AAFAQ ACADEMY – KASUR

Paper: Physics   **Chapter (10)**   **Class: F.Sc. Part – I**

OPTICAL INSTRUMENTS

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.	Unit of magnification is	m	m^{-1}	ms^{-1}	No units
2.	The magnifying power of astronomical telescope is	$\dfrac{f_0}{f_e}$	$f_0 + f_e$	$f_0 \times f_e$	$f_0 - f_e$
3.	If the focal length is $2cm$, the power of lens is	50	100	200	150
4.	The magnifying power of simple microscope is	$M = 1 + \dfrac{d}{f}$	$M = 1 - \dfrac{d}{f}$	$M = \dfrac{f_0}{f_e}$	$M = 1 + \dfrac{f}{d}$
5.	An astronomical telescope has objective of focal length $90cm$ and an eye piece of focal length is $5cm$. the length of telescope when focused for infinity is	95 cm	20 cm	100 cm	105 cm
6.	The value of critical angle for the glass – air boundary is	$41 \bullet 8^0$	$41 \bullet 5^0$	42^0	$42 \bullet 8^0$
7.	For normal adjustment, the length of astronomical telescope is	$\dfrac{f_0}{f_e}$	$f_0 + f_e$	$f_0 \times f_e$	$f_0 - f_e$
8.	In Michelson's experiment, the equation used to find the speed light is	$c = 16fd$	$c = 16\dfrac{f}{d}$	$c = 16\dfrac{d}{f}$	$c = \dfrac{1}{16}fd$
9.	Least distance of distinct vision	Increases with increase in age	Decreases with increase in age	Unchanged with increase in age	Decrease with decrease with decrease in
10.	Spectrometer is used to	Study diffraction of light	Measure wavelength of light	Measure refractive index of material	All of these
11.	Unit of power of lens is	m	m^{-1}	s^{-1}	No unit
12.	The magnifying power of astronomical telescope is	$\dfrac{f_0}{f_e}$	$f_0 + f_e$	$f_0 \times f_e$	$f_0 - f_e$

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. Explain the difference between angular magnification and resolving power of an optical instrument. What limits the magnification of an optical instrument?

 ii. Describe with the help of diagram, how (a) single biconvex lens can be used as a magnifying glass (b) biconvex lenses can be arranged to form a microscope.

 iii. If a person was looking through a telescope at the full moon. How would the appearance of the moon be changed by covering half of the objective lens?

 iv. Draw sketches showing the different light paths through a single-mode and a multi-mode fibre. Why the single-mode fibre is is preferred in telecommunications?

 v. How the power is lost in optical fibre through dispersion? Explain.

 vi. One can buy a cheap microscope for use by the children. The images seen in such a microscope have coloured edges. Why is this so?

 vii. Describe continuous refraction.

SECTION – II (ESSAY TYPE) Attempt given question

 3. Do as directed...

 i. What is compound microscope? Give its construction, working and find its magnifying power.   (5)

 ii. A point object is placed on the axis of 3.6 cm from a thin convex lens of focal length 3.0 cm. A second thin convex lens of focal length 16.0 cm is placed coaxial with the first and 26.0 cm from it on the side away from the object. Find the position of the final image produced by the two lenses.   (3)

SECTION – III (Practical)

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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