

Marking Scheme

SUMMATIVE ASSESSMENT - II (2015-16)

Science (Class-IX)

General Instructions:

1. The Marking Scheme provides general guidelines to reduce subjectivity and maintain uniformity. The answers given in the marking scheme are the best suggested answers.
2. Marking be done as per the instructions provided in the marking scheme. (It should not be done according to one's own interpretation or any other consideration).
3. Alternative methods be accepted. Proportional marks be awarded.
4. If a question is attempted twice and the candidate has not crossed any answer, only first attempt be evaluated and 'EXTRA' be written with the second attempt.
5. In case where no answers are given or answers are found wrong in this Marking Scheme, correct answers may be found and used for valuation purpose.

SECTION-A

1	8, 4	1
2	Electrons are located outside the nucleus in fixed orbits or shells Protons are located in the nucleus of an atom.	1
3	Carolus Linnaeus.	1
4	Density is defined as mass per unit volume. Its SI unit is kg/m ³ . Relative density of a substance is the ratio of its density to that of water. It has no unit.	2
5	Commercial unit = kWh 1 kWh = 1000 Wh = 1000 W × 3600 s = 3.6 × 10 ⁶ Ws = 3.6 × 10 ⁶ J That it consumes 1000 J of energy in 1 s. Refer to page 156 of NCERT	2
6	(a) No. of molecules[N _H] = $\frac{1}{2} \times 6.022 \times 10^{23}$ = 0.5 × 6.022 × 10 ²³ = 3.011 × 10 ²³ molecules No. of molecules[N _{CH₄}] = $\frac{1}{12+1 \times 4} \times 6.022 \times 10^{23}$ = $\frac{1}{16} \times 6.022 \times 10^{23}$ = 0.37 × 10 ²³ molecules N > N _{CH₄} Hence hydrogen has more number of molecules. (b) Atomic mass of Na = 23 g 23 g Na contains 6.022 × 10 ²³ particles 46 g Na contains $\frac{6.022 \times 10^{23}}{23} \times 46$ = 12.044 × 10 ²³ particles	3
7	(a) Nitrogen=5, Oxygen=6, Argon=8 (b) Atomic number = 5, mass number = 11, Electronic configuration = 2, 3	3
8	(a) Methane CH ₄ , 12:4 = 3:1 (b) Carbon dioxide CO ₂ , 12:(2 × 16) = 3:8	3

	(c) Hydrogen Sulphide H_2S , 2:32 = 1:16	
9	Coelomate - Herdmania, Earthworm, Fishes, Humans Acoelomate - Planaria Pseudocoelomate - Ascaris	3
10	Vector - some inter mediaries animals/organism carrying the infecting agents from a sick person to another potential host. Eg. Mosquito (Female) The female Mosquito need highly nutritious food in the form of blood in order to be able to lay mature eggs, hence it feed on human blood, so they transfer diseases (Malaria) from a patient to a healthy person.	3
11	(a) Disease means - DIS - EASE or with out ease or discomfort. (b) If socially and mentally we are not healthy then we can be in poor health without being a cause in the form of an actual disease.	3
12	Statement of Archimedes principle Applications (any two) <ul style="list-style-type: none"> • Determining R. D. of the substance • In designing ships and submarines • Principle of hydrometers and lactometer the forces acting on object : (1) gravitational force in downward direction (2) buoyant force or upthrust in upward direction.	3
13	$u = 0 \text{ m/sec.}$ $g = 10 \text{ m/s}^2 = a$ $s = 200 \text{ m}$ $t = ?$ $s = ut + \frac{1}{2}gt^2 = ut + \frac{1}{2}at^2$ $200 = 0 + \frac{1}{2} \times 10 \times t^2$ $t^2 = \frac{2 \times 200}{10} = 40 \Rightarrow t = 6.3 \text{ sec}$ time taken by sound to travel = $\frac{200}{340} = 0.58 \text{ sec}$ total time = $6.3 + 0.58 = 6.88 \text{ sec.}$	3
14	$P = mv$ $KE = \frac{1}{2} mv^2$ $\therefore P^2 = m^2v^2$ $\frac{P^2}{m} = mv^2$ $\frac{P^2}{2m} = \text{K.E.}$	3
15	Ultrasonography technique is used by the doctors to detect abnormalities, stones in kidneys, gallbladder, tumours etc. Ultrasonic waves of extremely short wavelengths travel through the tissue of the body and get reflected from a region where there is a change in tissue density. These reflected rays are then converted into electric signals, which are used to generate images of the organ. The image are displayed on a monitor or printed in a film.	3

