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CLASS IX   **Term -II (2021-22)**   <u>**Science (086)**</u>

Max. Marks:40   **Time allowed: 2 hours**

<u>**General Instructions:**</u>
   i)   All questions are compulsory.
   ii) The question paper has **three sections** and **15 questions**. All Sections are compulsory.
   iii) Section–A has 7 questions of 2 marks each; Section–B has 6 questions of 3 marks each; and Section–C has 2 case-based questions of 4 marks each.
   iv) Internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

<u>SECTION - A</u>

Q.1. Calculate the number of moles in 12.044×10^{23} helium atoms.

Q.2. Use the information to answer the following questions:

Elements	A	B	C	D	E	F	G
No. of Protons	7	8	10	12	15	18	19

 (a) Which of these elements have only four filled electron shells and a complete outermost shell?

 (b) Which of these elements have 5 valence electrons and 6 valence electrons?

OR

   An oxide of an element A has a formula $A_2 O_3$.

   (a) How many electrons are there in the outermost shell of an atom of element A?

   (b) Write down the formula for the chloride of A.

Q.3. (a) An element has two electrons in K-shell. Identify the element.

   (b) Draw the electronic structures of sodium (proton number = 11)

Q.4.The atom of an element has 9 protons, 9 electrons and 10 neutrons.

   (a) What is the atomic number of the element?

   (b) Name the element and give its electronic configuration.

Q.5. (a) Can a body have mass but no weight?

   (b) Write the SI unit of weight.

Q.6. An object of mass 12 kg is at a certain height above the ground. If the potential energy
   of the object is 480 J, find the height at which the object is with respect to the ground.
   Given, $g = 10$ ms^{-2}.

OR

   The kinetic energy of an object of mass, m moving with a velocity of 5 m/s is 25 J. What

   will be its kinetic energy when its velocity is doubled?

Q.7. A disease is an abnormal condition that negatively affects the structure or function of all
   or part of an organism.

   a). Do all diseases spread to people coming in contact with a sick person? Give
   reason.

   b). How would a person develop those diseases that don't spread by contact with a
   sick person?

OR
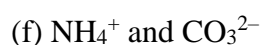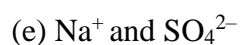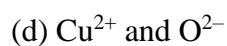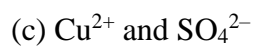
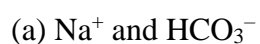   What are the symptoms shown by a person if

   a) lungs get infected?

   b) Stomach is infected?

SECTION – B

Q.8. Complete the following table.

Element	Atomic Number	Number of			Mass Number
		Protons	Electrons	Neutrons	
P	17	-	-	18	-
Q	-	-	14	14	-
R	-	9	-	-	19

Q.9.Write the formula and names of compounds formed by

(a) Na^+ and HCO_3^-

(b) K^+ and CO_3^{2-}

(c) Cu^{2+} and SO_4^{2-}

(d) Cu^{2+} and O^{2-}

(e) Na^+ and SO_4^{2-}

(f) NH_4^+ and CO_3^{2-}

Q.10. (a) Define power.

(b) Define SI unit of power.

(c) A lamp consumes 1000J electric energy in 10s. What is its power?

or

Define Kinetic energy. Give its SI units. Derive an expression for kinetic energy of a body.

Q.11. (a) What do you mean by free fall?

(b) Define acceleration due to gravity. Derive an expression for acceleration due to gravity on the surface of earth.

