Name:_____

Intro Astro Lab Prep Quiz: Lab 10 Stellar Spectra

Instructions: There are 10 multiple-choice problems each worth 1 marks for a total of 10 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

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010 qmult 00100 1 4 5 easy deducto-memory: electromagnetic specturm defined

1. "Let's play *Jeopardy*! For $100, the answer is: It is the range of all possible wavelengths of electromagnetic radiation. At least as an ideal limit, the wavelengths form a continuum (like real numbers) ranging from arbitrarily close to zero to arbitrarily close to infinity. Real processes may limit the actual range of wavelengths, but we really don't know where those limits are."

   What is _____, Alex?

   a) white light b) white noise c) colored light d) the energy spectrum
   e) the electromagnetic spectrum

   SUGGESTED ANSWER: (e)

   Wrong answers:
   a) As Lurch would say AAAARGH.

   Redaction: Jeffery, 2013jan01

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010 qmult 00110 1 4 1 easy deducto-memory: atmosphere transparent to visible band

2. "Let's play *Jeopardy*! For $100, the answer is: Because the Earth's atmosphere is very transparent to this electromagnetic radiation band, it has always been very important in the study of star light—and for life in general."

   What is the _____, Alex?

   a) visible band b) X-ray band c) red band d) gamma-ray band e) big band

   SUGGESTED ANSWER: (a)

   Wrong answers:
   e) Glenn Miller?

   Redaction: Jeffery, 2013jan01

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010 qmult 00150 1 1 3 easy memory: spectrum defined sort of

3. Dispersion separates in space the radiations of different wavelength (i.e., the _____) that make up a beam or propagating radiation. This allows the _____ to be analyzed. The dispersed beam is often called a _____ in a separate, but related, meaning of the word _____.

a) range b) electromagnetic spectrum c) spectrum. d) domain e) spread

SUGGESTED ANSWER: (c)

Wrong answers:
b) This is a wrong/non-conventional usuage of the term electromagnetic spectrum though one could argue that that it makes sense.

Redaction: Jeffery, 2013jan01

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010 qmult 00160 1 1 4 easy memory: dispersion of light

4. The dispersion of electromagnetic radiation into a spectrum can be done using a prism or a:

a) dispenser b) disperser. c) dispersion grating. d) diffraction grating.
e) diffraction window.

SUGGESTED ANSWER: (d)

Wrong answers:
a) A nonsense answer.

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010 qmult 00200 1 1 2 easy memory: continuum and line spectrum

5. A spectrum with no large deviations in narrow wavelength bands is a _____ spectrum and one with such deviations is a _____ spectrum. The two classes are **NOT** actually separate since a general spectrum can have both kinds of behavior. The part of a general spectrum **WITHOUT** large deviations in narrow wavelength bands is considered to be the _____ part of the spectrum.

a) line; continuous; continuous b) continuous; line; continuous;
c) continuous; continuous; line d) wavelength; continuous; wavelength
e) line; continuous; line

SUGGESTED ANSWER: (b)

Wrong answers:
e) Exactly wrong.

Redaction: Jeffery, 2013jan01

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010 qmult 00210 1 1 2 easy memory: emission and absorption line spectrum

6. An emission line spectrum consists of _____ against a dark background and comes from a _____ gas. An absorption line spectrum consists of _____ against a bright background of a continous spectrum and typically comes from a _____ gas overlying a hotter gas.

a) dark lines; cold, dense; bright lines; hotter, dense
b) bright lines; hot, dilute; dark lines; colder, dilute
c) dark lines; hot, dilute; bright lines; colder, dilute
d) dark lines; hot, dilute; dark lines; hotter, dilute
e) bright lines; cold, dilute; bright lines; hotter, dilute

SUGGESTED ANSWER: (b)

Wrong answers:
a) Exactly wrong.

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010 qmult 00250 1 4 5 easy deducto-memory: Grotrian diagrams defined

7. "Let's play *Jeopardy*! For $100, the answer is: He is the eponym (i.e., person after whom a thing is named) of Grotrian diagrams. A Grotrian diagram shows the energy levels of an atom, ion, or molecule in a standard format and the line transitions between the energy levels that can emit or absorb photons. It is a very abstract diagram of the atom, ion, or molecule"

Who is _____, Alex?

a) John Venn (1834–1923) b) Ejnar Hertzsprung (1873–1967)
c) Henry Norris Russell (1877–1957) d) Edwin Hubble (1889–1953)
e) Walter Grotrian (1890–1954)

SUGGESTED ANSWER: (e)

Wrong answers:
a) As Lurch would say AAAARGH.

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010 qmult 00300 1 1 2 easy memory: stars classified by absorption line spectrum

8. The direct observable by which stars are best empirically classified is their:

a) emission line spectrum. b) absorption line spectrum. c) continuous spectrum.
d) surface pressure. e) surface gravity.

SUGGESTED ANSWER: (b)

Wrong answers:
a) Oh, c'mon.

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010 qmult 00320 1 1 3 easy memory: OBAFGKM spectral classification

9. The OBAFGKM spectral type classification (AKA the Harvard spectral classification) of stars is based on the line spectra (mainly absorption line spectra) of stars: O stars have a certain spectrum, B stars another, etc. The classification is empirical, but is theoretically understood to be a stellar atmosphere temperature classification. The spectral types (i.e., OBAFGKM) are ordered by decreasing stellar surface (i.e., photosphere) temperature and each **SPECTRAL TYPE** is divided into **SUBTYPES** which are numbered: the numbers in order of decreasing temperature run 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. The Sun is **NOT** in the hottest, 2nd hottest, coldest, or 2nd coldest **SPECTRAL TYPE**. It is a:

a) O5 star. b) B8 star. c) G2 star. d) K6 star. e) M3 star.

SUGGESTED ANSWER: (c)

Wrong answers:
a) Oh, c'mon.

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010 qmult 00330 1 1 3 easy memory: Hertzsprung-Russell diagram

10. A _____ diagram plots logarithmic stellar luminosity versus stellar logarithmic photosphere temperature (or alternatively versus OBAFGKM spectral type or $B - V$ color).

a) Feynman b) Grotrian c) Hertzsprung-Russell d) Hubble e) Venn

SUGGESTED ANSWER: (c)

Wrong answers:
e) Oh, c'mon.

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