RIZWAN ACADEMY – KASUR

Paper: Physics **Chapter (16 – 17 – 18)** **Class: F.Sc. Part – II**

ALTERNATING CURRENT + PHYSICS OF SOLIDS + ELECTRONICS

Name: _____ Roll No: (in words) _____

OBJECTIVE TYPE

Total Marks: 17 **Paper Code: _____** **Total Time: 20 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 current which flows through the circuit in one direction is	Eddy current	Direct current	Alternating current	None of these
2.	The phase angle at +ve peak is	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
3.	The reactance of a capacitor is	ωC	$\frac{1}{\omega C}$	$\frac{1}{\sqrt{\omega C}}$	$\sqrt{\omega C}$
4.	The impedance of R-C series, circuit is	$\sqrt{R^2+(\frac{1}{\omega C})^2}$	$\sqrt{R^2+(\omega C)^2}$	$\sqrt{R^2-(\omega C)^2}$	$\sqrt{R+(\frac{1}{\omega C})}$
5.	The F.M. radio waves have frequency of the order of	$10^6\,Hz$	$10^4\,Hz$	$10^9\,Hz$	$10^{10}\,Hz$
6.	The ratio of rms value of the applied voltage to rms value of alternating current is called	Impedance	Capacitance	Conductance	Resistance
7.	The frequency of electromagnetic waves received through L-C circuit is adjusted by	Resistor	Capacitor	Inductor	Copper wire
8.	In free space, the speed of electromagnetic waves is	$3\times10^5 m\bullet s^{-1}$	$3\times10^5 km\bullet s^{-1}$	$3\times10^{-8} m\bullet s^{-1}$	None of these
9.	The pattern of $NaCl$ particles have a	Triangular	Square	Cubic	Rectangular
10.	When stress is increased beyond elastic limit and material is permanently changed this property is	Permanent stress	Elasticity	Yield strength	Plasticity
11.	The dimension of strain is	[L]	$[ML^2T^{-2}]$	$[M\,L^{-1}\,T^{-2}]$	Dimensionless
12.	The band above the valance band is called	Conduction band	Filled band	Forbidden band	Occupied band
13.	When current is zero but material still remains magnetized this property is called	Saturation	Retentivity	Hysterisis	Cohesive
14.	A photodiode is usually made from	Antimony	Silicon	Bismuth	None of these
15.	Transistor is usually used as switch in	Electric motor	Electric generator	Transformer	Computer
16.	Exclusive NOR gate can be obtained by inverting the output of	NOT gate	XOR gate	AND Gate	None of these
17.	Automatic functioning of street light can be done by the use of	Rectifier	Inductor	Comparator	Switch

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SUBJECTIVE TYPE

Total Marks: 18 **Time Allowed: 0 Hours 50 Minutes**

SECTION – I (SHORT QUESTIONS)

2. Attempt any FIVE questions. (5×2=10)Marks

i. Explain the conditions under which electromagnetic waves are produced from a source?

ii. How the reception of a particular radio station is selected on your radio set?

iii. A circuit contains an iron-cored inductor, a switch and a D.C. source arranged in series. The switch is closed and after an interval re-opened. Explain why a spark jumps across the switch contacts?

iv. Draw a stress-strain curve for ductile material and then define terms: Elastic limit, Yield point and ultimate tensile stress.

v. Distinguish between intrinsic and extrinsic semi conductors. How would you obtain n-type and p-type material from pure silicon? Illustrate it by schematic diagram.

vi. What is principle of virtual ground? Apply it to find the gain of an inverting amplifier.

vii. Why charge carriers are not present in the depletion region?

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

i. What is root mean square value of A.C? Describe flow of A.C. through a capacitor in detail. (5)

ii. A cylindrical copper wire and a cylindrical steel wire each of length $1 \bullet 5m$ 1.5m and diameter $2 \bullet 0mm$ are joined one end to from a composite wire $3 \bullet 0m$ Long. The wire is loaded until its length becomes $3 \bullet 003m$. Calculate the strain in copper and steel wires and the force applied to the wire. (Young's Modulus of Copper is $1 \bullet 2 \times 10^{11} Pa$ and for steel is $2 \bullet 0 \times 10^{11} Pa$). (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