# KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION – 32
## SAMPLE PAPER 05 FOR SA – II (2016-17)

## SUBJECT: SCIENCE

## BLUE PRINT : SA–II CLASS IX

| Unit/Topic | VSA/MCQ (1 mark) | Short answer (2 marks) | Short answer (3 marks) | Long answer (5 marks) | Total |
|---|---|---|---|---|---|
| Atoms and Molecules | 3(3) | -- | 3(1) | 5(1) | **11(5)** |
| Structure of Atoms | 1(1) | -- | 6(2) | -- | **07(3)** |
| Biological Diversity | 4(4) | 2(1) | 3(1) | 5(1) | **14(7)** |
| Health and Diseases | 1(1) | -- | 6(2) | 5(1) | **12(4)** |
| Gravitation (Flotation) | 1(1) | 4(2) | 3(1) | 5(1) | **13(5)** |
| Work and Energy | 1(1) | 2(1) | 6(2) | 5(1) | **14(5)** |
| Sound | 1(1) | 2(1) | 6(2) | -- | **09(4)** |
| Natural Resources * | -- | 2(1) | 3(1) | 5(1) | **10(3)** |
| **Total** | **12(12)** | **12(6)** | **36(12)** | **30(6)** | **90(36)** |

**\*Note:** The material for Open Text Based Assessment (**OTBA**) for SA-II will be from Unit - IV: Our Environment (Natural Resources). This unit will be tested through **OTBA** only.

## MARKING SCHEME FOR SA – II

| SECTION | MARKS | NO. OF QUESTIONS | TOTAL |
|---|---|---|---|
| **VSA** | 1 | 3 | 03 |
| **SA – I** | 2 | 3 | 06 |
| **SA – II** | 3 | 12 | 36 |
| **LA** | 5 | 6 | 30 |
| **Practical based MCQs** | 1 | 9 | 09 |
| | 2 | 3 | 06 |
| **GRAND TOTAL** | | | **90** |

SUBJECT: SCIENCE                                    MAX. MARKS : 90
CLASS : IX                                         DURATION   : 3 HRS

**General Instructions:**
1. All questions are compulsory.
2. The question paper comprises of **two Sections, A** and **B.** You are to attempt both the sections.
3. All questions of **Section-A** and **Section-B** are to be attempted separately.
4. Question numbers **1 to 3** in **Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
5. Question numbers **4 & 5** in **Section-A** are **two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **6 to 16** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
7. Question numbers **17 to 21** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
8. **Section B** has **3 OTBA** questions, Question number **22** is **two marks**, Question number **23** is **three marks** and Question number **24** is **five marks** question.
9. Question numbers **25 to 33** in **Section-C** are multiple choice questions based on practical skills. Each question is a **one mark** question. You are to select one most appropriate response out of the four provided to you.
10. Question numbers **34 to 36** in **Section-C** are questions based on practical skills and are **two marks** questions.

# SECTION – A

1. Define the atomic mass unit.

2. Why did Rutherford select a gold foil in his $\alpha$ –ray scattering experiment?

3. Mention the modification made by Carl Woese in Robert Whittaker's classification of living organisms?

4. Differentiate between density and relative density.

5. Sound produced by thunderstorm is heard 20s after the lightening is seen.  Calculate the approximate distance of the thunder cloud.  (Given speed of sound in air = 340 m/s)

6. Calcium chloride when dissolved in water dissociates into its ions according to the following equation.
   $CaCl_2$ (aq) $\rightarrow Ca^{2+}$ (aq) + $2Cl^-$ (aq)
   Calculate the number of ions obtained from $CaCl_2$ when 222 g of it is dissolved in water.
   (Ca = 40 u, Cl = 35.5 u)

7. The average atomic mass of a sample of an element X is 16.2 u. What are the percentages of isotopes $_{8}^{16}X$ and $_{8}^{18}X$ in the sample?

8. Define classification of organisms. Why do we need to classify them ? Mention any two major characteristics used for classifying organisms.

