

**ANSWER THE FOLLOWING**

**1 x 8 = 8**

**1. The SI unit of temperature is**

- A] Kelvin                                      B] Celsius                                      C] Fahrenheit                                      D] Newton

**2. Which separation techniques will you apply for the separation of Butter from curd.**

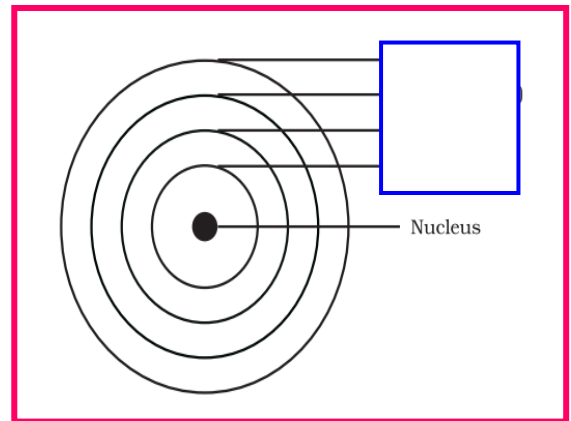
- A] centrifugation                                      B] evaporation                                      C] sublimation    D] distillation

**3. Among the following which is the Avogadro constant**

- A]  $6.022 \times 10^{23}$ .                                      B]  $60.22 \times 10^{23}$ .  
 C]  $602.2 \times 10^{23}$ .                                      D]  $6022 \times 10^{23}$ .

**4. In the given figure the correct arrangement of shell is**

- A] KLMN    B] LKMN  
 C] MLKN    D] KNML



**5. An isotope of cobalt is used in the treatment of**

- A] Cancer                                      B] AIDS                                      C] DENGUE                                      D] CHIKENGUNYA

**6. Blood has a fluid (liquid) matrix called**

- A] Plasma                                      B] epithelium                                      C] alveoli                                      D] mitochondria

**7. -----are warm – blooded animals with four – chambered hearts.**

- A] Mammals                                      B] Amphibians                                      C] Reptilians                                      D] Vertebrate

**8. If the velocity of an object changes from an initial value ‘u’ to the final value ‘v’ in time ‘t’**

**The acceleration ‘a’ is**

- A]  $a = \frac{v-u}{t}$                                       B]  $a = \frac{t-u}{v}$                                       C]  $a = \frac{s-u}{v}$                                       D]  $v = u + at$

**II. Answer the following:**

**1 x 8 = 8**

- 9. State first law of motion.**
- 10. What is the accepted value of [Gravitation] G .**
- 11. What is gravity?**
- 12. Define Power.**
- 13. What is the audible range of sound in human beings.**
- 14. How do we kill microbes?**
- 15. How do we get rain?**
- 16. How many nutrients are essential for crops ?**

III. Answer the following:

2 x 8 = 16

17. Which of the following is matter?

Chair, air, love smell, hate, almonds, thought, cold, cold – drink smell of perfume.

18. Convert the following temperature to Celsius scale : [a] 300K [b] 573K.

19. Differentiate between homogeneous mixture and heterogeneous mixture.

20. Explain [a] Colloid [a] suspension

21. How many atoms are present in [i] H<sub>2</sub>S molecule [ii] PO<sub>4</sub><sup>3-</sup>?

22. Draw the sketch of Bohr's model of an atom with three shells.

23. Which organelle is known as the powerhouse of the cell? Why?

24. What is the role of epidermis in plants?

Answer the following :

25. Draw a labelled diagram of a neuron.

26. How does gymnosperms and angiosperms differ from each other.

3 x 9 = 27

27. A stone is thrown in a vertically upward direction with a velocity of 5 ms<sup>-1</sup> of the acceleration of the stone. Differentiating its motion is 10 ms<sup>-1</sup> in the downward direction what will be the height attained by the stone and how much time will it take to reach there?

28. An automobile vehicle has a mass of 1500 kg. What must be the force between the vehicle and road if the vehicle is to be stopped with a negative acceleration of 1.7 m s<sup>-2</sup>?

29. [a] State the universal law of gravitation [b] what do you mean by buoyancy?

[c] What is the acceleration of free fall?

