Name:_____

Intro Astro Prep Quiz: Lab 3: Telescopes

Instructions: There are 10 multiple-choice problems each worth 10 marks for a total of 100 marks altogether. Choose the **BEST** answer, completion, etc., and **DARKEN** fully the appropriate circle on the table provided below. Read all responses carefully. **NOTE** long detailed responses won't depend on hidden keywords: keywords in such responses are bold-faced capitalized.
This is a 10 minute quiz.

Answer Table for the Multiple-Choice Questions

	a	b	c	d	e		a	b	c	d	e
1.	O	O	O	O	O	6.	O	O	O	O	O
2.	O	O	O	O	O	7.	O	O	O	O	O
3.	O	O	O	O	O	8.	O	O	O	O	O
4.	O	O	O	O	O	9.	O	O	O	O	O
5.	O	O	O	O	O	10.	O	O	O	O	O

1. Telescopes are divided into two main categories: _____ and _____. The distinction is based on the nature of the telescope primary (or objective): for the former it is a lens; for the latter a mirror.

   a) refractors; reflectors b) reflectors; refractors c) diffractors; integrators
   d) integrators; diffractors e) detractors; reenactors

2. Refractor telescopes are divided into Galilean and _____ telescopes. The former give an upright image and latter a point inverted image. With point inversion each point of the source is rotated by 180° in the image about the optical axis of the telescope. The _____ telescope quickly became favored for astronomy since it gives much wider field of view and the inversion is just accepted and adapted to. The inversion can be corrected for if you want to as in most binoculars. The _____ telescope was invented theoretically by Johannes Kepler (1571–1630), but he never built one to our knowledge.

   a) Scheinerian b) Dutch c) Keplerian d) Newtonian e) Schmidt-Cassegrain

3. "Let's play *Jeopardy*! For $100, the answer is: This kind of reflector telescope typically uses a spherical primary and a corrector plate (a kind of lens) to correct for spherical abberration. The setup gives it a wide field of view."

   What is a _____ telescope, Alex?

   a) Galilean b) Keplerian c) Newtonian d) Cassegrain e) Schmidt

4. The _____ telescope combines the defining features of the Schmidt telescope and the Cassegrain telescope.

   a) Schmidt-Cassegrain b) Galilean-Keplerian c) Gregorian-Newtonian
   d) Galilean-Newtonian e) Gregorian-Cassegrain

5. "Let's play *Jeopardy*! For $100, the answer is: The optical device closest to the eye in a telescope. It is used to magnify the image created by the primary (AKA objective) of a telescope. The device is rated by its focal length which for small telescopes is usually given in millimeters."

   What is a/an _____, Alex?

   a) finderscope b) reticule c) tube d) eyepiece e) star diagonal

6. For most optical devices, "focused" means the light rays from a point source are converged to a/an _____ image.

   a) circle b) oval c) donut d) blurry e) point

7. "Let's play *Jeopardy*! For $100, the answer is: It is the distance along the optical axis of a lens or mirror to the point where light rays (originally parallel to the optical axis) converge (i.e., are focused) after interacting with the lens or mirror. It is among other things a measure of the light ray bending power of the lens or mirror. The shorter it is, the greater that power."

   What is _____, Alex?

   a) angular resolution (AKA resolving power) b) focal length c) image distance
   d) object distance e) focusing length

8. The magnification M of common telescopes with an eyepiece is given by

$$M = \frac{f_p}{f_e} \, ,$$

   where f_p is the primary (AKA objective) focal length and f_e is the eyepiece focal length. If $f_p = 2\,\mathrm{m}$ and $f_e = 40\,\mathrm{mm}$, then

   a) $M = 1$. b) $M = 20$. c) $M = 40$. d) $M = 50$. e) $M = 0.05$.

9. In a Schmidt-Cassegrain telescope with a star diagonal, the telescope itself gives a _____ around the optical axis of the telescope and the star diagonal gives a _____ around the axis perpendicular to the optical axes of the telescope and eyepiece.

   a) axis reflection; point inversion b) point inversion; axis reflection
   c) translation; axis reflection d) point inversion; translation e) translation; point inversion

10. Field of view (FOV) is the angular diameter of the circular region seen through a telescope. As magnification increases, field of view _____. Another meaning of field of view is just the region seen through the telescope. Context as usual must decide the meaning meant.

    a) fluctuates b) stays the same c) increases d) decreases e) fluctuates wildly