9. "Prevention is better than cure". Justify the statement with three reasons.

**10.** (a) Why chemical properties of all the isotopes of an element are same ?
   (b) Name the isotopes used in the treatment of Goitre and Cancer.
   (c) An element 'X' has 2 electrons in its M shell. What is its atomic number ?

**11.** Classify the following diseases as infectious or non-infectious diseases and also mention the cause of the non-infectious diseases.
   (a) AIDS
   (b) Cholera
   (c) Tuberculosis
   (d) Pneumonia
   (e) Colour blindness
   (g) Diabetes

**12.** The volume of a 500g object is 350 $cm^3$. Will the object float or sink in water if the density of water is 1 $g/cm^3$? What will be the mass of the water displaced by this object, when it is immersed in water?

**13.** How defects in a metal block can be detected by using ultrasound? Explain with the help of diagram.

**14.** Define power. Write commercial unit and SI unit of electrical energy. An electrical geyser of 1.5 KW works for 2 hours. Find the electrical energy units consumed in a day.

**15.** Define kinetic energy. Write the SI unit of kinetic energy. Derive an expression for kinetic energy.

**16.** Sunita is a student of class VIII. During summer vacation the school arranged an educational trip to Agra. During their visit to Taj Mahal, when Sunita and other students entered the mausoleum of Mumtaj Mahal and king Shahjahan, she heard a mild persistent sound. Sunita asked her science teacher, who told her that it is due to reverberation.
   (a) What is the difference between reverberation and echo ?
   (b) What qualities are exhibited by Sunita ?

**17.** (a) Write the names of the following compounds :
   (i) $Ca(OH)_2$          (ii) $Mg(NO_3)_2$
   (iii) $(NH_4)_2SO_4$        (iv) $Al_2(SO_4)_3$
   (b) How many grams of sodium will have the same number of atoms as 6 grams of magnesium ?
   (Given Na = 23 u, Mg = 24 u )

**18.** Differentiate between the following :
   (a) Tube system of feather star and canal system of Euplectella
   (b) Skeleton of shark and sea horse
   (c) Respiratory organs of tadpole and frog
   (d) Forelimbs of birds and lizard
   (e) Skin of tree frog and human

**19.** Name the two types of disease one caused by some external agents and other due to some internal disorder of the body. Write its causes, symptoms and remedies.

**20.** (a) Radius of an iron sphere is 0.21 cm. If density of iron is 7.8 g/cm3, calculate its mass.

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(b) A pressure of 1000 Pa, acts on a surface of area 15 cm$^2$ by a block of mass 'm'. Calculate 'm'. Calculate the new pressure exerted by the same block if the area of contact with the surface becomes 10 cm$^2$.

21. (a) A light and a heavy object have the same momentum. What is the ratio of their kinetic energies?.
(b) A moving body of mass 20 kg has 40 Joules of kinetic energy. Calculate its speed.
(c) A person carrying a load of 20 kg climbs 4 m in 10 seconds. Calulate the work done and his power. ($g = 10$ m/s$^2$)

## SECTION – B (OTBA)
### (THEME –1 : HEALTHY ENVIRONMENT, HEALTHY PEOPLE)

22. How tobacco smoke affects human health?

23. Ram has a habit of throwing garbage on the street. How was his practice of littering affecting the environment as well as health?

24. An unhealthy, polluted environment does not only have adverse effect on the people of the present generation, but it can also put the life of subsequent generations at risk. Explain how.

