ROLL NUMBER				

SET A

INDIAN SCHOOL MUSCAT

FIRST PERIODIC TEST

CHEMISTRY

CLASS: XI Sub.Code: 043 Time Allotted: 50mts.

21.05.2023 Max .Marks: 20

GENERAL INSTRUCTIONS:

a) All questions are compulsory.

b) Mark for each question is indicated against the question.

1. The line spectrum of hydrogen obtained in the visible region corresponds to 1

   (a) Lyman series (b) Balmer series

   (c) Paschen series (d) Brackett series

2. According to Bohr's theory, the angular momentum of an electron in 3rd orbit is 1

   (a) $3h/\pi$ (b) $6h/\pi$ (c) $1.5h/\pi$ (d) $9h/2\pi$

3. What is the maximum number of emission lines obtained when the excited electrons of a hydrogen atom in $n = 3$ drop to ground state $n = 1$? 1

   (a) 10 (b) 6 (c) 12 (d) 3

4. As per de Broglie's formula, a macroscopic particle of mass 100 g and moving at a velocity of 1 ms^{-1} will have a wavelength 1

   (a) 6.626×10^{-33} m (b) 6.626×10^{-29} m

   (c) 6.626×10^{-31} m (d) 6.626×10^{-32} m

5. The transition in He^+ spectrum from n = 4 to n = 2 corresponds to which transition in the H spectrum? 1

(a) n = 2 to n = 1 (b) n = 3 to n = 1

(c) n = 3 to n = 2 (d) n = 4 to n = 2

In the following questions (Q.No 6 & Q.No 7) consist of two statements – Assertion (A) and Reason (R) .Choose the correct answer out of the following choices.

(a) Assertion and reason both are correct and reason is the correct explanation for assertion.

(b) Assertion and reason both are correct but reason is not the correct explanation for assertion.

(d) Assertion is wrong but reason is correct.

(e) Both assertion and reason are wrong.

6. **Assertion:** Hydrogen has one electron in its orbit but it produces several spectral lines. 1

Reason: There are many excited energy levels available in the atom.

7. **Assertion:** The energy of the electron in a hydrogen atom has a negative sign for all possible orbits. 1

Reason: Energy of an electron close to nucleus is taken as zero.

8. Why Bohr's orbits are called energy levels? 1

9. Which of the following has lowest frequency? 1

UV rays, X rays, Microwaves, Infra-red rays

10. Define the term wavelength. 1

11. Define electromagnetic radiation. 1

12. The radius of first Bohr orbit of hydrogen atom is $0.529A^0$. Calculate the radius of the second orbit of He^+ ion. 2

13. Calculate the energy of photon of light having frequency of $3 \times 10^{15}\ s^{-1}$. 2
($h = 6.626 \times 10^{-34}$ J s)

14. Write any two limitations of Bohr's model. 2

15. (i) An electron has a speed of 500 ms^{-1} with uncertainty of 0.02%. What is the uncertainty in locating its position? 3
(Mass of electron = 9.1×10^{-31} kg, h = 6.626×10^{-34} J s)

(ii) State Heisenberg's Uncertainty principle.

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ROLL NUMBER				

SET B

INDIAN SCHOOL MUSCAT

FIRST PERIODIC TEST

CHEMISTRY

CLASS: XI Sub.Code: 043 Time Allotted: 50mts.

21.05.2023 Max .Marks: 20

GENERAL INSTRUCTIONS:

a) All questions are compulsory.

b) Mark for each question is indicated against the question.

1. The line spectrum of hydrogen obtained in the UV region corresponds to 1

   (a) Lyman series (b) Balmer series

   (c) Paschen series (d) Brackett series

2. What is the maximum number of emission lines obtained when the excited electrons of a hydrogen atom in n = 6 drop to ground state n = 1? 1

   (a) 10 (b) 15 (c) 12 (d) 30

3. According to Bohr's theory, the angular momentum of an electron in 4^{th} orbit is 1

   (a) $3h/\pi$ (b) $4h/\pi$ (c) $2h/\pi$ (d) $h/2\pi$

4. The de Broglie wave length of an electron is 600 nm. The velocity of the electron is: 1

   (a) $1.8 \times 10^3\ ms^{-1}$ (b) $1.2 \times 10^5\ ms^{-1}$

   (c) $5.4 \times 10^3\ ms^{-1}$ (d) $1.2 \times 10^3\ ms^{-1}$

5. The transition in He^+ spectrum from $n = 4$ to $n = 2$ corresponds to which transition in the H spectrum? 1

(a) $n = 2$ to $n = 1$ (b) $n = 3$ to $n = 1$

(c) $n = 3$ to $n = 2$ (d) $n = 4$ to $n = 2$

In the following questions (Q.No 6 & Q.No 7) consist of two statements - Assertion (A) and Reason (R) .Choose the correct answer out of the following choices.

