

AAFAQ ACADEMY – KASUR

Paper: Physics

Chapter (20)
ATOMIC SPECTRA

Class: F.Sc. Part – II

Name: _____ Roll No: (in words) _____

EVENING GROUP OBJECTIVE TYPE

Total Marks: 12

Paper Code: _____

Total Time: 10 Minutes

NOTE: Write your Roll No. in space provided. Using lead pencil will result in loss of marks.

Q.No.1: You have four choices for each objective type question as A,B,C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

| Sr. No. | QUESTION | A | B | C | D |
|---------|--|--|---|---|---|
| 1. | The spectrum of visible sunlight ranges from | 400nm to 700nm | 600nm to 900nm | 656nm to 434nm | All of the above |
| 2. | The energy required to remove an electron from the atom is called | Critical energy | Excitation energy | Ionization energy | All of the above |
| 3. | X – rays can | Damage the living tissues | Effect photographic | Be used in crystallography | All of the above |
| 4. | The size (diameter) of an nucleus is of the order of | $10^{-12} m$ | $10^{-10} m$ | $10^{-15} m$ | None of these |
| 5. | The radius of the nth Bohr's orbit for H-atom is | $\frac{4\pi^2 m K e^2}{h^2}$ | $\frac{n^2 h^2}{4\pi^2 m K e^2}$ | $\frac{n^2 h^2}{4\pi^2 m^2 K e^2}$ | $\frac{n h}{4\pi^2 m^2 K e}$ |
| 6. | The electric force on an electron in an orbit around the nucleus is | Centrifugal Force | Drag Force | Centripetal Force | All the above |
| 7. | The first excitation energy of hydrogen atom is | -1.51 eV | 3.40 J | 10.2eV | 0.53eV |
| 8. | The electrical P.E. of an electron in an orbit around the nucleus is | $\frac{K e^2}{r_n^2}$ | $-\frac{K e^2}{r_n}$ | $\frac{K e}{r_n^2}$ | $\frac{K e^3}{r_n^2}$ |
| 9. | Which one of the following transitions emits hard photon? | From 4 th to 3 rd orbit | From 4 th to 2 nd orbit | From 5 th to 2 nd orbit | From 5 th to 1 st orbit |
| 10. | Different types of lasers are | Two | Three | Four | None of these |
| 11. | The penetrating power of X – rays increases with | Increase in their velocity | Decrease in their velocity | Increase in their intensity | Decrease in their intensity |
| 12. | Hydrogen atom does not emit X-rays because | Its energy levels are too close to each other. | Its energy levels are too far apart | It is too small in size | It has a single electron |

SUBJECTIVE TYPE

Total Marks: 18

Time Allowed: 0 Hours 40 Minutes

SECTION – I (SHORT QUESTIONS)

2. Attempt any FIVE questions.

(5 × 2 = 10) Marks

- i. What do you understand by stimulated or induced emission?
- ii. Describe different uses of laser in medicine and industry.
- iii. What is CAT Scanner?
- iv. What is spectroscopy?
- v. What are the advantages of lasers over ordinary light?
- vi. Can X-rays be reflected, diffracted and polarized just like any other waves? Explain.
- vii. How can the spectrum of hydrogen contain so many lines when hydrogen contains one electron?

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

- i. What is LASER? Describe its principle and Laser action in detail. (5)
- ii. A tungsten target is struck by electrons that have been accelerated from rest through 40kV potential difference. Find the shortest wavelength of the Bremsstrahlung radiation emitted? (3)

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SECTION – III (Practical)

4. (a) Write answer of TWO questions. (2×2=4)
- i. a
 - ii. c
 - iii. v
 - iv. b
4. (b) Write procedure to determine the resistance of voltmeter by graph method. (3)
- (OR)**
- Write procedure to find the unknown high resistance by using neon flash lamp. (3)
4. (c) Answer the following questions on the basis of graph drawn between potential difference (V) and charge (Q). (4)
- i. What you conclude from the graph?
 - ii. Find the capacitance of capacitor from the graph.

Good Luck
Ch. Khalid Mahmood Ashraf