

**Atomic Energy Education Society  
Annual Examination 2019-20**

**Class : IX**

**Time : 3 Hours**

**Subject : Science**

**Marks : 80**

**General Instructions:**

- a) The Question Paper consists of 30 questions and divided into three Sections – A, B and C. You have to attempt all the sections
- b) All questions are compulsory. However an internal choice is given for three questions in Section-B and three questions in Section-C.
- c) Section-A comprises of 20 questions in all, out of which 10 questions are multiple choice type questions of 1 mark each, 2 questions are based on assertion and reasoning which carries 1 mark each and 8 questions are very short answer type questions of 1 mark each.
- d) Section-B comprises of 10 short answer type questions of 3 marks each.
- e) Section-C comprises of 6 long answer type questions of 5 marks each
- f) The question paper will be distributed at 9:15 am. From 9:15 am to 9:30 am, the students will read the question paper only and will not write any answer on the answer-sheet.
- g) **No separate answer sheet will be provided for Physics, Chemistry and Biology. All the questions are compulsorily to be answered using the same single Answer Sheet. Schools are advised to ensure the said practice**

**SECTION – A**

1. Why does the weight of a body vary from poles to equator? [1]
2. Name the causal organism of AIDS. [1]
3. Answer question numbers 3 (a) – 3 (d) on the basis of your understanding of the following paragraph and the related studied concepts:

A homogeneous mixture of two or more substances is called a true solution. It consists of solute and solvent. The particle size of a true solution is less than 1  $\mu\text{m}$ . A suspension is a heterogeneous mixture in which the solute particles do not dissolve but remain suspended throughout the bulk of the medium. A colloid is a mixture that is actually heterogeneous but appears to be homogeneous as the particles are uniformly spread throughout the solution.

- 3 (a) Among -true solution, suspension and colloid- which ones are stable? [1]
- 3 (b) Which type of mixture can be separated by filtration? [1]
- 3 (c) Which type of mixture will not show Tyndall effect? [1]
- 3 (d) In which type of mixture, the particles cannot be seen with the naked eyes? [1]

4. Question numbers 4(a) - 4(d) are based on Table-A given below. Study this table and answer the questions that follow:

Table -A : Cell size and No. of chromosomes

Cells	Size ( $\mu\text{m}$ )	No. of chromosomes
A	5	3
B	26	2
C	12	4
D	2	1
E	45	6

- 4 (a) Can you find any discrepancy with respect to Cell A and Cell D? [1]
- 4 (b) Find out from the following, pairs of an eukaryotic cell: [1]  
 (i) A, B and D      (ii) B, C and E      (iii) C, D and E      (iv) A, C and D
- 4 (c) Give one difference between prokaryotic cell and eukaryotic cell. [1]
- 4 (d) Identify the prokaryotic cell from the following: [1]  
 (i) *Homo sapiens*      (ii) Garden lizard      (iii) *Hibiscus*      (iv) Blue green algae
5. Which of the following will form a homogeneous mixture? [1]  
 (a) Sand and water      (b) Oil and water  
 (c) Salt and water      (d) Chalk powder and water
6. The rate of change of displacement with time is: [1]  
 (a) Speed      (b) Acceleration      (c) Retardation      (d) Velocity
7. If A and B are two bodies of masses 20 kg and 40 kg respectively, then: [1]  
 (a) A has more inertia than B      (b) B has more inertia than A  
 (c) A and B have same inertia      (d) They will not have any inertia
8. Instrument used for measuring the density or relative density of liquids is known as: [1]  
 (a) Spherometer      (b) Hydrometer      (c) Buoyancy meter      (d) Mercury meter
9. Which of the following is a viral disease? [1]  
 (a) Anthrax      (b) Cancer      (c) Syphilis      (d) Rabies
10. The coastal areas during day time are characterized by: [1]  
 (a) movement of air from sea towards land      (b) movement of air from land towards sea  
 (c) flow of air in any direction      (d) flow of air at a very high speed
11. Which one of the following fishes is a surface feeder? [1]  
 (a) Rohu      (b) Mrigal      (c) Common carp      (d) Catia

12. A man with a box on his head is climbing up a ladder. What work is said to be done by the man on the box? [1]

- (a) positive (b) negative (c) zero (d) undefined

For question numbers 13 and 14, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- (i) Both A and R are true and R is correct explanation of the assertion.  
(ii) Both A and R are true but R is not the correct explanation of the assertion.  
(iii) A is true but R is false.  
(iv) A is false but R is true.

