

RIZWAN ACADEMY – KASUR

Paper: Physics

Chapter (19 – 21)

Class: F.Sc. Part – II

DAWN OF MODERN PHYSICS + THE ATOMIC SPECTRA + NUCLEAR PHYSICS

Name: _____ Roll No: (in words) _____

OBJECTIVE TYPE

Total Marks: 17

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.	A baryon consists of	Two quarks	Three quarks	Two quarks, one anti quark	None of these
2.	After γ – emission from ${}_{92}^{235}\text{U}$, the residual nuclei will be	${}_{88}^{226}\text{Ra}$	${}_{94}^{239}\text{Pu}$	${}_{91}^{235}\text{Pa}$	None of these
3.	Radioactive substances can be stored by using	Lead	Iron	Copper	Steel
4.	Which nucleus is the most stable nucleus?	${}_{15}^{31}\text{P}$	${}_{26}^{56}\text{Fe}$	${}_{56}^{141}\text{Ba}$	${}_{88}^{226}\text{Ra}$
5.	For electronic quenching in Geiger – Mueller counter	–ve voltage is applied at anode	+ve voltage is applied at cathode	A gas is used	Zero voltage is applied at anode
6.	Rutherford discovered proton by the bombardment of α – particle on	Nitrogen	Oxygen	Beryllium	Carbon
7.	Which radioactive element present in air?	Uranium	Krypton	Radium	Radon
8.	The spectrum of visible sunlight ranges from	400nm to 700nm	600nm to 900nm	656nm to 434nm	All of the above
9.	The energy required to remove an electron from the atom is called	Critical energy	Excitation energy	Ionization energy	All of the above
10.	X – rays can	Damage the living tissues	Effect photographic	Be used in crystallography	All of the above
11.	The size (diameter) of an nucleus is of the order of	10^{-12}m	10^{-10}m	10^{-15}m	None of these
12.	The radius of the nth Bohr's orbit for H-atom is	$\frac{4\pi^2 m K e^2}{h^2}$	$\frac{n^2 h^2}{4\pi^2 m K e^2}$	$\frac{n^2 h^2}{4\pi^2 m^2 K e^2}$	$\frac{n h}{4\pi^2 m^2 K e}$
13.	0.001kg mass will be equivalent to	2.50 Giga watt hour	25.00 giga watt hour	0.26 giga watt hour	None of these
14.	If the distance of an electric-lamp from a photo cell is continuously increased, the photo electric current (I) varies with distance (d) as	$I \propto d^2$	$I \propto d$	$I \propto \frac{1}{d^2}$	$I \propto \frac{1}{d}$
15.	Compton wavelength is given by	$\frac{h}{m_0 c^2}$	$\frac{h}{m_0 c}$	$\frac{hc}{m}$	$\frac{m_0 h}{c}$
16.	If energy of incident photon is greater than the rest mass energy of electron positron pair, the surplus energy is shared by the pair as	Potential energy	Thermal energy	Electronic energy	Kinetic energy
17.	Pair production can be studied with	Ultraviolet rays	X-rays	Microwaves	γ -rays

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Name: _____ Roll No: (in words) _____

SUBJECTIVE TYPE

Total Marks: 28

Time Allowed: 0 Hours 80 Minutes

SECTION – I (SHORT QUESTIONS)

2. Attempt any TEN questions. (10×2=20)Marks

- i. Why are heavy nuclei un-stable?
- ii. Explain how α - and β -particles may ionize an atom without directly hitting the electrons? What is the difference in the action of the two particles for producing ionization?
- iii. Discuss the advantages and disadvantages of nuclear power compared to the use of fossil fuel generated power.
- iv. What do you understand by "background radiation"? State two sources of this radiation.
- v. What is a radioactive tracer? Describe one application each in medicine, agriculture and industry.
- vi. Explain the term "mass defect" and binding energy" with the help of examples.
- vii. Describe different uses of laser in medicine and industry.
- viii. What is CAT Scanner?
- ix. What is spectroscopy?
- x. Does the dilation means that time really passes more slowly in moving system or that is only seems to pass more slowly?
- xi. When ultraviolet light falls on certain dyes, visible light is emitted. Why does this not happen when infra-red light falls on these dyes?
- xii. Can pair production take place in vacuum? Explain.
- xiii. What advantages an electron microscope has over an optical microscope?

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...
- i. How de – Broglie describe wave nature of particles? Verify it experimentally. (5)
 - ii. The orbital electron of a hydrogen atom moves with a speed of $5 \bullet 456 \times 10^5 m \bullet s^{-1}$. (a) Find the value of the quantum number 'n' associated with this electron, (b) Calculate the radius of this orbit, and (c) The energy of the electron in this orbit? (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