St. Xavier's Sr. Sec. School
Delhi-54

Summative Assessment II in **SCIENCE – Std. 9** M. Marks : 90
19-2-2016 Time : 3 hrs.

Roll No: | | |

Total printed pages : 07
Total printed questions : 36

General Instructions :

i) This question paper comprises of three sections A and B. You are to attempt both the sections.

ii) All questions are compulsory.

iii) There is no overall choice.

iv) **In Section A**

- Question nos. 1 to 3 carry one mark each.
- Question nos. 4 to 6 carry two marks each.
- Question nos. 7 to 18 are three marks questions.
- Question nos. 19 to 22 are five marks questions.
- Question nos. 23 & 24 are OTBA based questions.

v) **In Section B**

- Question nos. 25 to 33 are multiple choice questions based practical skills, and carry one mark each. You are to select one most appropriate response out of the four provided to you. Write the answer in the answer sheet.
- Question nos. 34 to 36 are two marks questions based on practical skills.

SECTION A

1. a) An element has 8 electrons in its valence shell. What is its general name?
   b) Who discovered neutrons? (1)

2. a) Define 1 mole.
   b) Give example for a tri atomic molecule. (1)

3. Give two advantages of classifying organisms. (1)

4. Relative density of a substance is 2.5. Find its density if the density of water is 1000kg/m^3. (2)

5. a) If chlorine atom is available in the form of two isotopes $^{35}_{17}Cl$ (75%) and $^{37}_{17}Cl$ (25%). Calculate the average atomic mass of chlorine atom.
   b) Write any two uses of isotopes. (1+1)

6. What is binomial system of nomenclature? Explain with the help of example. (2)

7. Differentiate between infrasonic wave, ultrasonic wave and audible range for humans. (3)

8. Define amplitude. A person is listening to a tone of 500 Hz sitting at a distance of 450m, from the source of sound. What is the time between successive compressions for the source? (3)

9. A pump delivers 1000 liters of water in a tank at a height of 15m in 120s. Find the work done by the pump and its power (take g = 10m/s^2 and 1litre = 1kg) (3)

10. Define potential energy and derive its formula. (3)

11. An object of mass 40kg is raised to a height of 5m above the ground. What is its potential energy? If the object is allowed to fall find its kinetic energy half way down. (3)

12. A man whose mass is 50kg climbs up 30 steps of the stairs in 30 seconds. If each step is 20cm high calculate the power used in climbing the stairs. (3)

13. a) Write down the chemical formula of:
    i) Ammonium carbonate ii) Sodiumchloride.
    b) Name the following compound: i) Al_2O_3 ii) $Ca(NO_3)_2$
    c) Calculate the percentage of oxygen in $CaCO_3$.
    (At. Mass of Ca = 40, C = 12, O = 16) (1+1+1)

14. a) What is the mass of 0.5mole of HCl molecule?
    b) Calculate the number of particles present in 8g of O_2 molecule.
    c) Find out the number of moles present in 20g of water. (1+1+1)
    (At. Mass of O = 16, H = 1, Cl = 35.5)

15. Identify and name the following:
    a) Organisms that use dead and decaying organic material as food;
    b) Cell walls of fungi are made up of this special type of sugar;
    c) The kingdom to which *Amoeba* belongs;
    d) An example of a Moneran;
    e) An animal with the pseudocoelom;
    f) A group which has an open circulatory system. (3)

16. Distinguish between acute diseases and chronic diseases. (any three points) (3)

17. Answer the following questions regarding AIDS: (3)
    a) What causes this disease?
    b) List three ways by which this disease spreads.
    c) What happens to the person who is infected with this disease?

18. Preeti was down with an attack of Bronchitis. The atmosphere was full of smoke and noise as Diwali was nearing when her parents explained to the ill effects of burning crackers to neighbourhood kids. They agreed not to burn crackers anymore.
    a) It is observed that when a cracker is burnt its light reaches us first and then we hear its sound, why?
    b) Any three ill effects that Preeti's parents might have explained to kids.

c)Do you support kid's decision of not burning crackers? Which qualities do you identify in those kids? (3)

19. Differentiate between:
    a) speed for a soft and loud sound (only diagrams)
    b) high pitched and low pitched sound (only diagrams)
    c) Why are ceilings of concert halls curved? (5)

20. State any condition when
    a) work done is positive b) work done is negative
    c. work done is zero. Give an example for each too. (5)

21. a) Write any two postulates of Bohr's Model of atom. (1+1+3)
    b) What was the drawback of Rutherford's atomic model?
    c) For a given element $^{27}_{13}X$, answer the following questions:
        i) Find the number of protons. ii) Find the number of neutrons.
        iii) Write the electronic configuration. iv) Identify the valence shell.
        v) What is the valency of element X? vi) Why is it called a metal?

