| MC | Qs Related to the Article "20.1ATOMIC SPECTRA" |
|----|---|
| 1. | The radiations emitted from hydrogen filled discharge t |

- e tube show
- (a) Bound spectrum

- (b) Line spectrum
- (c) Continuous spectrum
- (d) Absorption spectrum
- 2. A spectrum of radiation in which the quantity being studied, such as frequency or energy, takes discrete values is called:
- (a) Continuous spectra

(b) Band spectra

(c) Line spectra

- (d) None of these
- 3. Which of the following is an example of line spectra? (a) Black body radiation spectra
 - (b) Molecular spectra

(c) Atomic spectra

- (d) None of these
- 4. Sunlight spectrum is
- (a) Discrete (b) Line spectrum 5. Which is an example of continuous spectra?
 - (c) Molecular Spectra

(c) Continuous spectrum

(c) Atomic Spectra

- (d) None of these
- 6. Hydrogen atom spectrum does not lie in:
- (a) Visible region
- (b) Ultraviolet region (c) Infrared region
- (d) X-ray region

- 7. The value of Rydberg's constant is:
- (a) $1.0974 \times 10^7 m^{-1}$ (b) $1.6 \times 10^{-19} C$

(a) Black Body Radiation Spectrum

- (c) 1.05×10^{-34} Js
- (d) $9.1 \times 10^{-34} \ kg$

- 8. The unit of Rydberg's constant R_H is:
- (a) m^{-2}
- (b) m^{-1}
- (c) m

(d) m^2

(d) None

- 9. Which of the following series of H-spectrum lies in ultraviolet region:
- (a) Pfund Series
- (b) Balmer Series
- (c) Paschen Series
- (d) Lyman Series (d) $\frac{1}{\lambda} = E_o \left(\frac{1}{4^2} - \frac{1}{n^2} \right)$
- 10. Lyman series contains the wavelength given by formula: (a) $\frac{1}{\lambda} = E_o\left(\frac{1}{1^2} \frac{1}{n^2}\right)$ (b) $\frac{1}{\lambda} = E_o\left(\frac{1}{2^2} \frac{1}{n^2}\right)$ (c) $\frac{1}{\lambda} = E_o\left(\frac{1}{3^2} \frac{1}{n^2}\right)$ (d) 11. In the spectrum of which of the following, will you find Balmer Series:
- (b) Nitrogen
- (c) Hydrogen
- (d) All a, b & c
- 12. Balmer series is obtained when all the transitions of electron terminate on:
- (a) 2nd orbit

(a) Oxygen

- (b) 3rd orbit
- (c) 4th orbit
- (d) 5th orbit
- 13. Balmer series in mathematical form can be expressed as: (a) $\frac{1}{\lambda} = R_H \left(\frac{1}{1^2} \frac{1}{n^2} \right)$ (b) $\frac{1}{\lambda} = R_H \left(\frac{1}{2^2} \frac{1}{n^2} \right)$ (c) $\frac{1}{\lambda} = R_H \left(\frac{1}{3^2} \frac{1}{n^2} \right)$

- $(d)\frac{1}{\lambda} = R_H \left(\frac{1}{4^2} \frac{1}{n^2}\right)$
- 14. Balmer empirical formula explains the electromagnetic radiation of any excited atom in terms of their:
- (a) Energy
- (b) Mass
- (c) Wavelength
- (d) Momentum

- 15. Balmer series lies in
- (a) Visible region
- (b) Ultraviolet region (c) Infrared region
- (d) X-ray region
- 16. First spectral series of hydrogen atom was discovered by: (c) Paschen
- (a) Balmer
- (b) Lyman
- (d) Rydberg
- 17. Paschen series is obtained when all the transitions of electron terminate on:
- (a) 2nd orbit
- (b) 3rd orbit
- (d) 5th orbit
- 18. The relation for paschen series is given by: (a) $\frac{1}{\lambda} = R_H \left(\frac{1}{2^2} \frac{1}{n^2} \right)$ (b) $\frac{1}{\lambda} = R_H \left(\frac{1}{3^2} \frac{1}{n^2} \right)$ (c) $\frac{1}{\lambda} = R_H \left(\frac{1}{4^2} \frac{1}{n^2} \right)$ 19. For paschen series, value of n starts from:

