Faisalabad Board Group-II *(First Annual Examination 2025)*

Objective	**Intermediate Part Second**	**Roll No. _____**
Paper Code	**PHYSICS (Objective) Group - II**	
8474	**Time: 20 Minutes**	**Marks: 17**

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many question as given in objective types question paper and leave other circle blank.

Q1.

Sr.	Questions	A	B	C	D
1	An old unit of equivalent does is:	Gray	Radian	Rem	Seivert
2	Binding energy for deuteron nucleus is	2.8 MeV	2.23 MeV	2.28 MeV	2.25 MeV
3	If electron jumps from second orbit to first orbit in hydrogen atom it emits photon of:	3.8 eV	13.6 eV	10.20 eV	3.40 eV
4	The wavelength associated with the proton moving at speed of $40ms^{-1}$ is:	7.2nm	9.92nm	15.7nm	17.3nm
5	The converse of pair production is:	Annihilation of matter	Materialization	Compton's effect	Photo electric effect
6	SI unit of current gain is:	Ampere	Volt	Ohm-meter	No unit
7	A single silicon photo voltaic cell produces a voltage of the order of:	0.3V	0.9V	0.12V	0.6V
8	A solid in which there is no regular arrangement of molecules is called:	Amorphous solid	Glassy solid	Crystalline solid	Polymeric solid
9	In inductive circuit V leads I by:	π	$\frac{\pi}{2}$	2π	In phase
10	At high frequency, the current through a capacitor will be:	Large	Infinite	Small	Zero
11	The direction of induced current is such that to oppose the cause which produce it is the statement of:	Lenz's law	Faraday's law	Gauss's law	Ampere's law
12	Lenz presented his law in:	1826	1829	1834	1837
13	In CRO the wave form created by sweep or time base generator is:	Cosine wave	Sinusoidal wave	Saw tooth wave	Square wave
14	If 0.5 T field over an area of $2m^2$ which lies at an angle of 60° with field. Then the resulting flux will be:	0.50 T	0.50 Wb	0.25 Wb	0.25 T
15	Heat generated by a 50 watt bulb in one hour is:	36000J	48000J	18000J	180000J
16	Electric flux is expressed as:	$\Phi = \bar{E} \times \bar{A}$	$\Phi = \bar{E}.\bar{\theta}$	$\Phi = \bar{E}.\bar{A}$	$\Phi = E.A^2$
17	The electric field lines are closer where the field is:	Strong	Uniform	Weak	Variable

Intermediate Part Second | Roll No. _____

PHYSICS (Subjective) | Group - II

Time 02:40 Hours | Marks: 68

(SECTION - I)

Q2. Write short answers to any EIGHT parts. 16

(i) Electric lines of force never cross. Why?

(ii) Compare between electric force and gravitational force.

(iii) A particle carrying a charge of 2e falls through potential difference of 3.0V. Calculate the energy acquired by it in Joule.

(iv) Do electrons tend to go to region of high potential or of low potential?

(v) Why the voltmeter should have a very high resistance?

(vi) Describe the change in the magnetic field inside a solenoid carrying a steady current "I" if the number of turns is doubled but the length remains same?

(vii) Suppose the charge q is moving in a uniform magnetic field with a velocity v. Why is there no work done by magnetic force that acts on the charge q?

(viii) Why does the picture on TV screen become distorted when a magnet is brought near screen?

(ix) What do we mean by the term critical mass?

(x) What do you understand by background radiation? State two sources of this radiation.

(xi) A particle which produced more ionization is less penetrating. Why?

(xii) Name two processes take place at low energy and at high energy and at high energy radiation.

Q3. Write short answers to any EIGHT parts: 16

(i) Why a photo diode is operated in reverse biased state?

(ii) Why is the base current of a transistor very small?

(iii) Write the truth table of NOR gate. (iv) What is meant by hysteresis loss?

(v) What are the brittle substances? Give an example.

(vi) Define elastic modulus with types.

(vii) How does doubling the frequency affect the reactance of capacitor and inductor?

(viii) In R-C circit will the current lag or lead the A.C. voltage, support your answer with vector diagram.

(ix) What is meant by capacitive reactance (Xc), on which factors it depends?

(x) Define "Tesla", Relates it with "Gauss". (xi) Define resistivity with units.

(xii) What are the difficulties in testing whether the filament of a lighted bulb obeys Ohm's law?

Q4. Write short answers to any SIX parts: 12

(i) When an electric motor, such as an electric drill, is being used, does it also act as a generator? If so, what is the consequence of this?

(ii) In a certain region the earth magnetic field point vertically down. When a plane flies due north, which wingtip is positively charged?

(iii) We do not notice the de-Broglie wavelength for a pitched cricket ball. Explain why?

(iv) As a solid is heated and begins to glow, why does it first appear red?

(v) What are the advantages of laser over ordinary light?

(vi) What is meant by load? (vii) What is work function? Give its unit.

(viii) What is Compton shift? Write its equation.

(ix) Define spectroscopy. In spectroscopy give types of spectra.

SECTION - II

Note: Attempt any THREE questions. Each question carries 08 marks.

Q5. (a) Define capacitance. Derive the relation of capacitance of a parallel plate capacitor. 5

(b) A rectangular bar of iron is 2.0cm by 2.0cm in cross section and 40cm long. Calculate its resistance if the resistivity of iron is $11\times10^{-8}\ \Omega m$. 3

Q6. (a) Explain in detail the motional emf. 5

(b) A power line 10.0m high carries a current 200A. Find the magnetic field of the wire at the ground. 3

Q7. (a) Describe parallel resonance circuit of R-L-C and write its properties. 5

(b) The current flowing in to the base of a transistor is 100μA. Find its collector current I_C, its emitter current I_E and the ratio I_C/I_E, if the value of current gain β is 100. 3

Q8. (a) State the postulates of special theory of relativity. Also discuss (i) Time dilation (ii) Length contraction. 5

(b) A 1.25cm diameter cylinder is subjected to a load of 2500kg. Calculate the stress on the bar in mega pascals. 3

Q9. (a) State the postulate of Bohr's model of the hydrogen atom. Discuss in detail the de-Broglie interpretation of Bohr's orbits. 5

(b) If $^{233}_{92}U$ decays twice by a-emission, what is the resulting isotope? 3