30. An object of mass 40kg is raised to a height of 5m above the ground. What is the potential energy? If the object is allowed to fall, Find its kinetic energy when it is half-way down.

31. What are wavelength, frequency and amplitude of a sound wave?

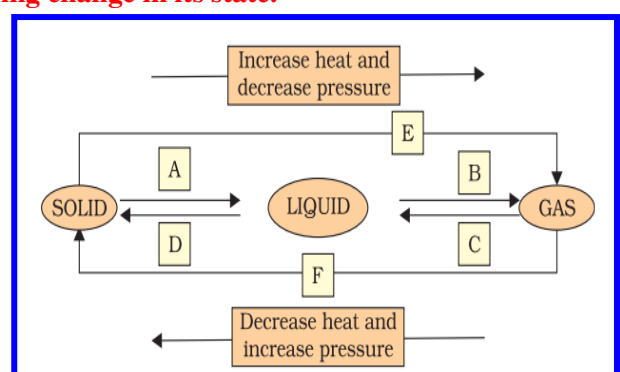
How are wavelength and frequency of a sound wave related to speed?

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Out [a] that the baby is sick [b] What is the sickness?

33. Write a note on how forests influence the quality of our air, soil and water resources.

34. Name A, B, C, D, E and F in the following diagram showing change in its state.



35.[a] How do porifera animals differ from coelenterate animals?

[b] What are the differences between amphibians and reptiles ?

36. Write the electronic configuration of any one pair of isotopes and isobars.

37. Cite an experiment to show that sound needs a material medium for its propagation. OR

4 x 4 = 16

37 [b] Explain How the human ear works.

38. Draw a neat diagram of Plant Cell OR Animal cell and write the function of

1 x 5 = 5

[a] Cytoplasm [b] Chloroplast [c] Lysosome

## KEY ANSWERS

1	2	3	4	5	6	7	8
A	A	A	A	A	A	A	A

### 9. State first law of motion.

An object continues to be in a state of rest or uniform motion along a straight line unless acted upon by an unbalanced force.

### 10. What is the accepted value of [Gravitation] G .

$6.673 \times 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$ .

### 11. What is gravity?

The force of gravitation due to the earth is called.

Force of gravitation due to the earth is called gravity.

### 12. Define Power.

Power is defined as the rate of doing work . The SI unit of power is watt.  $1 \text{ W} = 1 \text{ J/s}$ .

### 13. What is the audible range of sound in human beings.

The audible range of sound in human beings is 20 Hz to 20000 Hz

### 14. How do we kill microbes?

One way is to use medicines that kill microbes.

### 15. How do we get rain?

Evaporation of water from water bodies and subsequent condensation given us rain.

### 16. How many nutrients are essential for crops ?

There are thirteen nutrients essential for crops. Of these 6 are required macro nutrients and 7 are Micro – nutrients.

### III. Answer the following:

$2 \times 8 = 16$

### 17. Which of the following are matters?

Chair, air, love smell, hate, almonds, thought, cold, cold – drink smell of perfume.

Ans: Chair, air, almonds, cold –drink.

### 18. Convert the following temperature to Celsius scale :[a] 300K [b] 573K.

Ans: 300 K  $C^\circ = K^\circ - 273 = 300 - 273 = 27^\circ\text{C}$

573 K  $C^\circ = K^\circ - 273 = 573 - 273 = 300^\circ\text{C}$

### 19. Differentiate between homogeneous mixture and heterogeneous mixture

Sl. No	Homogeneous mixture	Heterogeneous mixture
1	No physical detectable boundary	Physical separation is possible
2	Particles are mixture and produces Monophasic	Produces biphasic

**20. Explain [a] Colloid [a] suspension**

**Colloid :** Homogeneous solutions in which solute particles are bigger than true solution Ex:-ink, blood , milk

**Suspension:** Heterogeneous mixture in which the solute particles are big enough to settle down. Example

Paints, Dosa batter

**21. How many atoms are present in [i] H<sub>2</sub>S molecule [ii] PO<sub>4</sub><sup>3-</sup> ion ?**

H<sub>2</sub>S molecule = H → 2 atoms      S → 1 atom

PO<sub>4</sub><sup>3-</sup> ion = P → 1 atom    O → 4 atom

**22. Draw the sketch of Bohr's model of an atom with three shells.**

**23. Which organelle is known as the powerhouse of the cell ? Why ?**

**Ans:** Mitochondria. The energy required for various chemical

Activities needed for life is released by it in the form of ATP [ Adenosine triphosphate ]