(d) $\frac{1}{\lambda} = R_H \left(\frac{1}{5^2} - \frac{1}{n^2} \right)$

- (a) 2

- (d)8
- 20. Brackett series can be expressed as: (a) $\frac{1}{\lambda} = R_H \left(\frac{1}{2^2} \frac{1}{n^2}\right)$ (b) $\frac{1}{\lambda} = R_H \left(\frac{1}{3^2} \frac{1}{n^2}\right)$ (c) $\frac{1}{\lambda} = R_H \left(\frac{1}{4^2} \frac{1}{n^2}\right)$ (d) $\frac{1}{\lambda}$ 21. Bracket series is obtained when all transition of electron terminate on _

- (d) $\frac{1}{\lambda} = R_H \left(\frac{1}{5^2} \frac{1}{n^2} \right)$
- (b) 5th orbit (c) 3rd orbit
- 22. The shortest wavelength in Bracket series has wavelength:
 - (b) $\frac{\bar{R}_{H}}{16}$
- (c) $16 R_H$
- (d) $4R_H$

(d) 2nd orbit

- 23. The relation for pfund series is given by:

- (a) $\frac{1}{\lambda} = R_H \left(\frac{1}{2^2} \frac{1}{n^2} \right)$ (b) $\frac{1}{\lambda} = R_H \left(\frac{1}{3^2} \frac{1}{n^2} \right)$ (c) $\frac{1}{\lambda} = R_H \left(\frac{1}{4^2} \frac{1}{n^2} \right)$
- (d) $\frac{1}{\lambda} = R_H \left(\frac{1}{5^2} \frac{1}{n^2} \right)$
- 24. The number of lines in the complete spectrum of hydrogen atom is:

- (d) Infinite
- 25. Radiation with wavelength longer than red light_ (a) Ultraviolet rays
 - (b) X-rays
- (c) Infrared radiation
- (d) Visible radiations

| MCQ # 1: (b) | MCQ # 2: (c) | MCQ # 3: (c) | MCQ # 4: (c) | MCQ # 5: (a) | MCQ # 6: (d) | MCQ # 7: (a) |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| MCQ # 8: (b) | MCQ # 9: (d) | MCQ # 10: (a) | MCQ # 11: (c) | MCQ # 12: (a) | MCQ # 13: (b) | MCQ # 14: (c) |
| MCQ # 15: (a) | MCQ # 16: (a) | MCQ # 17: (b) | MCQ # 18: (b) | MCQ # 19: (b) | MCQ # 20: (c) | MCQ # 21: (a) |
| MCQ # 22: (b) | MCQ # 23: (d) | MCQ # 24: (d) | MCQ # 25: (c) | | | |
| | <u> </u> | | | | | |