22. Answer the following: (5)
    a) Antibiotics are successful in curing bacterial infections but do not cure viral infections. Why?
    b) Which system of our body is activated in response to infection and how it responds?
    c) Name any two organisms from which antibiotic could be extracted.
    d) List two conditions essential for good health.
    e) Healthy balanced diet helps in preventing diseases. How?

OPEN TEXT BASED ASSESSMENT

SCIENCE CLASS-IX

Theme–2: Conservation of Water Bodies

Abstract

Mindless extraction and over exploitation of very small quantity of fresh water resource has caused a rapid depletion and deterioration both in its quantity and quality. As per the latest assessment of ground water resources, carried out jointly by the Central Ground Water Board (CGWB) and the States, the assessment units are categorized as 'overexploited' or 'critical' and 'semi-critical' based on the stage of ground water development and the long-term water level declining trend during the past decade. This calls for initiative to conserve water bodies. The initiative gains immense importance in the sense that urban lakes or water bodies are first victims of urbanization and their conservation or restoration is sign of healthy and sustainable urban development. Urbanization and/or industrialization of the lake catchments in particular have had its extreme adverse impact.

After exploring the content, the learner will be able to explain importance of conservation of water bodies. This will help him/her to develop a positive attitude towards conservation through case studies. The student shall be able appreciate the interdependence of different natural resources and their management as a whole.

Until the last drop dries
And the Mother Nature cries
I think we won't realize
Our precious water bodies price

The cries grow shrill
A glassful to drink will be a frill.
You say it's polluted
You say it's scarce
But have we done for its care?

It will be the reason for fights and battles
It will be the reason for end of humans and cattle

That day is not far
When we are going to be on the brink
What will remain is just
The formula "H_2O" and the water bodies converted to a stink.

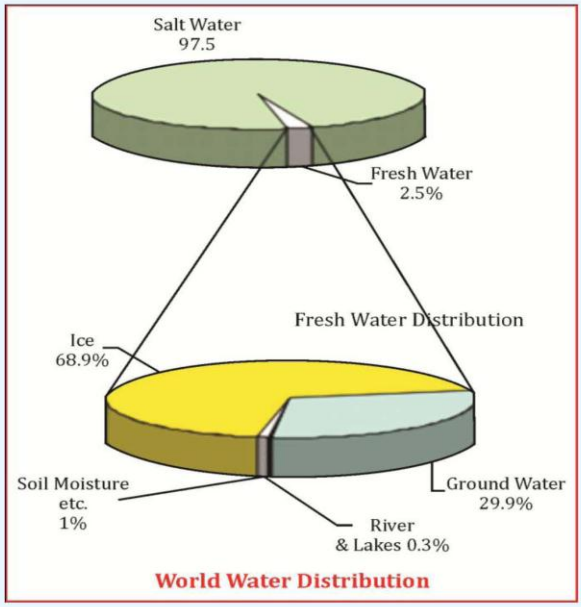
It's never too late
And it's not the matter of our fate
It's high time now
It's the right time now
Let's save them, let's save them let's save them……

A young girl of 8th standard was curious about going to her new class, the senior class -9. While going through her text book of science she was surprised to see a topic "Water-a wonder liquid" Out of curiosity she asked her science teacher why is it so that there is a need to study such a common and easy topic even in the senior class when they have already studied about it in the lower classes. Her curiosity actually encouraged her teacher to discuss at length the most debated topic all over the world and plethora of tactics and conventions being adopted for the sustainable use of water.

There started a class room discussion on need and importance of WATER, WATER BODIES and their CONSERVATION……..

Water is an abstract concept for some and a stark reality for others. It is a topic of environmental, political, social, economical and cultural importance and relevance. ***Ismail Serageldin*** - the Vice President of the World Bank in 1995, rightly predicted that in the next century wars would be over water.

While nearly 70% of the world is covered by water and nearly 60% of the human body is made of water, ironically, merely 0.0007% of planet's water is available for its 6.8 billion people!!



World Water Distribution

In a developing country like India, which no doubt is blessed with many beautiful and pious water bodies like rivers, streams, lakes and ponds---- CLEAN and POTABLE WATER is either hard to come

by or a commodity that requires laborious work and significant investment. It is projected that, the population under water stress will rise from 450 million at present to 2.7 billion by 2025 and Indian subcontinent is already being classified as water stressed i.e. our water needs will far exceed its availability.

