

INTERMEDIATE PART-II (12th CLASS)

PHYSICS PAPER-II

TIME ALLOWED: 3.10 Hours

SUBJECTIVE

MAXIMUM MARKS: 83

NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

2. **Attempt any Eight parts.** **8 × 2 = 16**
- (i) How can you identify that which plate of a capacitor is positively charged?
 - (ii) Electric field lines can never cross. Why?
 - (iii) Define surface charge density and give its units.
 - (iv) Define Electron Volt. Derive its relation with Joule.
 - (v) What is meant by Lorentz Force?
 - (vi) Give at least two uses of CRO.
 - (vii) Is it possible to orient a current loop in a uniform magnetic field such that the loop will not tend to rotate? Explain.
 - (viii) Why resistance of voltmeter should be very high?
 - (ix) Does the induced current depend on the resistance of the circuit? Explain.
 - (x) Does the induced emf always act to decrease the magnetic flux through a circuit? Explain.
 - (xi) Can a D.C motor be turned into a D.C generator? What changes are required to be done?
 - (xii) In an actual transformer, how many causes are of power loss?
3. **Attempt any Eight parts.** **8 × 2 = 16**
- (i) Do bends in a wire affect its electrical resistance? Explain briefly.
 - (ii) Why the terminal potential difference of a battery decreases when the current drawn from it is increased? Explain briefly.
 - (iii) State the Ohm's Law. Also give its mathematical form.
 - (iv) Name the device that will (a) permit flow of direct current but oppose the flow of alternating current (b) permit flow of alternating current but not the direct current
 - (v) Explain briefly the conditions under which electromagnetic waves are produced from a source.
 - (vi) Write two advantages of a three phase A.C. supply.
 - (vii) Explain briefly the electrical behaviour of conductors in terms of Energy Band Theory.
 - (viii) What is meant by Ferromagnetic Substance? Explain briefly.
 - (ix) Define Tensile Stress and Tensile Strain. Also give their SI Units.
 - (x) How does the motion of electrons in a n – type substance differ from the motion of holes in a p – type substance? Explain briefly.
 - (xi) Why a photo diode is operated in reverse biased state? Explain briefly.
 - (xii) Define input resistance and output resistance of an operational amplifier.
4. **Attempt any Six parts.** **6 × 2 = 12**
- (i) What happens to total radiation from a black body if its absolute temperature is doubled?
 - (ii) Does the brightness of a beam of light primarily depends on the frequency of photons or on the number of photons?
 - (iii) Can pair production take place in vacuum? Explain briefly.
 - (iv) Can X – rays be reflected, refracted, diffracted and polarized just like any other wave? Explain.
 - (v) Can the electron in the ground state hydrogen absorb a photon of energy 13.6 eV and greater than 13.6 eV?
 - (vi) Why are heavy nuclei unstable?
 - (vii) What factors make a fusion reaction difficult to achieve?
 - (viii) How can radio-activity help in the treatment of cancer?
 - (ix) Define the terms (i) Mass Number (ii) Charge Number. Also give their symbols.

SECTION-II (Essay Type)

NOTE: - Attempt any three questions.

8 × 3 = 24

- 5.(a) What is Wheatstone Bridge. How it can be used to determine unknown resistance? 5
- (b) Find the electric field strength required to hold suspended a particle of mass 1×10^{-6} kg and charge $1.0 \mu C$ between two plates, 10.0 Cm apart. 3
- 6.(a) What is an Inductor? Find out energy stored in an Inductor. 5
- (b) What current should pass through a solenoid that is 0.5m long with 10,000 turns of Copper wire so that it will have a magnetic field of 0.4 T? 3
- 7.(a) What is meant by Strain Energy? Derive its relation from graph of ductile substance. 5
- (b) What is the Resonant frequency of a Circuit which includes a coil of inductance 2.5H and a capacitance $40 \mu F$? 3