MCQs Related to the Article "20.2 BOHR'S MODEL TO HYDROGEN ATOM" 1. Bohr second postulate $\left(mvr = n\frac{h}{2\pi}\right)$ was justified by: (c) Heisenberg (a) Bohr (b) DeBroglie (d) Davisson and Germer 2. If an electron jumps from nth orbit of energy E_n to pth (lower) orbit of energy E_p , a photon of frequency f and wavelength λ obeys the relation: (b) $E_n - E_p = hf$ (d) $E_n - E_p = \frac{J\lambda}{h}$ (a) $E_n - E_p = f\lambda$ (c) $E_n - E_p = h\lambda$ 3. According to Bohr's theory the outer orbit Electron has _ energy than inner orbits. (d) None of these (a) Greater (b) Smaller (c) Equal 4. When an electron absorbs energy, it jumps to: (a) Lower energy state (b) Higher energy state (c) Ground energy state (d) Remains in the same state 5. If one or more electrons are completely removed from an atom, then atom is said to be: (b) Polarized (a) Excited (c) Stabilized (d) Ionized 6. The orbital angular momentum in the allowed stationary orbits of Hygdrogen atom is given by: (a) $\frac{2\pi}{nh}$ (b) $\frac{nh}{2\pi}$ (c) $\frac{2h}{n\pi}$ (d) $\frac{h}{\pi}$ 7. The relation between Rydberg's constant R_H and ground state energy E_o is: (b) $R_H = \frac{hc}{E_o}$ (d) $E_o = \frac{hc}{R_H}$ (c) $E_o = \frac{R_H}{hc}$ (a) $R_H = \frac{E_o}{hc}$ 8. Bohr's theory is failed to explain (c) Complex atoms spectrum (a) H – spectrum (b) He – spectrum 9. The potential required to remove an electron from atom is called: (b) Excitation Potential (a) Critical Potential (c) Absolute Potential (d) Ionization Potential 10. The quantized energy of first Bohr orbit of hydrogen atom is (a) 13.04 eV (b) 3.7 eV (c) 13 eV (d) 13.6 eV 11. The quantized radius of first Bohr orbit of a hydrogen atom is: (a) 0.053 nm (b) 0.0053 nm (c) 0.00053 nm (d) 0.53 nm 12. The radius of 3rd Bohr orbit in H-atom is greater than the radius of 1st orbit by the factor (b) 3 (a) 2 (c) 4 (d) 9 13. The speed of electrons in nth orbit is given as: (b) $\frac{2\pi ke^2}{}$ (a) $\frac{4\pi^2ke^2}{}$ 14. Speed of electron in first Bohr's orbit is: (c) $2.19 \times 10^{-6} \ cm/s$ (d) $2.19 \times 10^{6} \ cm/s$ (a) $2.19 \times 10^{-6} \ m/s$ (b) $2.19 \times 10^{6} \ m/s$ 15. The total energy of electron in the state $n = \infty$ of hydrogen atom is: (c) 10.2 eV (a) Zero (b) 3.2 eV (d) 13.6 eV 16. The total energy of electron in an orbit around the nucleus is (d) None (a) + ive (b) - ive (c) zero 17. The value of Plank's constant is (a) 6.63×10^{-34} J.sec (b) 6.63×10^{-34} J/sec (c) 6.63×10^{-34} sec/J (d) None of these 18. Ratio of the weight of H-atom to that of an electron is approximately.

| (a) 183.336 | (b) 1836 | (c) 18360.00 | (d) 183.60 | | | | | |
|--|-------------|--------------|------------|--|--|--|--|--|
| 19. Ground state energy of the 4th orbit in a H-atom is | | | | | | | | |
| (a) 13.60eV | (b) 3.40eV | (c) 0.85eV | (d) 1.51eV | | | | | |
| 20. If the ionization energy of hydrogen atom is 13.6 eV, its ionization potential will be | | | | | | | | |
| (a) 13.6 V | (b) 136.0 V | (c) 3.4 V | (d) 0 V | | | | | |
| 21. Photon of high frequency will be absorbed when transition takes place from | | | | | | | | |

| (a) 1st to 5th orbit | (b) 2 nd to 5 th orbit | (c) 3^{rd} to 5^{th} orbit | (d) 4 th to 5 th orbit |
|----------------------|--|--------------------------------|--|
| | | | |

| MCQ # 8: (c) MCQ # 9: (d) MCQ # 10: (d) MCQ # 11: (a) MCQ # 12: (d) MCQ # 13: | ICQ # 1: (b) M | b) MCQ # 2: (b) MCQ # 3: (a) MCQ # 4: (b) | MCQ # 6: (b) MCQ # 7: (| 7: (a) |
|---|------------------|---|---------------------------|---------|
| | MCQ # 8: (c) M | c) MCQ # 9: (d) MCQ # 10: (d) MCQ # 11: (a) |) MCQ # 13: (b) MCQ # 14: | 14: (b) |
| MCQ # 15: (d) MCQ # 16: (b) MCQ # 17: (a) MCQ # 18: (b) MCQ # 19: (c) MCQ # 20: | MCQ # 15: (d) M | (d) MCQ # 16: (b) MCQ # 17: (a) MCQ # 18: (b) | MCQ # 20: (a) MCQ # 21: | 21: (a) |

