Part IV: Exhibits

G. Sample of marking guide

Key answer for Final Examination
GJ 191 Physics for Gems and Jewelry Industry
Semester 1, 2018

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Open Book test:
Students are allowed to open books, notes and homework assignments. Briefly answer the following questions or problems. (60 total points, points are assigned to each problem)

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1. Describe the physical properties of mater? **(2 points)**

Key answer:

Criteria	Points
Describe what is the physical properties of mater.	**1**
Give an example of the physical properties of mater.	**1**

2. Describe the states of matter? **(1 point)**

Key answer:

Criteria	Points
Describe what is the states of matter.	**0.5**
Give an example of the states of matter.	**0.5**

3. Why are the physical properties so important? **(3 points)**

Key answer:

Criteria	Points
Describe what is the physical properties.	**1**
Describe why are the physical properties so important.	**2**

4. Describe the properties of light? **(2 points)**

Key answer:

Criteria	Points
Describe what is the properties of light.	**1**
Give an example of materials which have light properties	**1**

5. What are the primary colors of light? **(1 point)**

Key answer:

Criteria	Points
Describe what are the primary colors of light.	**0.5**
Give an example of the primary colors of light	**0.5**

6. Describe the ability to allow electricity to pass through a substance? **(2 points)**

Key answer:

Criteria	Points
Describe what is the ability to allow electricity to pass through a substance.	**1**
Give an example of the electricity to pass through a substance.	**1**

7. Why is a red shirt hotter than a purple shirt in the summer? **(2 points)**

Key answer:

Criteria	Points
Describe what is light absorption phenomena.	**1**
Describe is a red shirt hotter than a purple shirt in the summer.	**1**

8. What is the difference between transparent and translucent? **(2 points)**

Key answer:

Criteria	Points
Describe what are transparent and translucent.	**1**
Describe the difference between transparent and translucent	**1**

9. Why do we see different colors? **(3 points)**

Key answer:

Criteria	Points
Describe how we can see the colors.	**1**
Describe why do we see different colors.	**2**

10. What is chromogenic substrate? **(2 points)**

Key answer:

Criteria	Points
Describe what is chromogenic.	**1**
Give an example of chromogenic substrate.	**1**

11. Is it true? Chemical energy is required to bond atoms together and when bonds are broken, new chemicals are formed and some of it is released energy. **(2 points)**

Key answer:

Criteria	Points
Describe what is Chemical energy.	**1**
Describe why Chemical energy is formed bond and some of it is released energy.	**1**

12. Give 4 examples of electromagnetic energy? **(2 points)**

Key answer:

Criteria	Points
Describe what is electromagnetic energy.	**1**
Give 4 examples of electromagnetic energy.	**2**

13. Describe the mechanical energy? **(2 points)**

Key answer:

Criteria	Points
Describe what is mechanical energy.	**1**
Give an example of mechanical energy.	**1**

14. Is it true? All forms of energy can be converted into other forms **(1 point)**

Key answer:

Criteria	Points
Describe why is energy can be converted into other forms	**1**

15. Give an example of energy transformation of chemical -> electrical-> mechanical? **(2 points)**

Key answer:

Criteria	Points
Describe what is energy transformation.	**1**
Give an example of energy transformation of chemical -> electrical-> mechanical.	**1**

16. Is it true? Convection always involves the circulation of a liquid or gas **(2 points)**

Key answer:

Criteria	Points
Describe what is convection energy.	**1**
Give an example of convection of a liquid or gas.	**1**

17. Is it true? Radiation requires particles to travel **(1 point)**

Key answer:

Criteria	Points
Describe what is radiation requires particles to travel.	**1**

18. Is it true? Red color in ruby from the Al^{3+} ions are replaced with Cr^{3+} ions **(2 points)**

Key answer:

Criteria	Points
Describe what is red color from Al^{3+}.	**1**
Describe why the Al^{3+} ions are replaced with Cr^{3+} ions.	**1**

19. How many 3d electrons does a Fe^{3+} ion have? **(2 points)**

Key answer:

Criteria	Points
Describe what is 3d electrons.	**1**
Describe how many 3d electrons does a Fe^{3+} ion.	**1**

20. What is the oxidation number of Chlorine in $HClO_4$? **(2 points)**

Key answer:

Criteria	Points
Describe what is the oxidation number.	**1**
Describe the oxidation number of Chlorine in $HClO_4$.	**1**

21. Is it true? A form of energy found in nature (lightning, static) and can also be produced through rubbing, chemical reactions and generators → electricity **(3 points)**

Key answer:

Criteria	Points
Describe what is energy form.	**1**
Give an example of form of energy found in nature (lightning, static) and can also be produced through rubbing, chemical reactions and generators → electricity.	**2**

22. Is it true? Heat energy is the energy associated with the difference in temperature between objects **(2 points)**

Key answer:

Criteria	Points
Describe what is heat energy.	**1**
Give an example of heat energy is the energy associated with the difference in temperature between objects.	**1**