P.T.O

PHYSICS PAPER-II

TIME ALLOWED: 20 Minutes

MAXIMUM MARKS: 17

OBJECTIVE

Note: 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. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) Shunt resistance is also called:-
 (A) Low resistance (B) High resistance (C) Specific resistance (D) Infinite resistance
- (2) Frequency of A.C used in Pakistan is:-
 (A) 100 cps (B) 60 cps (C) 50 cps (D) 120 cps
- (3) Milli Henry is the unit of:-
 (A) Inductance (B) Current (C) Charge (D) Electric flux
- (4) We can measure the reactance of capacitor in:-
 (A) Farad (B) Volt (C) Ampere (D) Ohm
- (5) Power dissipated in a pure inductor is:-
 (A) Large (B) Zero (C) Small (D) Infinite
- (6) The dimensions of strain is:-
 (A) $[T]$ (B) $[M]$ (C) $[LT^{-1}]$ (D) Dimensionless
- (7) The diodes required for full wave rectifications are:-
 (A) 1 (B) 2 (C) 3 (D) 4
- (8) P - n diode when forward biased acts as a:-
 (A) High resistor (B) Low resistor (C) Capacitor (D) As a switch
- (9) 0.1 Kg mass will be equivalent to the energy:-
 (A) $9 \times 10^{16} J$ (B) $9 \times 10^{15} J$ (C) $9 \times 10^{-16} J$ (D) $9 \times 10^{-15} J$
- (10) The rest mass of Photon is:-
 (A) Small (B) Large (C) Zero (D) Infinite
- (11) X - rays are similar in nature to:-
 (A) Cathode rays (B) Positive rays (C) γ - rays (D) α - rays
- (12) An α - particle has a charge of:-
 (A) $+2e$ (B) $-2e$ (C) $+e$ (D) $-e$
- (13) Number of Isotopes of Hydrogen are:-
 (A) 1 (B) 2 (C) 3 (D) 4
- (14) The earth potential is considered as:-
 (A) Positive (B) Negative (C) Zero (D) Infinite
- (15) Farad is unit of:-
 (A) Charge (B) Current (C) Potential (D) Capacitance
- (16) The drift velocity of electrons in a conductor is:-
 (A) $10^3 ms^{-1}$ (B) $10^{-3} ms^{-1}$ (C) $10^{-4} ms^{-1}$ (D) $10^4 ms^{-1}$
- (17) The S.I unit of magnetic flux is:-
 (A) Weber (B) Weber - m^2 (C) Weber - m^3 (D) Henry

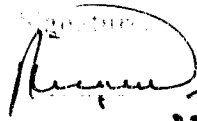
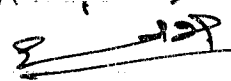
**BOARD OF INTERMEDIATE AND SECONDARY EDUCATION,
MULTAN ✓**
OBJECTIVE KEY FOR INTER (PART I/II) Supply Examination, 2016.
Name of Subject Physics Session _____

Q. Nos.	Paper Code 8471	Paper Code 8473	Paper Code 8475	Paper Code 8477
1.	C	C	D	A
2.	D	C	B	C
3.	B	A	D	A
4.	A	C	B,D	D
5.	A	C	B,D	B
6.	C	D	B	D
7.	A	B	C	B,D
8.	D	A	C	B,D
9.	B	A	A	B
10.	D	C	C	C
11.	B,D	A	C	C
12.	B,D	D	D	A
13.	B	B	B	C
14.	C	D	A	C
15.	C	B,D	A	D
16.	A	B,D,C		B
17.	C	B	A	A
18.	/	/	/	/
19.	/	/	/	/
20.	/	/	/	/

سرٹیفیکیٹ بابت تصحیح سوالیہ پرچہ/ مارکنگ Key

پہلے سے اس پرچہ کا نام **physics** پرچہ **II** گروپ **_____** سیکم **New** انٹر سائنس/ ضمنی امتحان 2016ء کا سوالیہ پرچہ ہے۔
 (Subjective & Objective) کا نظریاتی چیک کر لیا ہے یہ پرچہ سلیبس کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں
 دو قسم کے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کر لیا ہے یہ Version آپس میں مطابقت رکھتے ہیں اور سلیبس (s)
 کے مطابق ہیں۔ اس پرچہ کی Key کی بابت بھی تصدیق کی جاتی ہے کہ یہ بھی درست بنائی گئی ہے۔ اس میں بھی کسی قسم کی کوئی غلطی نہیں ہے۔
 ہرگز سلیبس کے متعلق ہرگز کوئی غلطی یا تیارہ کردہ ہدایات وصول کر کے ان کا بغور مطالعہ کر لیا ہے اور ان کی روشنی میں Key

PREPARED & CHECKED BY

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جزل ہدایات برائے مارکنگ Key کیونیکیم اولڈ سکیم (مارکنگ سکیم)

انٹرنیٹ فرسٹ ایکنڈ سالانہ ضمنی امتحان 2016ء

SECTION - I

For Question No 2, 3 and 4, if idea/Reason is given then award the max. marks.