MCQs Related to the Article "20.3 INNER SHELL TRANSITIONS AND CHARACTERISTIC X-RAYS"

| cess of photo-electric | effect is: | | |
|----------------------------------|--|---|--|
| (b) X-ray production | (c) Pair Production | (d) Pair Annih | ilation |
| field is applied in the j | path X -rays , they wil | l be moving in | |
| (b) Circular path | (c) Parabolic path | (d) None | |
| nown as | | | |
| (b) γ – rays | (c) Breaking radiatio | n | |
| lar in nature to | | | |
| (b) Positive rays | (c) γ - rays | (d) α - rays | |
| depends upon | | | |
| (b) Accelerating volta | nge (c) Material o | f the target | (d) b and c |
| | (b) X-ray production field is applied in the p (b) Circular path nown as (b) γ - rays lar in nature to (b) Positive rays s depends upon | field is applied in the path X -rays , they wile (b) Circular path (c) Parabolic path nown as (b) γ - rays (c) Breaking radiatio lar in nature to (b) Positive rays (c) γ - rays (c) γ - rays | (b) X-ray production (c) Pair Production (d) Pair Annih (e) Pair Production (f) Pair Annih (g) Parabolic path (h) None (h) γ - rays (c) Breaking radiation (d) α - rays (e) Positive rays (f) γ - rays (g) γ - rays (h) Positive rays (h) γ - rays (h) γ - rays (h) γ - rays (h) γ - rays (h) α - |

