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Intro Astro Lab Quiz Prep: Lab 6: Galilean Moons of Jupiter

Instructions: There are X multiple-choice problems each worth 1 mark for a total of X marks altogether. Choose the **BEST** answer, completion, etc. Leave no answers blank. If you do not know answer, eliminate wrong ones and guess. 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 $2X$ 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	11.	O	O	O	O	O
2.	O	O	O	O	O	12.	O	O	O	O	O
3.	O	O	O	O	O	13.	O	O	O	O	O
4.	O	O	O	O	O	14.	O	O	O	O	O
5.	O	O	O	O	O	15.	O	O	O	O	O
6.	O	O	O	O	O	16.	O	O	O	O	O
7.	O	O	O	O	O	17.	O	O	O	O	O
8.	O	O	O	O	O	18.	O	O	O	O	O
9.	O	O	O	O	O	19.	O	O	O	O	O
10.	O	O	O	O	O	20.	O	O	O	O	O

006 qmult 00102 1 1 1 easy memory: Galilean moons named for Galileo

1. Galileo called the 4 Jupiter moons he discovered the Medicean stars to help in obtaining the patronage of the Medici—the rulers of his native Florence—it worked. But posterity, ruling that the Medici have done well enough in fame in other areas, has named these moons the:

　　a) Galilean moons.　　b) Dead Sea moons　　c) Cosmian stars　　d) Keplerian moons
　　e) Gan De stars

SUGGESTED ANSWER: (a)

Wrong answers:
　b) Wrong end of the Jordan River.
　c) This was the name the Medician Duke Cosimo II turned down.
　e) Gan De (4th century BCE) made detailed observations of Jupiter and may have made a naked-eye observation of Ganymede.

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006 qmult 00110 1 4 2 easy deducto-memory: Galilean moon sinusoidal motion

2. The projected motion on the sky of the Galilean moons is:

　　a) uniform circular motion.　　b) sinusoidal motion.　　c) uniform linear motion.
　　d) elliptical orbital motion.　　e) a state of rest.

SUGGESTED ANSWER: (b)

Wrong answers:
　a) As Lurch would say AAAARGH.

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006 qmult 00112 1 4 2 easy deducto-memory: sinusoidal motion

3. Uniform circular motion seen edge-on is:

a) uniform circular motion.   b) sinusoidal motion.   c) uniform linear motion.
d) elliptical orbital motion.   e) a state of rest.

SUGGESTED ANSWER: (b)

Wrong answers:
  a) As Lurch would say AAAARGH.

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006 qmult 00120 1 1 5 easy memory: Earth not the center of all motion

4. "Let's play *Jeopardy*! For $100, the answer is: This/these early telescopic discovery/discoveries proved that the Earth was not the center of motion of all astronomical bodies as was posited by Aristolelian cosmology and the Ptolemaic geocentric system."

　　　What is/are _____, Alex?

  a) sunspots   b) the partial resolution of the Milky into a quasi-infinity stars
  c) the terrestrial-like geological features of the Moon   d) Neptune
  e) the 4 largest moons of Jupiter and the full phases of Venus

SUGGESTED ANSWER: (e)

Wrong answers:
  d) Galileo actually observed Neptune in near Jupiter, but assumed it was a fixed star, and so missed that big discovery.

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006 qmult 00130 1 4 4 easy deducto-memory: Galilean moons and chronometer

5. Since the orbital periods of the Galilean moons are constant to high accuracy, Galileo suggested that they be used as a

  a) barometer.   b) speedometer.   c) pedometer.
  d) marine chronometer (i.e., high accuracy portable clock) for navigation.   e) ornithopter.

SUGGESTED ANSWER: (d)

Wrong answers:
  a) As Lurch would say AAAARGH.

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006 qmult 00140 1 4 3 easy deducto-memory: Kepler's 3 laws to Galilean moons

6. "Let's play *Jeopardy*! For $100, the answer is: His 3 laws of planetary motion also apply to the Galilean moons of Jupiter."