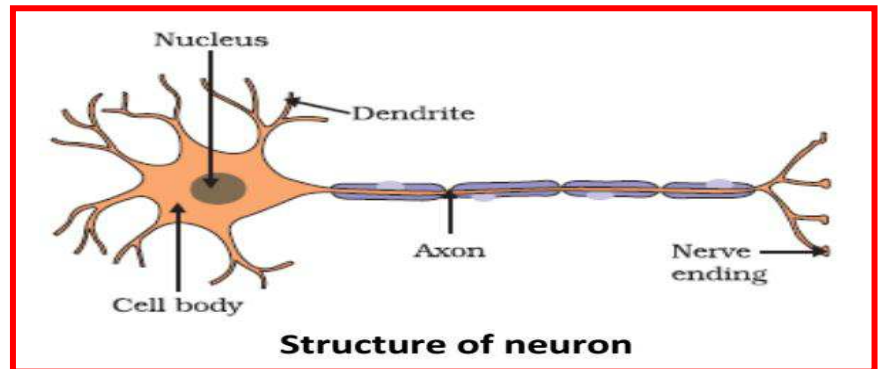
**24. What is the role of epidermis in plants ?**

**Ans:** [a] protects all parts of the plant body.

[b] Water resistance due to waxy substance.

[c] Protection against loss of water.

**25. Draw a labelled diagram of a neuron.**



**26. How does gymnosperms and angiosperms differ from each other**

Sl no	Gymnosperms	Angiosperms
1	Naked seed	Covered seed
2	Evergreen and woody	Flowering plants
3	Perennial Ex:- Pinus deodar	Monocot or dicot Ex:- Pulses , grain

**27. A stone is thrown in a vertically upward direction with a velocity of 5 ms<sup>-1</sup> of the acceleration**

**Of the stone . Differentiating its motion is 10 ms<sup>-1</sup> in the downward direction what will be the height**

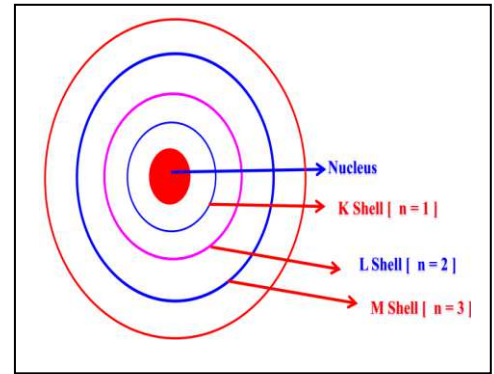
**Attained by the stone and how much time will it make to reach there ?**

**Ans:**  $V^2 = u^2 + 2as$

$$\therefore S = \frac{v^2 - u^2}{2a} = \frac{0 - (5)^2}{2 \times (-10)}$$

$$= 1.25M$$

$$V = U + at$$



$$t = \frac{v-u}{a} = \frac{0-5}{2 \times (-10)} = 0.5 \text{ sec.}$$

**28. An automobile vehicle has a mass of 1500 kg. What must be the force between the vehicle and road**

**If the vehicle is to be stopped with a negative acceleration of  $1.7 \text{ m s}^{-2}$  ?**

Ans:  $a = 1.7 \text{ ms}^{-2}$     $m = 1500\text{kg}$

$$F = ma$$

$$= 1500 \times 1.7$$

$$= 1500 \times \frac{17}{10} \text{ [ to remove decimal place we add 10 to the denominator ]}$$

$$= 150 \times 17$$

$$= 2550 \text{ Newton.}$$

**29. [a] State the universal law of gravitation [b] what do you mean by buoyancy ?**

**[c] What is the acceleration of free fall?**

[a] Every object in the universe attracts every other object with a force which is proportional to the Product of their masses and inversely proportional to the square of the distance between them.

$$\therefore F = \frac{GMm}{d^2}$$

[b] The property of liquid exerts upward force to push the objects towards the surface .