Q.12. Various modes of transmission through with an infectious disease spread from infected person healthy person are shown in figure given below. Give example of diseases transmitted through these modes (One example of each mode)
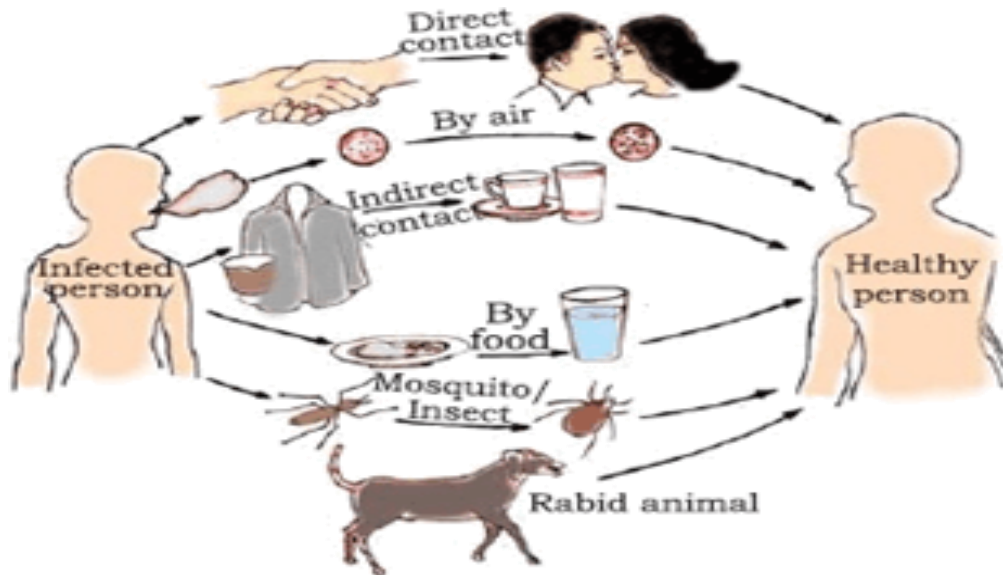
Q.13. A pathogen is an organism that causes disease, these microbes only cause a problem if your immune system is weakened. The most common types of pathogens are: viruses, bacteria, fungi, protozoa and parasites. Write down two bacterial and two protozoan diseases.

OR

There are many possible areas, organs or tissues in organisms body, where microbes can enter and stay. Different species of microbes appear to have evolved to move to different parts of body. Mention the name of disease as per statement given below:

 (a) If microbes enter from air and affect lungs causing cough and breathlessness.
 (b) If microbes enter through mosquito bite, first goes to liver and then to RBCs.
 (c) If virus goes to immune system and damage it.

SECTION-C

This section has 02 case-based questions (14 and 15). Each case is followed by 3 questions (a, b, c). Parts a, and b are compulsory. However, an internal choice has been provided in part c.

Q.14.Read the passage given below and answer the following questions from i to iv. The table shows the number of sub-atomic particles in arbitrary elements, A to H.

Atoms	Number of protons	Number of electrons	Number of neutrons
A	1	1	0
B	3	3	4
C	4	4	6
D	5	5	5
E	6	6	6
F	6	6	7
G	9	9	10
H	9	9	11

a. Which pair from the table is/are isotopes?
b. Which of the given Atoms in table will attains noble gas configuration by gaining an electron?
c. The atom _____ has nucleon number 13 and atom _____ has valency 3.

OR

The atom _____ has nucleon numbers 10 and atom _____ has a valency 2.

Q.15. In physics, work is the energy transferred to or from an object via the application of force along with a displacement. In its simplest form, it is often represented as the product of force and displacement. A force is said to do positive work if (when applied) it has a component in the direction of the displacement of the point of application. A force does negative work if it has a component opposite to the direction of the displacement at the point of application of the force.
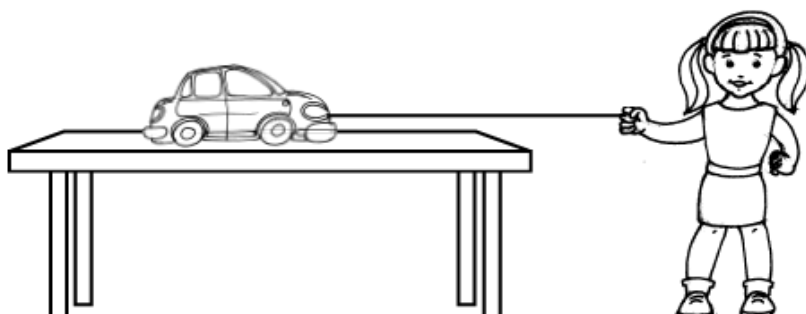
(a) A person holds luggage over his head for 30 minutes and gets tired. Has he done some work or not? Justify your answer.

(b) Define 1J of work.

(c) Certain force acting on a 20 kg mass changes its velocity from 5 m/s to 2 m/s. Calculate the work done by the force.

OR

A porter lifts a luggage of 15kg from the ground and puts it on his head 1.5 m above the ground. Calculate the work done by him on the luggage.