13. **Assertion :** Isobars do not differ in their chemical properties [1]

**Reason :** Isobars are atoms of different elements having the same mass numbers.

14. **Assertion :** A body can have acceleration even if its velocity is zero at a given instant of time.

**Reason :** A body is momentarily at rest when it reverses its direction of motion [1]

### SECTION B

15. (a) Give reasons: [2]

- (i) Ice floats on water.  
(ii) A desert cooler cools better on a hot dry day.

(b) Convert 370 K into Celsius scale ( $^{\circ}\text{C}$ ) [1]

**OR**

(a) What is evaporation? [1]

(b) In the following examples state which factor is responsible for the change in rate of evaporation and how? [2]

- (i) Wet clothes dry faster on spreading them.  
(ii) Clothes dry faster in sun than in shade.

16. Give three characteristics of the particles of matter [3]

17.(a) What are the limitations of Rutherford's model of atom. [2]

(b) On the basis of Thomson's model of atom, explain how the atom is neutral as a whole [1]

18. Draw a labeled diagram of a neuron. [3]

19. (a) State the constituents of phloem. [2]  
 (b) How does cork act as a protective tissue? [1]

OR

- (a) Draw a diagram showing apical, intercalary and lateral meristem. [2]  
 (b) Define a meristem. [1]
20. (a) Write two differences between Acute and Chronic disease [2]  
 (b) State one of the principles of treatment. [1]
21. (a) State Archimedes' Principle. [2]  
 (b) What is the SI unit of (i) G and (ii) g? [1]

OR

- An object is thrown vertically upwards and it rises to a height of 10 m. [3]  
 Calculate: (i) the velocity with which the object was thrown upwards and  
 (ii) the time taken by the object to reach the highest point.
22. The average atomic mass of a sample of an element X is 16.2. What are the  
 percentages of isotopes  $^{16}_8X$  and  $^{18}_8X$  in the sample? [3]
23. (a) Write any one of the equations of motion [1]  
 (b) A car accelerates uniformly from 18 km/h to 36 km/h in 5 s. [2]  
 Calculate (i) the acceleration and (ii) the distance covered by the car in that time.
24. (a) What is animal husbandry? [1]  
 (b) Differentiate between milch and draught animals [2]

### SECTION – C

25. (a) Write down the formula of: [2]  
 (i) Aluminium chloride (ii) Magnesium hydroxide  
 (b) Calculate the mass of  $3.011 \times 10^{23}$  numbers of N atoms? [2]  
 (Given: Atomic mass of N = 14 u)  
 (c) What are polyatomic ions? Give one example. [1]

OR

- (a) Which postulate of Dalton's atomic theory is the result of the law of  
 Conservation of mass? [1]  
 (b) Give the names of the elements present in the following compounds: [2]  
 (i) Quick lime (ii) Baking Powder  
 (c) What is the mass of 0.5 moles of water molecules? [2]  
 (Given: Atomic mass of H = 1 u, O = 16 u)

26. (a) Name the largest phylum of animal kingdom. [1]  
(b) Explain the basis of grouping organisms into five kingdoms. [2]  
(c) What is binomial nomenclature? Who proposed it? [2]

OR

- (a) State any four characteristics of mammals. [2]  
(b) What are *Gymnosperms*? Give two characteristics. [3]
27. (a) Draw a neat and labeled diagram of Nitrogen Cycle in nature. [3]  
(b) What would happen if ozone layer in the atmosphere disappears? [2]
28. (a) Define kinetic energy. Derive an expression possessed by an object of mass ' $m$ ' and moving with velocity ' $v$ '. [3]  
(b) A ball of mass 400 g rolls on a ground with uniform speed of 25 m/s. Find the kinetic energy possessed by it. [2]

OR

- (a) Define 1 watt of power. [1]  
(b) Find the energy in kWh consumed in 10 hours by four devices of power 500 W each. [2]  
(c) What is the work done by the force of gravity on a satellite moving round the earth? Justify your answer. [2]
29. (a) State Newton's second law of motion. [2]  
(b) A truck starts from the rest and rolls down a hill with a constant acceleration. It travels a distance of 400 m in 20 s. Find its acceleration and also the force acting on it, if its mass is 7000 kg. [3]
30. (a) Expand SONAR. [1]  
(b) How does it work? [2]  
(c) A sound wave travels at the speed of 339 m/s. If its wave length is 1.5 cm, then what is the frequency of the wave. [2]

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