- Q2:- (i) Explanation (02) marks
 (ii) No (01) marks, Briefly Explanation (01) marks
 (iii) Definition (01) marks S.I unit (01) marks
 (iv) Definition (01) marks, Derive its Relation (01) marks
 (v) Definition (01) marks, Formula (01) marks
 (vi) Any two uses of CRO (01 + 01) marks
 (vii) Explanation — (02) marks
 (viii) Explanation OR Reason (02) marks
 (ix) No (01) marks and Explanation (01) marks
 (x) No (01) marks and Briefly Explanation (01) marks
 (xi) Yes (01) marks and Reason (01) marks
 (xii) Any two points (02) marks.
- Q3:- (i) No OR YES (01) marks, Explanation (01) marks
 (ii) Expression of V_4 (01) marks, Explanation of Expression (01) marks
 (iii) Statement (01) marks, Mathematical Form (01) marks
 (iv) For Inductor (01) marks, For Capacitor (01) marks
 (v) Briefly Explanation (02) marks
 (vi) Any two advantages (1+1) marks
 (vii) Explanation Briefly (02) marks
 (viii) Definition (01) marks, Briefly Explanation (01) marks
 (ix) Definitions ($\frac{1}{2} + \frac{1}{2}$) marks, S.I unit-s ($\frac{1}{2} + \frac{1}{2}$) marks
 (x) Explanation Briefly (02) marks (xi) Briefly Explanation (02) marks
 (xi) Definitions (01 + 01) marks

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- Q4:- (i) Show that $E' = 16E$ by Stefan-Boltzmann Law (02) marks
 (ii) Briefly Explanation (02) marks (iii) No (01) marks and Briefly Explanation (01) marks
 (iv) Yes (01) marks, Explanation — (01) marks
 (v) yes (01) marks, Explanation — (01) marks
 (vi) Explanation OR Reason (02) marks
 (vii) Any two Factors (02) marks
 (viii) Explanation Briefly (02) marks
 (ix) Definitions ($\frac{1}{2} + \frac{1}{2}$) marks, Symbols ($\frac{1}{2} + \frac{1}{2}$) marks

SECTION-II

Q5(a) Definition (01) marks, circuit diagram (01) marks
 Relation to find for unknown Resistance (03) marks

(b) Data + Formula (01) marks, Sub. values (01) marks
 Calculation of correct Ans. with unit (01) marks

$$E = \frac{mg}{q}, \quad E = 9.8 \text{ N/C or } 9.8 \text{ V/m} \quad \text{Ans}$$

Q6(a) Definition (01) marks, Expression For energy
 $= P \cdot E = \frac{1}{2} L I^2$ (02) marks, and derive Relation
 $= U_m = \frac{1}{2} \frac{B^2}{\mu_0} (Al)$ — (02) marks

(b) Data + Formula (01) marks, Sub values (01) marks
 Calculation of correct Ans with units (01) marks

$$I = \frac{B}{\mu_0 n}, \quad I = 16 \text{ A} \quad \text{Ans.} \quad (04) \text{ marks}$$

Q7 (a) Definition (01) marks, Derivation For Relation
 (b) Data + Formula (01) marks, Sub. values (01) marks
 Calculation of correct Ans. with units (01) marks.

$$f = \frac{1}{2\pi\sqrt{LC}}, \quad f = 15.9 \text{ Hz} = 16 \text{ Hz} \quad \text{Ans.}$$

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Q8:- (a) Write notes (i) Compton effect (2 1/2 marks)

(ii) Pair Production (2 1/2 marks)

(b) Data + Formula (01 marks), Sub values (01 marks)

Calculation of correct Ans. with units 01 marks

$$I_B = \frac{V_{cc}}{R_B} \Rightarrow I_B = 11.25 \times 10^{-6} A = 11.25 \mu A$$

Ans

$$I_C = \beta I_B \Rightarrow I_C = 1.125 \times 10^{-3} A = 1.125 mA$$

Ans.

Q9 (a) Definition (01) marks, Functions of main Part (04) marks

(b) Data + Formula (01) marks. Sub. Values (01) marks

Calculation of correct Ans. with units (01) marks

$$\frac{1}{\lambda} = R_H \left(\frac{1}{2^2} - \frac{1}{n^2} \right) \Rightarrow \lambda = 364.5 nm$$

Ans.

SECTION - III

Q10 (a) of the idea/Reason given in Answers

Kindly give max. marks 2 x 4 = 08 marks

(b) max. marks should be given if Important (03) marks steps or main steps are written for brief procedure

(c) Graph (A)

(i) Resistance of Voltmeter (02) marks

(ii) $R_V = 2500 \Omega$ Ans (02) marks

OR

Graph (B)

(i) current is directly proportional to capacitance $I \propto C$ (02) marks

(ii) When $C = 0.7 \mu F$ then $I = 17.5 \mu A$ Ans. (02) marks