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| ANSWER KEY | Chapter 5 Test Answer Key | BLM 5.4.1A |
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Answers to **Multiple Choice** Questions

1. b
2. b
3. d
4. a
5. c
6. d
7. c
8. d
9. b
10. a
11. d
12. c
13. c
14. c
15. d
16. a
17. c
18. c
19. b
20. d
21. d
22. b
23. b
24. a
25. b
26. a
27. b
28. a
29. b
30. d

Answers to **Numerical Response** Questions

- Numerical response # 1 3, 4, 1, 2
Numerical response # 2 4, 1, 6, 2

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| ANSWER KEY | Chapter 5 Test Answer Key | BLM 5.4.1A |
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Sample Answers to **Written Response** Questions

1. a) Materials
 - beaker
 - $\text{NaHCO}_3(\text{s})$
 - Cabomba (or other aquatic plant)
 - bright lamp or grow light)
 - test tube and stopper
 - short stemmed funnel

Safety Precautions

You should identify common safety precautions including wearing protective eye wear and aprons. (6 marks)

- b) Accept all plausible hypotheses. For example, if the intensity of light is increased then the rate of photosynthesis will increase. (2 marks)
- c) Various set ups are possible.

Students should describe a situation where they have three or four identical set-ups, each being exposed to a different intensity of light for a specific period of time, perhaps 24 hours. One set-up should be the control and not be exposed to light.

Controlled variable for each set-up:

- amount of sodium hydrogen carbonate added to the water
- amount and species of plant in each set-up
- amount of time plants are exposed to different light intensities

Manipulated variable: The intensity of the light

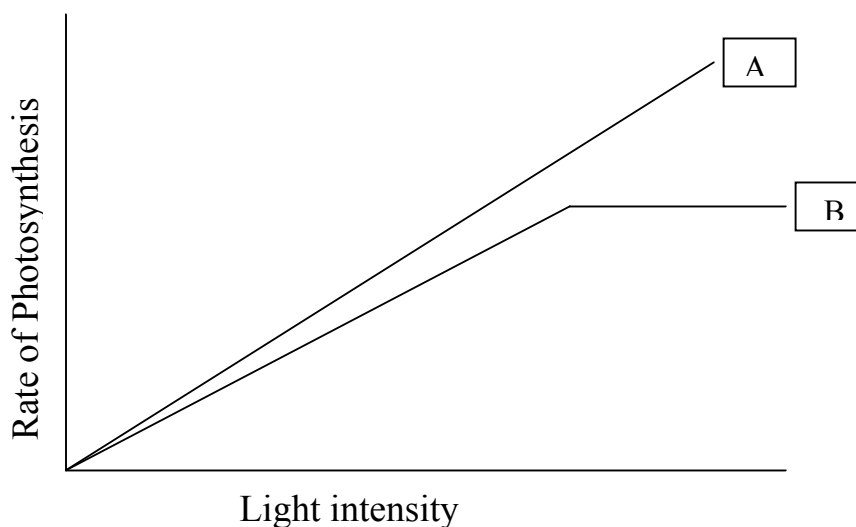
Responding variable. The amount of oxygen gas collected in each test tube.
(10 marks)

ANSWER KEY**Chapter 5 Test Answer Key****BLM 5.4.1A**

d) (4 marks)

| Light Intensity | Volume of oxygen gas collected (mL) |
|-----------------|-------------------------------------|
| dim light | |
| medium | |
| bright light | |
| no light | |

e) (5 marks)



If a student draws graph A, he/she should explain that as the light intensity increases, so does the rate of photosynthesis.

If a student draws graph B, (a better response) he/she should explain that light intensity will increase the rate of photosynthesis only up to the point when all the electrons in chlorophyll are active. After this point, the light intensity will not increase the rate of the process any further.