# Science (Theory)
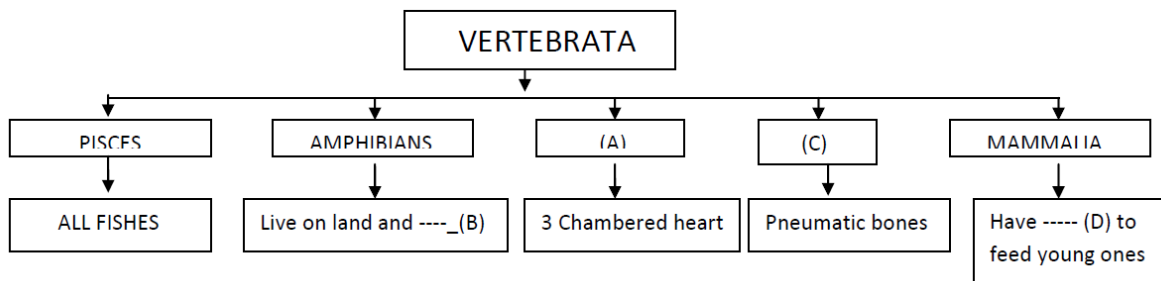# Summative assessment-2
# Class- IX

| S.No. | CHAPTER | VSA | SA-I | SA-II | LA | MCQ | TOTAL |
|---|---|---|---|---|---|---|---|
| 1 | Atoms and molecule | | 2(1) | 6(2) | | | 8(3) |
| 2 | Structure of Atom | 1(1) | | 3(1) | 5(1) | | 9(3) |
| 3 | Diversity in living organisms | | 2(1) | 6(2) | | 6(6) | 14(9) |
| 4 | Why do we fall ill | | | 6(2) | | | 6(2) |
| 5 | Natural resources | 1(1) | 2(1) | 3(1) | 5(1) | | 11(4) |
| 6 | Work and energy | 1(1) | | 6(2) | 5(1) | | 12(4) |
| 7 | Sound | | | 6(2) | 5(1) | 6(6) | 17(9) |
| 8 | Gravitation | | 2(1) | | 5(1) | 6(6) | 13(8) |
| | TOTAL | 3(3) | 8(4) | 36(12) | 25(5) | 18(18) | 90(42) |

# SECTION - A

1.      Which form of energy will a body possess placed at the top of hill?
2.      In which layer of the atmosphere ozone layer is located?
3.      If Z=3,What would be the valency of element? Write the name of element.

4.      Calculate the mass of 1 molecule of Nitrogen gas.
5.      Complete the following chart-

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                              ┌─────────────┐
                              │ VERTEBRATA  │
                              └─────────────┘
                                     │
     ┌──────────┬──────────────┬─────┴──────┬──────────┬──────────────┐
     ▼          ▼              ▼            ▼          ▼
 ┌────────┐ ┌──────────┐ ┌──────────┐ ┌────────┐ ┌──────────┐
 │ PISCES │ │AMPHIBIANS│ │   (A)    │ │  (C)   │ │ MAMMALIA │
 └────────┘ └──────────┘ └──────────┘ └────────┘ └──────────┘
     │          │              │            │          │
     ▼          ▼              ▼            ▼          ▼
┌──────────┐┌──────────────┐┌────────────┐┌──────────────┐┌──────────────┐
│ALL FISHES││Live on land  ││3 Chambered ││Pneumatic bones││Have ----- (D) to│
│          ││and ----_(B)  ││heart       ││              ││feed young ones │
└──────────┘└──────────────┘└────────────┘└──────────────┘└──────────────┘
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6.      State two causes and two effects of depletion of ozone layer.
7.      Relative density of silver is 10.8 ,The density of water is $10^3$ kg/m³. What is density of silver in S.I. unit?
8.      Give reasons-
    a.  Which divison among plants have the simplest organisms?
    b.  How do Gymnosperms and Angiosperms differ from each other?
9.      A)  Why a person suffering once from small pox cannot suffer from it again?
    B)   Name one disease associated with the attack of microbe on the lungs.
10.     A child hears an echo from a cliff in 10 sec after the sound from an animal is produced. Calculate the distance between the cliff and the child. ( take velocity of sound as 340 m/s)
11.     A)   Draw a diagram showing graphical representation of low pitch and high pitch sound.
    B)    Write any 2 applications of SONAR.
12.     People often bemoan that quality of air has gone down since their childhood.
    a)  How is quality of air affectd?
    b)  How does this quality affect us and other life forms?
13.     A)   Write 2 differences between acute and chronic diseases.
    B)   Give one example of each.
14.     Identify the phylum of the following 2 organisms and write 2 characteristic feature of each-
                        (a)                                         (b)