　　　Who is _____, Alex?

  a) Aristarchus of Samos (c.310–c.230 BCE)   b) Nicolaus Copernicus (1473–1543)
  c) Johannes Kepler (1571–1630)   d) Galileo Galilei (1564–1642)
  e) Caroline Herschel (1750–1848)

SUGGESTED ANSWER: (c)

Wrong answers:
  d) Not this time.

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006 qmult 00200 1 1 5 easy memory: number of Jupiter moons

7. Jupiter has:

  a) no moons.   b) 1 moon.   c) 2 moons.   d) 3 moons.   e) more than 60 moons.

SUGGESTED ANSWER: (e)

Wrong answers:

a) Oh, c'mon.

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006 qmult 00232 1 1 5 easy memory: innermost moons 2

8. Jupiter has 5 moons closer than Europa. They are:

a) Leto, Europa, Ganymede, Leda, Io.   b) Metis, Adrastea, Ganymede, Leda, Europa.
c) Metis, Adrastea, Amalthea, Thebe, Callisto.   d) Metis, Adrastea, Callisto, Thebe, Io.
e) Metis, Adrastea, Amalthea, Thebe, Io.

SUGGESTED ANSWER: (e) Wikipedia: Moons of Jupiter: List confirms the order above that Io is the 5th innermost moon.

Wrong answers:
a) Oh, c'mon.

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006 qmult 00300 1 1 3 easy memory: Galilean moons

9. The Galilean moons of Jupiter are:

a) Io, Europa, Ganymede, Leda.   b) Leto, Europa, Ganymede, Leda.
c) Io, Europa, Ganymede, Callisto.   d) Leto, Europa, Demeter, Leda.
e) Leto, Semele, Demeter, Leda.

SUGGESTED ANSWER: (c)

Wrong answers:
e) Everything is wrong.

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006 qmult 00302 1 1 2 easy memory: Galilean moons

10. The largest Galilean moon and the largest moon in the Solar System is:

a) the Moon.   b) Ganymede.   c) Europa.   d) Amalthea.   e) Titan.

SUGGESTED ANSWER: (b)

Wrong answers:
a) Oh, c'mon.
d) Amalthea and Himalia are approximately tied for 5th largest moon of Jupiter, but Himalia is about 3.5 more massive.

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006 qmult 00310 1 1 5 easy memory: Callisto

11. The Galilean moons in order of increasing orbital radius are Io, Europa, Ganymede, and:

a) Psamanthe.   b) Amalthea.   c) Leda.   d) Arche.   e) Callisto.

SUGGESTED ANSWER: (e)

Wrong answers:
a) Not a Jupiter moon..

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006 qmult 00322 1 1 4 easy memory: tidally locked Io

12. If you stood on Io and saw Jupiter, it would set:

a) in about 1 hour.   b) in about 1 day.   c) in about 1 week.   d) never.
e) every 10 minutes or so.

SUGGESTED ANSWER: (d)

Since Io is tidally locked to Jupiter, it always turns the same face to Jupiter. So if you saw Jupiter from Io, it would never set from the place where you are standing.

Wrong answers:
  e) Talk about rapid rotation.

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006 qmult 00340 1 1 1 easy memory: 1:2:4 resonance of the Galilean moons
13. The 3 innermost Galilean moons exhibit a 1:2:4 Laplace resonance of the orbital periods. This means that the ratio of the orbital periods of the moons going outward is nearly exactly _____.

  a) 1:2:4   b) 1:2:3   c) 1:1:3   d) 1:2:1   e) 1:1:1

SUGGESTED ANSWER: (a)

Wrong answers:
  b) Words fail me.

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006 qmult 00420 1 1 2 easy memory: Io most geologically active body
14. Because of its proximity to Jupiter and slightly non-circlar orbit, _____ has strong tidal flexing which gives it a lot of internal heating which makes it the most geologically active body in the solar system—every time you look at it, it seems, a volcano is erupting somewhere.

  a) Amalthea   b) Io   c) Europa   d) Ganymede   e) Callisto

SUGGESTED ANSWER: (b)

Wrong answers:
  a) Too small for much tidal heating and to retain any tidal heat for geological activity I would guess.

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