[c] The body change its velocity in unit time during its free fall .  $g = 9.8 \text{ ms}^{-2}$  .

**30. An object of mass 40kg is raised to a height of 5m above the ground. What is the potential energy?**

**If the object is allowed to fall, Find its kinetic energy when it is half – way down.**

Ans:  $V^2 - U^2 = 2gh$

$$V^2 = 2 \times (10) \times (2.5)$$

$$V^2 = 50 \text{ m/s}^{-2} .$$

$$V = \pm \sqrt{50}$$

$$\text{K. E.} = \frac{1}{2} mv^2 .$$

$$= \frac{1}{2} \times 40 \times 50$$

$$= 1000 \text{ J}$$

**31. What are wavelength , frequency and amplitude of a sound wave ?**

**How are wavelength and frequency of a sound wave related to speed ?**

Ans : Wavelength : Distance between two consecutive compressions or rarefactions, denoted by  $\lambda$

Unit is metre.

Frequency: Number of oscillations per unit time, it's unit is Hertz ( Hz ) denoted by ' f '

**Amplitude:** The magnitude of maximum displacement in the medium from mean position.

$$[b] \text{ Speed} = \frac{\text{Distance}}{\text{time}} = \frac{\lambda}{T} \quad [v = n \lambda]$$

Speed = wavelength x frequency

**32. A baby is not able to tell her/his caretakers that she/ he is sick. What would help us to find**

**Out [a] that the baby is sick [b] What is the sickness ?**

**Ans :** (a) Active face and movements

(b) Crying /Screaming

(c) Rashes on skin

(d) Drowsiness

(e) temperature

(f) loose motions and symptoms help the sickness of the body.

**33. Write a note on how forests influence the quality of our air, soil and water resources.**

**Ans:** [a] Photosynthesis

[b] Transportation.

[c] food chain and food wells

[d] Precipitation.

[e] Absorption of pollutants

**34. Name A , B , C , D, E and F in the following**

**diagram showing change in its state.**

[a] Melting point

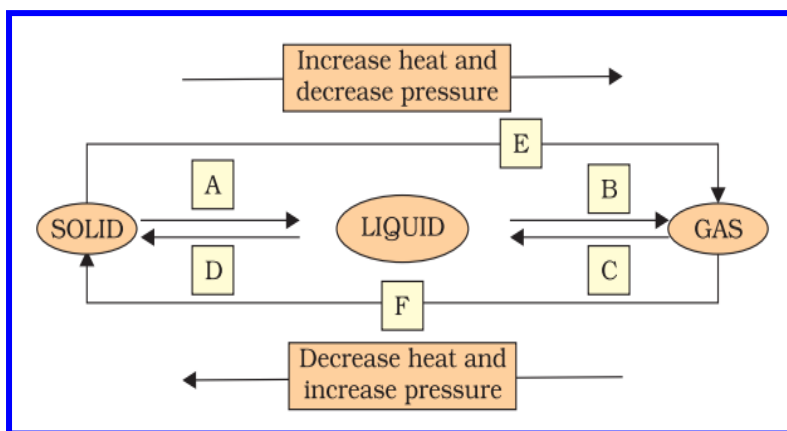
[b] Vapourisation

[c] Condensation

[d] Aolisification

[e] Sublimation.

[f] Sublimation.



**35.[a] How do porifera animals differ from coelenterate animals?**

**[b] What are the differences between amphibians and reptiles ?**

[a]

Sl No	Proifera	Coelenterate
1	Cellular level of organisation	Tissue level of organisation.
2	No division of labour.	Division of labour is seen.
3	Do not have coelom	Have coelom

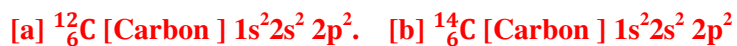
[b]

Sl No	Amphibians	Reptiles
1	Levels both in land and water	Can live in water but need To come out for oxygen.
2	Can jump	Move by crawling
3	Skin is moist and soft.	Skin is hardened.