15.        A)    Why are the shells in which electrons revolve called energy shells?
    B)    Name the shells.
    C)    How many electrons can be there in M shell?


16.        A)    Calculate the molar mass of $CH_3COOH$. ( Atomic mass of C= 12 u, H=1 u, O=16 u )
    B)    Write the molecular formula for
        i.    Aluminium chloride.
        ii.    Ammonium nitrate.
17.        A)    Define power.
    B)    A body of mass 45 Kg climbs up 20 steps in 20 sec if each step is 25 cm high, calculate the power used in climbing. Take $g = 10m/s^2$.
18.        Identify the energy transformation in the following- Hydroelectric power, explosion of cracker, And oscillating pendulum.
19.        A)    What mass of sodium sulphate will react with 5.22 g of barium chloride to produce 6.10 g of 3sodium chloride and 2.80 g of barium sulphate?
    B)    On the basis of which law did you calculate your answer?
20.        Explain an activity with labeled diagram that sound needs material medium for propagation.
                        OR
    Explain working of human ear with the help of well labelled diagram.
21.        A)    What are biogeochemical cyles?
    B)    Draw a labelled diagram of nitrogen cycle.
                    OR
    A)    What is green house effect?
    B)    Draw a well labeled diagram of carbon cycle.



22.        A)    On which principle lactometer and hydrometer are based?
    B)    A bucket of water is easily lifted as long as it is in water. Why?
    C)    Following forces act on  body immersed in a liquid.
        a.    Name the forces
        b.    What happens when A is greater than B.
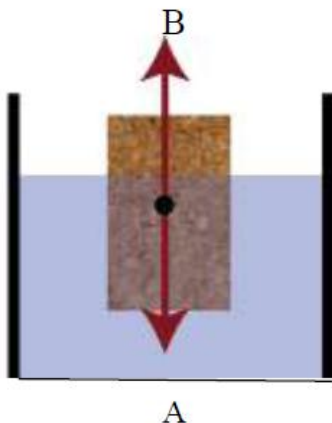


OR

A) Give difference between thrust and pressure.

B) Why does an object float or sink when placed on the surface of water?

C) What do you mean by Buoyancy.

23.     A)   Derive an expression for kinetic energy of a moving body.

B) Name the type of energy possessed by
   i.   Flowing water
   ii.  Stretched rubber band

D) A car weighing 2000 Kg is accelerated from rest and covers a distance of 40 m in 6 sec. calculate the work done by the car.

<div align="center">OR</div>

A)   Drive an expression for Potential energy of a body.

B)   When do you say that work is done?

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

24.     From the given table answer the following-

| ELEMENT | MASS NUMBER | ATOMIC NUMBER |
|---------|-------------|---------------|
| A | 11 | 5 |
| B | 19 | 9 |
| C | 3 | 2 |
| D | 23 | 11 |
| E | 9 | 4 |

a)   How many electrons are present in E?

b)   Which is an inert gas? Why?

c)   Which atom will form a negatively charged ion?

d)   Which element has 12 neutrons? Why?

e)   Which atom will form a cation with one positive charge.