16	(a) When we stand at some distance from a huge building/ hillock/large tree etc and speak loudly, we listen our voice again after a definite interval of time due to reflection of sound wave from that building etc. Such repetition of sound due to reflection is known as " <u>echo</u> ". Minimum distance should be 17.2m (b) Rushil was considerate and caring for her younger sister Shruti and shared his knowledge with her.	3
17	(a) • Valency – The combining capacity of an atom is known as its valency. Valency is the no. of electrons in outermost shell of an atom. The no. of electrons gained or lost or shared gives us the combining capacity of an atom and this decides whether an atom is reactive or not ? (b) The atomic number of Argon= 18,i.e., it has 18 electrons. Hence, its electronic configuration will be 2, 8, 8 Since it has 8 electrons in its valence shell, So, its valency = 8-8= 0 (zero)	5
18	Any 5-cell organelles of a eukaryotic cell except plastids. Plant cell Fungal cell Plastids present Absent Cell wall made of Cell wall made of chitin Cellulose Life form : Lichen.	5
19	(1) Educated parents understand the importance of healthy and balanced diet for their children which will prevent nutritional deficiency disorders and also help in proper functioning of immune system. (2) They know about modes of spread of diseases so, will maintain hygienic conditions. (3) Parents will provide only safe uncontaminated water to avoid water–borne diseases (4) Educated parents can provide symptomatic treatment first and then go for further doctor’s consultation to kill the cause of the disease. (5) Educated parents can inculcate a sense of social and moral responsibility in their children to maintain clean environment to prevent spread of infections	5
20	(a) In case of salty water. Buoyant force decreases $\therefore U = Vdg$. (b) $U = Vdg = \frac{4}{4000} \times 1000 \times 10 = 10N$.	5
21	(a) Def. of work SI unit Joules $W = F.S$. (b) $F = 250 N$ $S = 50 m$ $W = F.S$. negative work done (c) $F = Mg = 5.2 \times 10^{-2}$ $= 52 N$ $W = - FS$ $= -52 N \times 15 m$ $= -780 J$ Against force of gravity.	5
SECTION - B (OTBA) (* Please ensure that open text of the given theme is supplied with this question paper.) Conservation of Water Bodies		
22	Water inside the deep reservoir remains cold but vapour at the surface gets heated up by the sun. Sudden release of cold water into the rivers and ponds encourages growth of some organisms and harms other organisms. Thus it disturbs the balance among various organisms which had been established in that system.	2

23	<ul style="list-style-type: none"> ○ Arrange meetings with water conservationist of local people ○ Display banners showing techniques of water conservation ○ Motivate people to do water conservation ○ Motivate people to do rain water harvesting ○ Try and produce behavioural change in people regarding water conservation 	3
24	<ul style="list-style-type: none"> ■ Involvement of local people. ■ Specified role of government or government bodies ■ Strengthening the link between community and government. ■ Fishermen Co-operative Society. ■ Formed water User Association. (WUSA) ■ (Any other relevant point 1+1+1+1+1) 	5
Section - C		
25	(d)	1
26	(c) to find the relationship between force and surface area in contact.	1
27	(c)	1
28	(a)	1
29	(b) 17.2 g	1
30	(a) Decomposition of calcium carbonate	1
31	(d)	1
32	(d)	1
33	(b) larva	1
34	No, the density of iron ball is more than the aluminium, hence it will experience more upthrust	2
35	(i) Loss of weight is maximum in salty water (ii) Density of salty water is maximum	2
36	egg laying, hollow bones, body covered with feathers etc. (any two)	2
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