**36. Write the electronic configuration of any one pair of isotopes and isobars.**

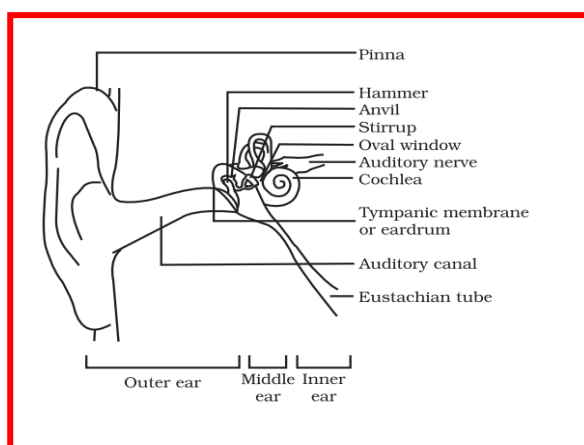
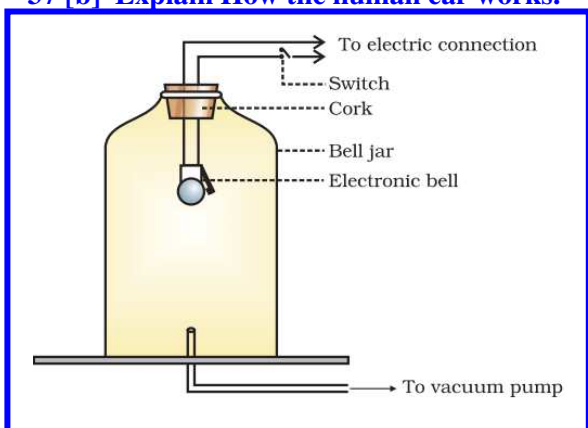
Isotopes are variants of a particular chemical element which differ in neutron number, and consequently in nucleon number. All isotopes of a given element have the same number of protons but different numbers of neutrons in each atom.

*Isobars* are atoms or nuclides of separate chemical elements having the same number of nucleons (protons+ neutrons). ... Atoms of chemical elements having same atomic mass but a different atomic number are called *Isobars*. The sum of the number of protons and neutrons together form the ...



**37. Cite an experiment to show that sound needs a material medium for its propagation. OR**

**37 [b] Explain How the human ear works.**



- The electric bell is suspended inside an air tight glass jar which is connected to a vacuum pump. Working : (i) When we press the switch, we will be able to hear the bell. (ii) When the air in the jar is pumped out gradually, the sound becomes feeble although the same amount of current is flowing through the bell. (iii) When the air is removed completely, we will not be able to hear the sound of the bell. Conclusion : This experiment shows that sound requires a medium for its propagation.

**Explain How the human ear works.**

Here is how the ear works normally:

The sound waves are gathered by the outer ear and sent down the ear canal to the eardrum. The sound waves cause the eardrum to vibrate, which sets the three tiny bones in the middle ear into motion. The motion of the bones causes the fluid in the inner ear or cochlea to move.