## SECTION – C

25. If the reflected and the incident sound waves are at angle of 120$^0$ with each other, the incident angle should be:
(a) 60$^0$          (b) 100$^0$          (c) 20$^0$          (d) 120$^0$

26. If we perform the experiment, to observe and compare the pressure exerted by a solid cuboid on sand in vacuum, we observe that the pressure exerted by the cuboid on the sand is :
(a) same as that on the Earth's surface
(b) less than that on the Earth's surface
(c) greater than that on the Earth's surface
(d) equal to zero

27. A change in the physical state of a substance can be brought about:
(a) only when energy is given to the substance
(b) only when energy is taken out from the substance
(c) when energy is either given to or taken out from the substance
(d) without any change in energy

28. A thick strand of underground hyphae resembling a root is called as :
(a) Rhizoid                    (b) Rhizophore
(c) Rhizomorph                (d) Radicle

29. Given below is a chemical equation :
$$2Mg + O_2 \longrightarrow 2MgO$$
Mass of magnesium oxide formed by burning 24g of magnesium in air is :- (Relative atomic masses, Mg=24u and O=16u) :
(a) 16g                        (b) 80g
(c) 20g                        (d) 40g

30. Which of the following correctly represents 360 g of water?
    (i) 2 moles of H$_2$0

(ii) 20 moles of water
(iii) $6.022 \times 10^{23}$ molecules of water
(iv) $1.2044 \times 10^{25}$ molecules of water
(a) (i) (b) (i) and (iv)
(c) (ii) and (iii) (d) (ii) and (iv)

**31.** The number of cotyledons found in a dicotyledonous plant is :
(a)               2   (b)           3  (c)        4  (d) 5

**32.** Observe the following figures A, B, C and D



(A)        (B)        (C)        (D)
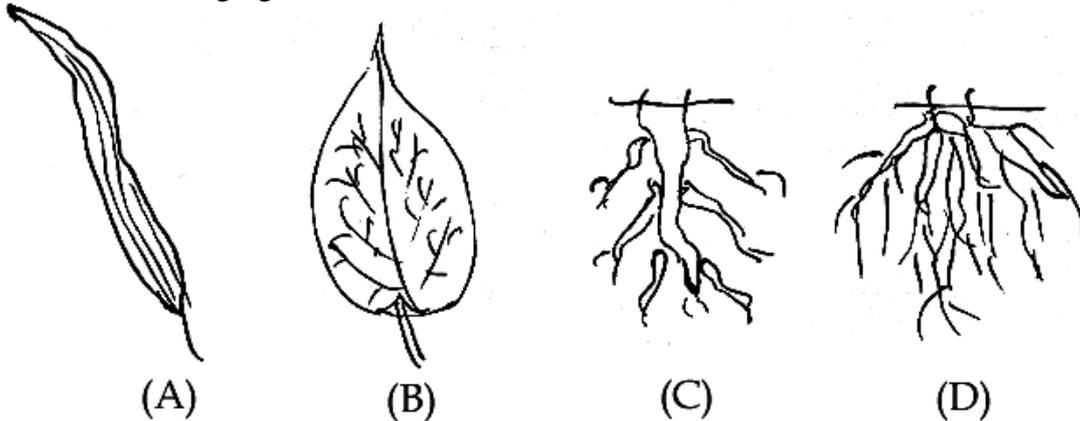
What do the A, B, C and D regarding the monocot and dicot plants indicate ?
(a) A - Reticulate venation. B - Parallel venation. C - Tap root. D - Fibrous root.
(b) A - Parallel venation. B - Reticulate venation. C - Fibrous root. D - Tap root.
(c) A - Parallel venation. B - Reticulate venation. C - Tap root. D - Fibrous root.
(d) A - Reticulate venation. B - Parallel venation. C - Fibrous root. D - Tap root.

**33.** A student identified the following features while observing the eggs in the life cycle of mosquito. Which of the observation is incorrect?
(a) Eggs are oblong shaped and are clamped
(b) Eggs are separated, round shaped, bigger in size.
(c) Eggs are separated, oval shaped, smaller in size.
(d) Eggs are clustered, bead like structure.

**34.** An object of mass $m$ and velocity $v$ has kinetic energy = 200 J. Find the new kinetic energy if the velocity of the object becomes double.

**35.** Draw the diagram of hydra and label the following parts:
Tentacles, Stinging cells, Gastrovascular cavity, Epidermis.

**36.** Explain how an ultrasound is used to clean spiral tubes and machine parts located in a place hard to reach.