<div align="center">OR</div>

A)Which postulate of dalton's atomic theory is the result of Law of conservation of mass?

B)Why is it not possible to see an atom with naked eyes?

C)Write the symbols for following elements:
   Sodium,Zinc,Lead,Chlorine.

# SECTION- B
## Multiple choice questions  ( 1 MARK EACH)

25.        Jointed appandages are characteristic feature of :
        a. Cockroach

        b. Earthworm
        c. Bonyfish
        d. Pigeon

26.       The level of water in measuring cylinder before and after immersing a solid of mass 1.5 g has risen from point A to B as shown below. The density of the solid object would be:
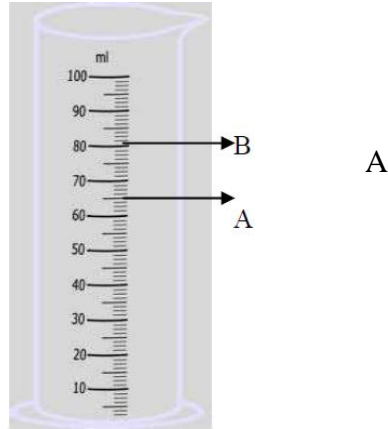


    a. 1g/ cc        b. 1.5 g/cc        c. 2g/cc        d. 0.75g/cc

27.       If the reflected and incident sound are at an angle of 90 degrees with each other, the incident angle should be:
        a. 60 degrees
        b. 30 degrees
        c. 45 degrees
        d. 180 degrees

28.       2 specimens A and B were observed by a child for spotting as shown below. After identifying the given specimens, in which of the following groups should he place them:
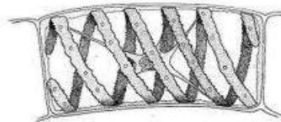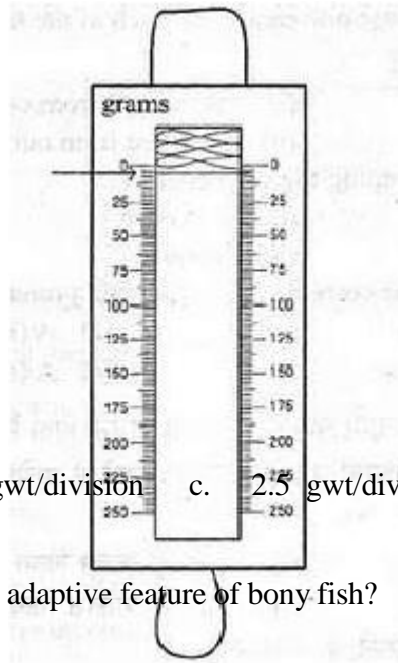


FIGURE - A        FIGURE - B

29.        A spring balance is used to calculate the mass of the body as shown below. A student calculated the least count of the spring balance and found it to be:



a.   1.5  gwt/division       b.    2  gwt/division      c.    2.5 gwt/division       d.    1 gwt/division

30.        Which one of the following is not an adaptive feature of bony fish?
    a.   It has streamlined body.
    b.   Presence of anal cerci
    c.   Presence of fins
    d.   Presence of gills

31.        The density of pure water at 25 degree celcius is:
    a.   $1g/m^3$
    b.   1g/cc
    c.   1000kg/cc
    d.   100g/cc

32.        For doing experiment on verification of laws of reflection of sound successfully, the reflecting surface should be
    a.   A foam padded board.
    b.   A sheet of pure white cloth
    c.   A wooden board with many holes in it
    d.   A wooden board without holes

33.        The umbrella like spherical part of the button mushroom is
    a.   Stipe
    b.   Pileus

c. Sporangiophore

d. Sporangium

34. The speed of sound in air is about
   a. $3 \times 10^8$ m/s      b. 340 m/s      c. 340 cm/s      d. 340 km/s

35. Ribbon shaped and spiral chloroplast is present in which of the following organism:
   a. Ulothrix
   b. Agaricus
   c. Spirogyra
   d. Chlamydomonas