**38. Draw a neat diagram of Plant Cell OR Animal cell and write the function of**

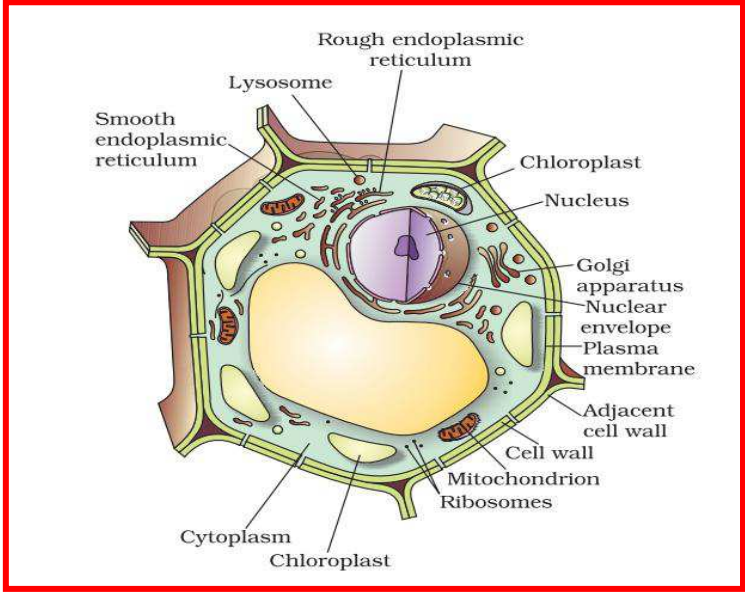
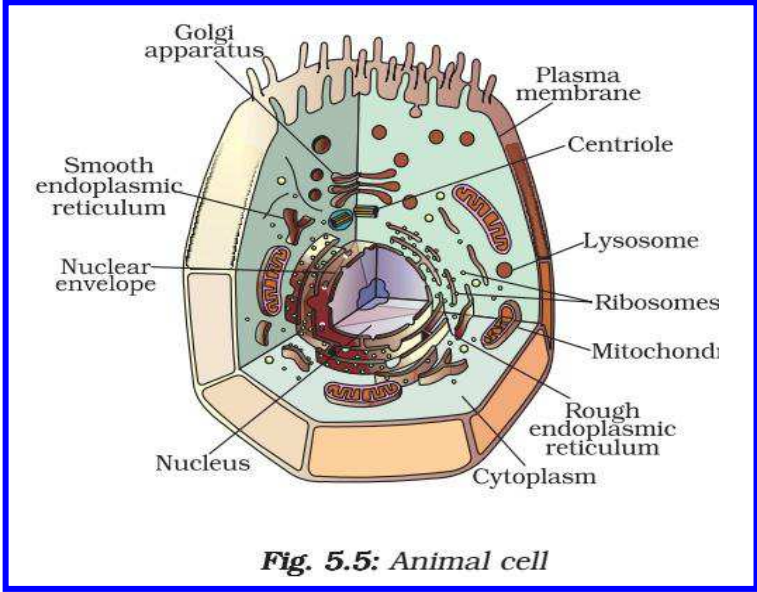
- [a] Cytoplasm [b] Chloroplast [c] Lysosome

Cytoplasm is a thick solution that fills each cell and is enclosed by the cell membrane. It is mainly composed of water, salts, and proteins. In eukaryotic cells, the cytoplasm includes all of the material inside the cell and outside of the nucleus.

**[b] Chloroplast:** Chloroplasts work to convert light energy of the Sun into sugars that can be used by cells. The entire process is called photosynthesis and it all depends on the little green chlorophyll molecules in each chloroplast. Plants are the basis of all life on Earth.

**[c] Lysosome:** One of the key organelles involved in digestion and waste removal is the lysosome. Lysosomes are organelles that contain digestive enzymes. They digest excess or worn out organelles, food particles, and engulfed viruses or bacteria. Lysosomes are like the stomach of the cell.





Subject : SCIENCE

9<sup>TH</sup> STANDARD

Code: 83 – E

Time: 2.30 Hour

Marks: 80

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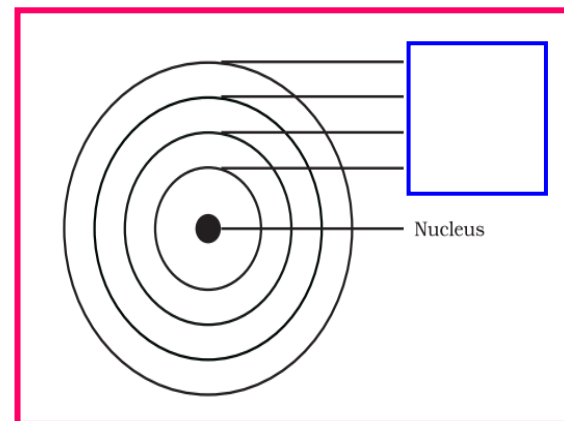
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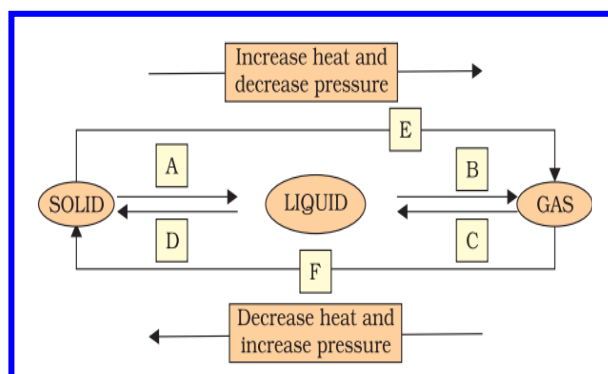
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