
- ④ Less international co-operation
- ⑤ No hardcore infrastructure and technology

### Efforts at COP28:

Loss and Damage fund was established at COP28 which was pledged by a number of countries of G-77 chaired by Pakistan. Along with that, climate investment plan in which the government of UAE would invest over 100 bn \$ for climate related projects. A new deal was signed which ask for shifting away from fossil fuels to renewable energy. It has been committed to 50% of the world energy would be transformed into renewable energy by 2050.

### Conclusion:

Climate change is the biggest concern for global world. A number of disastrous calamities occurred in every part of the globe. A strong commitment, policies and funding are required to tackle climate change on time. It would be impossible if it reached to tipping point.



Question 3 (b):

Balanced Diet:

Balanced diet is a diet that contain all necessary nutrients in the form of minerals, vitamins etc, which are essential for the growth of a body. A balanced diet leads to the balance development of body while imbalance diet leads to mal-nutrition. A balanced diet supports overall health, helps prevent nutrient deficiencies and other diseases. The need of balanced diet is essential for a healthy life. An average adult body requires about 2500 to 3000 calories a day.

Question 3 (c):

Machine Learning:

Machine Learning (ML) is a subset of AI that make computers enabled to learn from data and make prediction. It has revolutionized the world by doing a number of functions like speech recognition, translation, autonomous vehicle, fraud detection, etc. It is also used for making images or speeches. It is also used in health-care, environment and education.



### Question 4(d):

#### Random Access Memory: (RAM)

- Volatile memory for temporary storage
- Quickly accessible
- Need electricity (power)
- Used for running application, multi-tasking and storing temporary data.
- It is for reading and writing of the data.

#### Read-Only Memory: (ROM):

- Non-volatile and permanent data.
- Do not power
- It is reading only.
- It contain essential system instructions and software.