36. Seeds are naked in:
   a. Angiosperms    b.Gymnosperms    c. Both of these    d none of these

37. While determining the density of a metal block using a spring balance and a measuring cylinder, a student followed the following steps in his experiment.
   I. Noted the water level in the measuring cylinder without the metal block.
   II. Immersed the metal block centrally in water without touching the sides and centre of the bottom.
   III. Noted the water level in the measuring cylinder with the metal block inside it.
   IV. Removed the metal block from the water and immediately weighed it using a spring balance.

   The incorrect step in the procedure is
   a. I      b. II      c. III      d. IV

38. When sound gets reflected from a surface:
   a. The angle of reflection is always greater than the angle of incidence.
   b. The angle of reflection is always less than the angle of incidence.
   c. The angle of reflection is always equal to the angle of incidence.
   d. The angle of reflection is always equal to 90 degrees.

39. Upthurst is a force which acts in
   a. Upward direction
   b. Downward direction
   c. Any direction
   d. None of the above\

40. Weight of an object in air is 100 N. Its weight in water will be:
   a. Less than 100 N
   b. More than 100 N
   c. Equal to 100 N
   d. Zero

41. Pulse is a

a. Short duration disturbance
b. Does not repeat
c. Can travel
d. All of the above

42.     A pulse travels through a slinky 10 m long from one end to the other end and then back to the point of origin in 3 sec. the velocity of pulse in the slinky is
  a. 3.33 m/s
  b. 4.5 m/s
  c. 6 m/s
  d. 6.66 m/s

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# **MARKING SCHEME**

1.  potential energy ( 1 mark )
2.  Stratosphere ( 1 mark )
3.  Valency-1 , name of element- Lithium ( ½ mark each)
4.  Mass of 1 mole nitrogen gas = 28g ( ½ mark)

    1mole= $6.022 \times 10^{23}$ molecules of nitrogen gas ( ½ mark)

    Mass of $6.022 \times 10^{23}$ molecules of nitrogen gas = 28 g ( ½ mark)

    Mass of 1 molecule of nitrogen gas = $28/6.022 \times 10^{23}$ g $= 4.6 \times 10^{23}$ g ( ½ mark)
5.  a = reptilia, b = water, c = aves d = mammary gland ( ½ each)
6.  Causes- a) use of CFC's ½

    b) increase in the level of methane or carbon dioxide. ½

    Effects- a) U.V rays will reach the earth and may cause skin burns. ½

    b) increased chances of cancer. ½
7.  Relative density of silver-10.8 2

    Relative density of silver- density of silver

    Density of water

    Density of siver-relative density of silver X density of water

    - $10.8 \times 10^3$ kg/m³
8.  A. Thallophyta 1

    B. Any two differences 2

    . 1
9.  A) Development of immunity to small pox, memory cells are formed, memory cells attack more vigorously and quickly if microbe enters the body second time. 2

    B) Tuberculosis 1
10. Formula- 2d = v x t 1

    d = v x t/2 = 340 x 10/2 1

    = 1700 m 1

11. Refer to NCERT book pg 165 and 171. ( 2 for diagram + ½ each for application)
12. A) any one reason 1

    B) Any two points 2

| ACUTE DISEASES | CHRONIC DISEASES |
| --- | --- |
| These diseases are short term | These diseases have long duration |
| The patient recovers completely | The patient never recovers completely |

13 A)

C)  A)  porifera- any two characteristic                                        ( ½ + 1 )
B)  Platyhelminthes- any two characteristic                          ( ½+ 1)
D)   A)  Because each shell has its own fixed energy.                        ( 1 marks )
B)  K,L,M,N                                                                   **(1)**
C)  18 Electrons                                                              (1)