Inland Water Resource of India

(1)	(2)
Rivers and Canals (length in km)	195095
Other Water Bodies (area in Mha)	
Reservoirs	2.93
Tanks and Ponds	2.43
Food Plain Lakes & Derelict Water bodies	0.80
Brackish Water	1.15
Total	7.31

Source: Handbook on Fisheries Statistics: 2014, Department of Animal Husbandry, Dairying & Fisheries, M/o Agriculture

Water bodies: Inland Water resources of the country are classified as: rivers and canals; reservoirs; tanks, lakes & ponds; lakes and derelict water bodies; and brackish water. The area of water bodies at all-India level has been presented in the table. Total water bodies other than rivers and canals cover an area of about 7.3 Mha. Among these water bodies, 'reservoirs' have maximum area (2.93 Mha) followed by 'tanks, lakes and ponds' (2.43 Mha). The total area of inland water resources (other than rivers and canals) is unevenly distributed over the States.

WHY DO WE FORGET THIS? – ALL LIVING BEINGS NEED CLEAN WATER.....

Hence a CHALLENGE: How can we effectively conserve, manage, distribute and sustainably use the various water resources available to us?

Water bodies have served various functions to meet the water requirements of the people for drinking, household, irrigation, fishing, religious, cultural and even recreational purposes. They are the host to a variety of flora and fauna and are an important feature of the landscape. In hydrological conditions like droughts and floods they influence the micro climate of the region.

Since water bodies are the life lines for all the living beings, it becomes our social and moral duty to conserve them and contain further on. The present day environmental conditions like pollution, drying up of water bodies, reduced water level, eutrophication, silting and flooding of water bodies are the results of various anthropogenic activities like urbanization, sewage, agriculture and industrial run off, to name a few. These factors are leading to the death of our life lines.

Some Facts and Figures on Water

Food and Agriculture Organization of the United Nations (FAO)

- The daily drinking water requirement per person is 2-4 litres, but it takes 2000 to 5000 litres of water to produce one person's daily food.
- It takes 1000-3000 litres of water to produce just one kilo of rice.
- In 2010, the estimated number of undernourished people worldwide was 925 million.
- Over the period to 2050 the world's water will have to support the agricultural systems that will feed and create livelihoods for an additional 2.7 billion people.
- The extent of land under irrigation in the world is 277 million hectares, about 20 percent of all cropland. Rainfed agriculture is practiced on the remaining 80 percent of the arable land.
- The Intergovernmental Panel on Climate Change predicts that yields from rain-dependent agriculture could be down by 50 percent by 2020.
- Due to climate change, Himalayan snow and ice, which provide vast amounts of water for agriculture in Asia, are expected to decline by 20 percent by 2030.
- Irrigation increases yields of most crops by 100 to 400 percent, and irrigated agriculture currently contributes to 40 percent of the world's food production.
- Water use has been growing at more than the rate twice of population increase in the last century.
- By 2025, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions.

World Water Assessment Programme (WWAP)

- Poor drainage and irrigation practices have led to water logging and salinization of approximately 10 percent of the world's irrigated lands.
- How the world uses freshwater: Irrigation- about 70%, Industry - about 22%, Domestic use - about 8%

Seeing the present state of our water bodies, we have to conserve and restore the water bodies and recycle waste water. Many programmes have been launched by State and Central Governments. The programme for Repair, Renovation and Restoration (RRR) of water bodies with domestic and external assistance have been set up with the main objective to increase the availability of drinking water. The adoption of stringent steps will initiate the restoration of these water bodies. These steps will help to alleviate the suffering of all living beings from this crisis.

Role of Government and other authorities: The major role of the Government at local level is to identify the local water bodies and notify them in their records. The water bodies like step wells (Baolis), trenches around old forts, wells as well as man made water bodies like ponds within temples, gurudwaras, mosques, parks, residential areas and other such public places should be declared as part of the "green architecture" of a city. Committees at all levels should be set up, drawing members from all the concerned departments and the local residents for maintaining the balanced conservation of water bodies. All stakeholders should allocate an adequate budget for water utilisation for various purposes such as, for drinking, domestic and industrial uses besides other uses like gardening. A Storm Water Management Plan of each city should be prepared and water bodies around should be prepared to receive storm water after it is appropriately treated through various feasible techniques such as in a sedimentation basin and/or constructed wetland (bio-treatment) approach etc. Awareness programmes should be initiated at all the levels of society, through various campaigns, hoardings involving famous personalities. The land around the water bodies should be declared as eco- sensitive areas and dumping of any waste should be a punishable offence. Only treated effluent, as per effluent standard should be allowed to be disposed into the water bodies.