(a) Assertion and reason both are correct and reason is the correct explanation for assertion.

(b) Assertion and reason both are correct but reason is not the correct explanation for assertion.

(c) Assertion is correct but reason is wrong.

(d) Assertion is wrong but reason is correct.

(e) Both assertion and reason are wrong.

6. **Assertion:** Hydrogen has one electron in its orbit but it produces several spectral lines. 1

Reason: There are many excited energy levels available.

7. **Assertion:** The energy of the electron in a hydrogen atom has a negative sign for all possible orbits. 1

Reason: Energy of an electron close to nucleus is taken as zero.

8. Which transitions between Bohr's orbit corresponds to second line in the Balmer series? 1

9. Which of the following have shortest wavelength? 1

Microwave, Infra-red rays, Long radio waves, X-rays

10. Define the term wavenumber. 1

11. Define electromagnetic radiation. 1

12. The radius of first Bohr orbit of hydrogen atom is $0.529 A^0$. Calculate the radius of the third orbit of Li^{2+} ion. 2

13. The wave length of a spectral line of cesium is 820 nm. Calculate the frequency of the line. ($c = 3 \times 10^8\ ms^{-1}$) 2

14. Write any two limitations of Bohr's model. 2

15. (i) An electron has a speed of 500 ms^{-1} with uncertainty of 0.02%. What is the uncertainty in locating its position? 3
(Mass of electron = 9.1×10^{-31}kg, h = 6.626×10^{-34} J s)

(ii) State Heisenberg's uncertainty principle.

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ROLL NUMBER				

SET C

INDIAN SCHOOL MUSCAT

FIRST PERIODIC TEST

CHEMISTRY

CLASS: XI Sub.Code: 043 Time Allotted: 50mts.

21.05.2023 Max .Marks: 20

GENERAL INSTRUCTIONS:

a) ***All questions are compulsory.***

b) ***Mark for each question is indicated against the question.***

1. Paschen series of hydrogen spectrum is under which portion of electromagnetic spectrum? 1

   (a) Visible (b) IR

   (c) Uv (d) Microwave

2. According to Bohr's theory, the angular momentum of an electron in 2^{nd} orbit is 1

   (a) $4h/\pi$ (b) $2h/\pi$ (c) h/π (d) $h/2\pi$

3. What is the maximum number of emission lines obtained when the excited electrons of a hydrogen atom in n = 4 drop to ground state n = 1? 1

   (a) 10 (b) 6 (c) 12 (d) 3

4. As per de Broglie's formula, a macroscopic particle of mass 100 g and moving at a velocity of 1 ms^{-1} will have a wavelength of 1

   (a) 6.626×10^{-33} m (b) 6.626×10^{-29} m

   (c) 6.626×10^{-31} m (d) 6.626×10^{-32} m

5. The transition in He^+ spectrum from $n = 4$ to $n = 2$ corresponds to which transition in the H spectrum? 1

(a) $n = 2$ to $n = 1$ (b) $n = 3$ to $n = 1$

(c) $n = 3$ to $n = 2$ (d) $n = 4$ to $n = 2$

In the following questions (Q.No 6 & Q.No 7) consist of two statements - Assertion (A) and Reason (R) .Choose the correct answer out of the following choices.

(a) Assertion and reason both are correct and reason is the correct explanation for assertion.

(b) Assertion and reason both are correct but reason is not the correct explanation for assertion.

(c) Assertion is correct but reason is wrong.

(d) Assertion is wrong but reason is correct.

(e) Both assertion and reason are wrong.

6. **Assertion:** Hydrogen has one electron in its orbit but it produces several spectral lines. 1

Reason: There are many excited energy levels available.

7. **Assertion:** The energy of the electron in a hydrogen atom has a negative sign for all possible orbits. 1

Reason: Energy of an electron close to nucleus is taken as zero.

8. Why Bohr's orbits are called energy levels? 1

9. Which of the following have shortest wavelength? 1

Microwave, Infra-red rays, Long radio waves, X-rays

10. Define the term frequency. 1

11. Define electromagnetic radiation. 1

12. The energy associated with the first orbit in hydrogen atom is -2.18×10^{-18} J $atom^{-1}$. What is the energy associated with 5th orbit? 2

13. Calculate the energy of photon of light having frequency of 3×10^{15} s^{-1}. ($h = 6.626 \times 10^{-34}$ J s) 2

14. Write any two limitations of Bohr's model. 2

15. (i) Table tennis ball has a mass of 0.01 kg and a speed of 90 m/s. If speed can be measured within an accuracy of 4% what will be the uncertainty in speed and position? 3

(ii) State Heisenberg's Uncertainty principle.

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