Name _____

The Outer Planets (p. 702 – 707)

I. Jupiter

Tilt 3.12°

Experiences differential rotation

1. **Jupiter is the most massive planet in the solar system.**

Circle One : (True) False (Fit 1,300 Earths in Jupiter)

2. **Circle the letter of each sentence that is true about Jupiter.**

a. Jupiter has a dense core of ~~hydrogen~~ rock and ~~helium~~ iron.
b. Jupiter's atmosphere is extremely ~~thin~~ thick → 86% - Hydrogen, 13% - Helium
c. Jupiter has dozens of moons revolving around it.
d. More than 60 moons have been discovered to be revolving around Jupiter.

3. **What is the Great Red Spot on Jupiter?**

Large Storm (larger than Earth, high speed winds) → no continents to slow it down → 375 + mph

4. **Jupiter has a strong magnetic field.** (Not in the book.)

Circle One : (True) False (14x stronger than Earth)

5. **Faint dust rings exist around Jupiter.**

Circle One : (True) False (3 ringlets of dust particles)

6. **What are Jupiter's four largest moons?**

1. Io
2. Ganymede
3. Europa
4. Callisto

Atmosphere:
White Ovals: Cool, high clouds
Brown ovals: warm, low cards
Belts: dark reddish bands (cool material sinks)
Zones: light colored bands (warm material rises)

Interior:
Mantle: liquid hydrogen + helium
Outer Core: water + methane "ices"
Inner Core: rock + iron

II. Saturn

Tilt: 26.7°

Experiences differential rotation

1. **Like Jupiter, Saturn has an atmosphere composed mainly of hydrogen and helium.** (1,000 mph winds)

Circle One : (True) False (96% Hydrogen, 3% Helium)

2. **Saturn has a strong magnetic field.** (Not in the book.)

Circle One : (True) False

3. **What are Saturn's rings made of?**

Chunks of ice + rock (travels in own orbit)

4. **Saturn has only a few thin rings.**

Circle One : True (False) (thousands of rings 10 meters thick)

5. **The largest of Saturn's moons is called** Titan.

Interior:
Mantle: liquid hydrogen helium
Outer Core: Liquid ices
~~Inner Core:~~ rock + metal

Name _____

III. Uranus

Interior:
* Mantle: liquid hydrogen, helium
Outer core: highly compressed
* Inner Core: rocky

1. **When was Uranus discovered?** 1781 (William Herschel) (shaped of S.S.)
2. **Why does Uranus look blue-green?** Traces of methane in the atmosphere (Hydrogen = 83%, Helium = 15%, Methane = 2.3%)
3. **Uranus is surrounded by** 11 **dark rings and more than** 21 **moons.** (discovered in 1977 as a star blocked rings)
4. **What are Uranus' five largest moons like?** They have icy, cratered surfaces (Miranda = seriously disturbed + reassembled)
5. **How is the rotation of Uranus unlike that of most of the other planets?** Uranus rotates from top to bottom instead of side-to-side (Tilt 97.9°) → Collision with Earth-sized object. Retrograde rotation → 84 Earth-years

* Exaggerated Seasons
Summer = 42 yrs.
Winter = 42 yrs.

IV. Neptune

Tilt 29.6° (Size: 3.9x Earth's diameter)

Hydrogen = 79%
Helium = 18%
Methane = 3%

1. **When was Neptune discovered?** 1846 (Johann Galle)
2. **Neptune's atmosphere is blue and has no clouds.**

   Circle One: True False
3. **Neptune is surrounded by** several (2) **dark rings and more than** 13 **moons.**
4. **A storm similar in size to the one on Jupiter, that emerges and disappears on Neptune is known as the** Great Dark Spot (disappeared in 1994, re-emerged in 1995)
5. **In the 1800's, how was the location of Neptune predicted?** (Not in the book) Uranus not following predicted orbit (gravity pulls elsewhere)

Atmosphere:
Belts: dark-blue around equator
Zones: Light Blue
Greenish Belt: near South Pole, different chemically

V. "Pluto"

Tilt 118°

1. **When was Pluto discovered?** 1930 (Not in the book.) Clyde Tombaugh
2. **How often does Pluto revolve around the Sun?** 248 Earth yrs. (17.1 orbital tilt)
3. **Circle the letter of each sentence that is true about Pluto.**

   (a.) One of its moons (Charon) is more than half Pluto's size. "Karen"
   b. Pluto has a ~~gaseous~~ rocky surface (Region of rock, ice, impacts, or mountains)
   (c.) Astronomers know the least about Pluto than any other planet.
   (d.) Pluto is sometimes closer to the Sun than Neptune.

   most terrain differences (Except Earth's)
4. **Pluto is currently classified as a** dwarf planet. (Not in the book.)

* Only case where a planet and a moon have synchronous rotation

Charon: never rises, just hovers in the sky
↓ Same side always faces each other