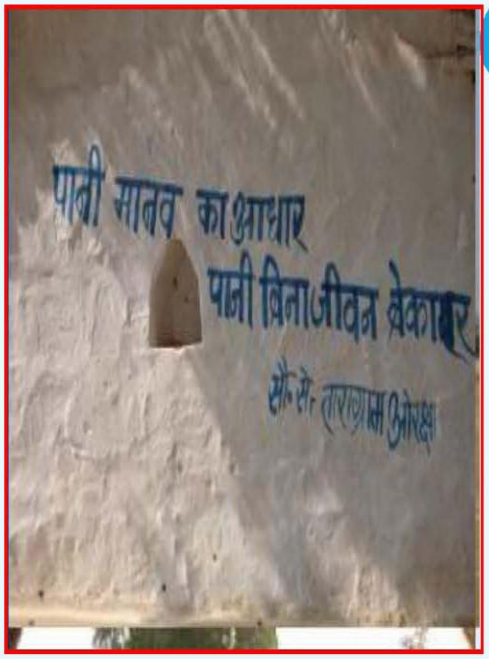
Conservation of Water bodies- Important Schemes

National River Conservation Plan (NRCP): The objective of NRCP is to improve the water quality of the rivers, which are the major water sources in the country, through implementation of pollution abatement works, to the level of designated best use. The river conservation programme in the country initiated with the launching of the Ganga Action Plazn (GAP) in 1985. The Ganga Action Plan was expanded to cover other rivers under National River Conservation Plan (NRCP) in the year 1995.

National Plan for Conservation of Aquatic Eco-Systems (NPCA): The 'National Wetlands Conservation Programme' (NWCP) and the 'National Lake Conservation Plan' (NLCP) has been merged into one integrated scheme of National Plan for Conservation of Aquatic Eco-systems (NPCA). NPCA aims at conserving aquatic ecosystems (lakes and wetlands) through implementation of sustainable conservation plans, and governed with application of uniform policy and guidelines. The scheme would contribute to reduction of pollution loads in lakes and wise use of wetland resources and their services including biodiversity of these water bodies to the stakeholders.

Source: Annual Report 2014-15 Ministry of Environment, Forests and Climate Change, Govt. of India

A Case Study



The news about India's first River Lake Link project in Tikamgargh to save the water bodies of the Chandelaera, drew everybody's attention. The project aims to create additional irrigation potential for 1990 hectares of land.

Tikamgarh district is situated in the northern part of Madhya Pradesh. It is bound in the north and west by Jhansi and Lalitpur of Uttar Pradesh, in the east by the Chhatarpur district. River Dhasan passes through it.

Tikamgargh is blessed with a large number of water bodies like wells, tube wells, tanks, lakes, dams which are used for irrigation, fisheries, industrial and domestic purposes. The river network of the region comprises of big and small rivers like Yamuna, Chambal, Betwa, Dhasna, Sindh and Ken... Canals have been culled out from most of these reservoirs for water supply. Two minor dams are constructed on river Jamni and Dhasan .

More than 86% of net ground water availability has been utilized placing the district in a critical condition.

Irrigation by Different Sources	Area (Km²)
Dug wells	762151235.74
Tube wells/ Bore wells	1955 88.73
Tank/Ponds	276 105.13
Canals	175 134.80
Other sources	65.86

The above data indicates that the most of the agricultural land depends on wells for irrigation.

The average annual rainfall of the Tikamgargh district is about 1000mm which is certainly far below the national average.

A large number of water bodies are still serving the purpose, but they are in various stages of degradation due to human intervention. According to recent surveys, the quality of water is deteriorating in rural and urban areas due to poor sanitation, run off fertilizer and improper disposal of solid and liquid waste.

In ancient times also, people had realized the importance of managing water resources. Several water harvesting structures had been constructed in the past to ease the water situation. These include Bundela tanks, step wells, village ponds, *hawelibandies* etc,. Many of these structures are currently in a state of neglect and are no longer able to harvest water. Moreover, the water quality is deteriorating day by day. The presence of nitrates, fluorides and cholera causing micro-organisms are confirmed by the concerned department .It has repeatedly been found that not just physical infrastructure, but behavioural issues also need to be addressed for solving the water issues. There is no practice of reuse of water for domestic purposes although some coping mechanisms have emerged in the last few years like reduced cropping of water-intensive crops, creation of farm bunds and mixed cropping.