E)   A)   Molar mass of $CH_3COOH = 12u + 3u \times 1 + 12u + 16u + 16u + 1u$                    1
                          $= 60$ u                                                 1
B)    $AlCl_3$ , $NH_4 NO_3$                                                         ½ each

B)  ACUTE-  common cold, tuberculosis    CHRONIC- diabetes, elephantiasis ( any one )    ½ each

F)   A)  refer to NCERT book                                                   1
B)    Height of each step $= 25$ cm
No. of steps $= 20$
Total height $= 25 \times 20 = 500$ cm $= 5$ m                                         ½
Work done $= mgh = 45 \times 10 \times 5 = 2250$ J                                     ½
Power = workdone/time $= 2250/20 = 112.5$ watt                                       1
G)   Hydroelectric power- water to electricity, explosion of cracker- chemical to heat, light and sound
     energy, oscillating pendulum- kinetic energy to potential energy              1+1+1
H)   Mass of sodium sulphate $= x$ g
Mass of sodium sulphate + Mass of barium chloride = Mass of sodium chloride +  Mass of barium
sulphate
  X g  +   5.22 g  $= 6.10$ g $+ 2.80$ g                                              1
  X g  $= 8.90 – 5.22 = 3.68$ g. law of conservation of mass is used.                1+1
I)    Refer to ncert                          ( 2 marks for diagram + 1 for labeling+ 2 for
      Explanation)
 Or
 Refer to ncert book pg. 172                  ( 2 marks for diagram + 1 for labeling+ 2 for working)
J)    A) Cyclic flow of nutrients between living and non living components are called biogeochemical
      cycles.                                                                        1
B)  Refer to NCERT book pg 198.                ( 2 for diagram + 2 for labeling)
          Or
A)  Refer to ncert                                          1
B)  Refer to ncert book pg 199                    ( 2 for diagram + 2 for labeling)

K) A) Archimedes principle                                                                                        1

B) In water the apparent weight of the bucket is less.                                              1

C) a= weight of the object, b= upthrust                                                      ( 1+1 )

Object will sink.                                                                                ( 1 mark)

Or

A) Any two points                                                                                              2

B) Refer to ncert                                                                                              2

C) buoyancy is the upward force on an object produced by the surrounding liquid or gas in which it is fully or partially immersed                                                                            1

L) A) refer to NCERT book.                                                                               2

B) Kinetic energy and elastic potential energy.                                                  **½+½**

C) $S = ut + ½ at^2$                                                                                       **½**

40= 0 + ½ a x 36

$a = 40/18 = 2.22$ m/s$^2$                                                                     1/2

Work done $= F \times S = m \times a \times s = 2000 \times 2.22 \times 40 = 177600$ J           1

Or

A)Refer to ncert text book pg no. 153                                                              2

B) Work is said to be done if force is applied on an object and it shows some displacement    1

C) mass of object, m - 15 kg          Displacement- 1.5 m

Work done-F X S = mg X s

1.5 X 10 X 1.5 = 225J                                                                                      2

M)

a. 4 electrons.

b. C because it has completely filled shell.

c. B because it has 7 valence electrons.

d. D

e. D

OR

A)The law of conservation of mass is based on following postulate of Dalton's atomic theory.

" Atom can neither be created and nor be destroyed during a physical change or chemical reaction".                                                                                              1

B) Because they are far too small to be seen even with a microscope. They have a diameter of between 32-225 pm (pm = $1x10^{-12}$ metres).                                                             2

C) Na, Zn,Pb,Cl                          ( ½ marks for each)

## **MCQ**

| Q.NO | ANSWER | Q.NO | ANSWER |
|------|--------|------|--------|
| 25 | a | 33 | b |
| 26 | a | 34 | b |
| 27 | c | 35 | c |
| 28 | d | 36 | b |
| 29 | c | 37 | d |

| 30 | b | 38 | c |
|----|---|----|---|
| 31 | b | 39 | a |
| 32 | D | 40 | a |
|    |   | 41 | d |
|    |   | 42 | d |