| 6. In an X - r | • | | angth of the V | rave amittad is | - | ici ciicc |
|--|--|---|---|---|---|--------------|
| allowed to hit a metal target, the wavelength of the X-r (a) hc/eV (b) he/Vc (c) eV/h | | | | - | · ossible to predic | ·† |
| | | metal on heat | | (u) mip | ossible to predic | |
| (a) Secondary | = | | (b) Field effect | | | |
| (c) Photoelect | | | (d) Thermionic | emission | | |
| | | an atom canno | | | | |
| (a) γ -rays | | rared rays | (c) UV rays | (d) X – | rays | |
| (a) Continuous | | r shell transitio | o n are: (b) Discontinuo | ue V-rave | | |
| (c) Characteris | - | | (d) Energetic X- | - | | |
| 10. X-rays are | <u>-</u> | | (a) Energetic A | Tuy 5 | | |
| (a) Unknown | | | (b) High energy | y electrons | | |
| (c) High energ | | | (d) Radioisotop | oes | | |
| | _ | re the X – rays | | | | |
| (a) High energ | | | (b) Specific wa | velengths | | |
| (c) Specific from | equencies tons moves wi t | th a speed of : | (d) All of these | | | |
| (a) Light | tons moves wit | in a speed of . | (b) sound | | | |
| (c) Less than s | peed of light | | (d) Greater than | n speed of light | | |
| | | in living cells of | due to radiation | | | |
| (a) Small | (b) Lar | ge | (c) Excessive | (d) Non | e of these | |
| MCQ # 1: (b) | MCQ # 2: (a) | MCQ # 3: (c) | MCQ # 4: (c) | MCQ # 5: (d) | MCQ # 6: (a) | MCQ # 7: (d) |
| MCQ # 8: (a) | MCQ # 2: (a) | MCQ # 3. (c) | MCQ # 11: (d) | MCQ # 12: (a) | MCQ # 0. (a) | MCQ # 7. (u) |
| | | | | | | |
| MCQs Related | to the Article | "20.4 UNCERT | AINTY WITHIN | THE ATOM" | | |
| - | | | principle, the q | uantities which | ch cannot be me | easured |
| | ously with acc | uracy are: | (L) Desition | 1.34 | | |
| (a) Energy and(c) Position an | | | (b) Position and (d) Momentum | | | |
| | | ul calculation b | y Warner Heise | | | |
| (a) ΔE . $\Delta t \approx \hbar$ | | | (c) Δx . $\Delta p \geq \hbar$ | | $\Delta v \approx \hbar$ | |
| (a) $\Delta E. \Delta t \approx \hbar$ (b) $\Delta x. \Delta p \approx \hbar$ (c) $\Delta x. \Delta p \geq \hbar$ (d) $\Delta m. \Delta v \approx \hbar$ MCQ # 1: (b) MCQ # 2: (c) | | | | | | |
| | | MCQ # | | | _, ,, | |
| MCOs Polotos | Ltatha Antiala | | | | <u>-</u> , | |
| • | to the Article | "20.5 LASER" | | | | |
| 1. Laser is a | device which c | "20.5 LASER" | 1: (b) MCQ # 2 | 2: (c) | | |
| 1. Laser is a (a) An intense | device which c beam of light | "20.5 LASER" | 1: (b) MCQ # 2 | 2: (c) | | |
| 1. Laser is a (a) An intense (c) Monochron | device which c beam of light natic light | "20.5 LASER" | (b) Coherent lig | 2: (c) | | |
| 1. Laser is a (a) An intense (c) Monochror 2. Which one (a) X - rays | device which c beam of light natic light e of the followi (b) Nor | "20.5 LASER" can produce ng is more coh | (b) Coherent lig (d) All a, b & c erent (c) Laser | 2: (c) | | |
| 1. Laser is a (a) An intense (c) Monochron 2. Which one (a) X - rays 3. Which is a | device which c beam of light natic light e of the followi (b) Non not a character | "20.5 LASER" can produce ng is more coh rmal light istics of a LASE | (b) Coherent lig (d) All a, b & c erent (c) Laser | cht (d) γ - 1 | ays | |
| 1. Laser is a (a) An intense (c) Monochron 2. Which one (a) X - rays 3. Which is a (a) Monochron | device which c beam of light natic light e of the followi (b) Non not a character natic (b) Coh | "20.5 LASER" can produce ng is more coh rmal light istics of a LASE | (b) Coherent lig (d) All a, b & c erent (c) Laser (R: (c) Intense | cht (d) γ - 1 | | |
| 1. Laser is a (a) An intense (c) Monochron 2. Which one (a) X - rays 3. Which is a (a) Monochron 4. LASER act | device which c beam of light natic light e of the followi (b) Non not a character natic (b) Coli | "20.5 LASER" can produce ng is more coh rmal light istics of a LASE nerent duced if an ato | (b) Coherent lig (d) All a, b & c erent (c) Laser (c) Intense m is in its: | (d) γ – 1 (d) Mul | ays ti-Directional | |
| 1. Laser is a (a) An intense (c) Monochror 2. Which on (a) X - rays 3. Which is a (a) Monochror 4. LASER act (a) Normal Sta | device which c beam of light natic light e of the followi (b) Non not a character natic (b) Cob ion can be pro- | "20.5 LASER" an produce ng is more coh rmal light istics of a LASE nerent duced if an ato cited State | (b) Coherent lig (d) All a, b & c erent (c) Laser (R: (c) Intense | (d) γ – 1 (d) Mul | ays | |
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13. Helium-Neon Laser beam emitted from a discharge tube has a color:

(a) Blue (b) Green

14. Optical pumping exist in

(a) X - rays (b) Laser

(c) Spectrum

(d) White (d) None

15. Reflecting mirrors in laser is used to

(a) Further stimulation

(b) Lasing more

(c) Red

(c) For production more energetic laser

(d) All the above

16. A finally focused beam of LASER used to destroy:

(a) Cancerous cells

MCQ # 1: (d)

(b) Precancerous cells (c) Living cells

(d) Both a and b

MCQ # 6: (c)

MCQ # 7: (c)

17. Laser beam can be used to generate

(a) One dimensional images

(b) Two dimensional images

(c) Three dimensional images

(d) None of these

18. Laser beam can be used for

(a) Wilding of detached retinas

(b) Destroy tissues in a localized area

(c) Sealed off capillaries for prevention of disease

MCQ # 2: (c) MCQ # 3: (d)

(d) All of them

MCQ # 5: (c)

| MCQ # 8: (d) | MCQ # 9: (b) | MCQ # 10: (d) | MCQ # 11: (c) | MCQ # 12: (c) | MCQ # 13: (c) | MCQ # 14: (b) |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| MCQ # 15: (d) | MCQ # 16: (d) | MCQ # 17: (c) | MCQ # 18: (d) | | | |
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MCQ # 4: (b)