A few suggestions made are maintenance and modernization of water bodies, ground water development, quality control of drinking water, participation in water management, research in science and technology.

The district administration then decided to initiate programmes with government departments, NGOs Wuas (Water User Association) and fishermen cooperative societies. The programme involved public awareness activities in villages such as celebration of World Wet lands day, desalting, removal of water weeds, preventing soil run off, and preparation of compost pits.

There was an overwhelming response from the community in all the awareness and conservation project works. Students from schools located in all rural areas and NGOs rejuvenated the village tanks by desiltation and deepening of the water bodies.

Our water resources, irregularly distributed in space and time, are under pressure due to major population change and increased demand. Access to reliable data on the availability, quality and quantity of water, and its variability, forms the necessary foundation for the management of water resources. The different alternatives that we are looking at are very small steps to match the demand and supply. All components of the hydrological cycle, and the influence of human activities on it, need to be understood and quantified in order to efficiently and *sustainably* develop and protect our water resources.

23. a) Write some possible reasons for drying up of water bodies. (2)
b) How is it possible for each one of us to conserve fresh water resources? (3)

24. Explain the term Eutrophication. What are the human activities which accelerate it? What are its effect? (5)

SECTION B (Multiple choice questions)

25. A compressed spring has
a) kinetic energy b) potential energy c) heat energy d) electrical energy (1)

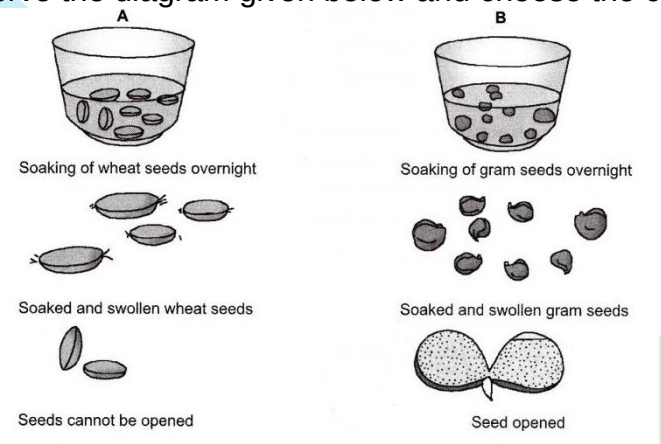
26. Distance between two adjacent crest and trough is 0.5m. The wavelength of the wave is
a) 1m b) 0.5m c) 0.25m d) 2m (1)

27. Mark the correct one (V = volume D = density M = mass)
a) D=M/V b) D=MV c) VxDxM=1 d) V=MxD (1)

28. The SI unit of buoyant force is
a) newton b) dyne c) kg d) metre second (1)

29. A student takes some water in a beaker and heats it over a flame for determining its boiling point. He keeps on taking its temperature readings. He would observe that the temperature of water.
a) Keeps on increasing regularly.
b) Keeps on increasing irregularly.
c) First increases slowly, then decreases rapidly and eventually becomes constant.
d) First increases gradually and then becomes constant. (1)

30. Observe the diagram given below and choose the correct option. (1)



a) Seed A is a Dicot seed but Seed B is a Monocot seed.
b) Seed A is a Monocot seed but Seed B is a Dicot seed.
c) Seed A is a Monocot seed but Seed B is a Gymnosperm seed.
d) Seed A is a Gymnosperm seed but Seed B is an Angiosperm seed.

31. Needle shaped structure in *Pinus* plant is: (1)
a) Leaf b) Shoot c) Stem d) Reproductive Part.

32. Identify a plant which has got fibrous root system, from the options given below: (1)
a) Mango tree b) Maple tree c) Mulberry d) Maize

33. The stage in the life cycle of a mosquito in which the organism is very active and requires a lot of food is: (1)
a) Pupa b) Larva c) Adult d) Egg.

34. Two pins A and B have surface areas of tips as $10^{-4}m^2$ and $10^{-8}m^2$. If a force of 10newtons is applied on each find pressure in each case. (2)

35. a) Write the separation techniques used to separate the mixture of camphor, sand and salt.
b) Why do we use cotton plug in the inverted funnel during sublimation process?(1+1)

36. Name any two aerial adaptations in birds. (2)

-x-x-x-x-x-x-