23. What kind of heat is transferred from one particle of matter to another without the movement of matter? **(1 point)**

Key answer:

Criteria	Points
Describe what is heat transform.	**1**

24. How does a glass of tea become cold when you put ice in it? **(2 points)**

Key answer:

Criteria	Points
Describe how the glass of tea become cold.	**1**
Describe how does a glass of tea become cold when you put ice in it	**1**

25. Besides kinetic energy, molecules have rotational kinetic energy, potential energy due to forces between molecules and more. The total of all energies inside a substance is called? **(3 points)**

Key answer:

Criteria	Points
Describe what are kinetic energy and potential energy.	**1**
Give an example of kinetic energy and potential energy.	**2**

26. Is it true? A thermometer comes to thermal equilibrium with whatever it is place in, therefore a thermometer actually registers its own temperature. **(3 points)**

Key answer:

Criteria	Points
Describe what is thermal equilibrium.	**1**
Describe how does the thermometer comes to thermal equilibrium with whatever it is place in, therefore a thermometer actually registers its own temperature.	**2**

27. What is the unit of mass? **(2 points)**

Key answer:

Criteria	Points
Describe what is the unit of mass.	**1**
Give an example of the unit of mass.	**1**

28. Is it true? An object is in a state where there is no change in motion mean mechanical Equilibrium. **(2 points)**

Key answer:

Criteria	Points
Describe what is mechanical Equilibrium.	**1**
Describe an example of a state where there is no change in motion.	**1**

29. Is it true? When one object is sliding against another object, a resistive force opposes the motion mean friction. **(2 points)**

Key answer:

Criteria	Points
Describe what are force and friction.	**1**
Give an example of fiction.	**1**

30. Is it true? The object is in equilibrium, the sum of all the forces acting on the object is zero mean Equilibrium rule **(2 points)**

Key answer:

Criteria	Points
Describe what is the force of equilibrium rule.	**1**
Give an example of the object is in Equilibrium, the sum of all the forces acting on the object is zero mean Equilibrium rule.	**1**

GJ 303: Seminar in Gems and Jewelry

RUBRICS grading system

Proportion of Grading

1. Consultation 1 — 10 points
2. Consultation 2 — 10 points
3. Presentation — 20 points
4. Research analysis assessment — 20 points
5. Research topic assessment — 30 points
6. Working as a team and punctuality — 10 points

Consultation1	**5 points**	**8 points**	**10 points**	**Groups**					
				1	**2**	**3**	**4**	**5**	**6**
Research framework development	No referred research work	Referred research work but unclear research framework	Referred research work and able to develop research framework	10	10	10	10	10	10
Consultation2	**6 points**	**8 points**	**10 points**	**1**	**2**	**3**	**4**	**5**	**6**
Research framework development	Referred research work but unable to show connection to the framework	Referred research work and able to show connection to the framework	Referred research work and able to synthesize ideas to research framework	8	10	8	6	6	8
Presentation				**15**	**16**	**15**	**17**	**19**	**18**
Personality	3	4	5	1	2	3	4	5	6
	Appropriate attire	Appropriate attire and present interaction with audience	Appropriate attire, present interaction with audience and able to communicate fluently	3	3	4	3	4	3

Presentation Techniques	3	4	5	1	2	3	4	5	6
	Able to use media in communication but inappropriate sequence of presentation flow	Able to use media and easy-to-understand sequence of flow	Able to use appropriate and interesting media in presentation with good presentation flow	4	3	3	4	5	5
Accuracy and Answer the questions	7	8	10	1	2	3	4	5	6
	Unable to answer the questions	Able to answer the questions with somewhat accuracy	Able to answer the questions with accuracy	8	10	8	10	10	10
Research work analysis				**14**	**14**	**14**	**14**	**20**	**14**
Completeness	7	8	10	1	2	3	4	5	6
	Incomplete analysis	Present complete analysis	Present complete analysis and able to lead to correct and interesting research work category	7	7	7	7	10	7
Accuracy	7	8	10	1	2	3	4	5	6
	Some correct analysis	Some correct analysis which lead to research questions	Complete and correct analysis that lead to research questions	7	7	7	7	10	7

Research Proposal	**10**	**13**	**15**	**1**	**2**	**3**	**4**	**5**	**6**
				26	23	26	23	28	28
Completeness and organization	Unable to cover some topics. Unorganized and incorrect references	Complete but incoherent content. Unorganized and incorrect references	Complete content with coherence. Correct organization and references	13	10	13	13	13	13
Research Framework	**10**	**13**	**15**	**1**	**2**	**3**	**4**	**5**	**6**
	Research framework and research questions are incoherent	Research framework and research questions are coherent but unclear referred research work	Research framework and research questions are coherent with clear referred research work	13	13	13	10	15	15
Teamwork and report	**7**	**-**	**10**	**1**	**2**	**3**	**4**	**5**	**6**
	Work as a team and somewhat punctual	-	Work as a team and punctual	10	7	10	10	10	7