

NAME:

GEOLOGY 340 – SEDIMENTATION AND STRATIGRAPHY
FINAL EXAM

SECTION 1 – QUESTION 1	_____	(30 POINTS)
QUESTION 2	_____	(30 POINTS)
SECTION 2 – QUESTION 3	_____	(10 POINTS)
QUESTION 4	_____	(10 POINTS)
SECTION 3 – QUESTION 5	_____	(15 POINTS)
QUESTION 6	_____	(15 POINTS)
QUESTION 7	_____	(15 POINTS)

ANSWER **EACH** OF THE FOLLOWING QUESTIONS ON THE PAPER PROVIDED.

QUESTION 1 (10 POINTS TOTAL)

- (a) Define “accommodation space”. (3 points)
- (b) Why is the concept of accommodation space a more valid construct than “sea level”? (7 points)

QUESTION 2 (15 POINTS TOTAL)

- (a) Explain how general depositional conditions would be expected to vary in order to produce progradational, aggradational, and retrogradational facies stacking. (5 points)
- (b) Which of these facies stacking patterns is most frequently observed in parasequence-scale sedimentary packages? (2 points)
- (c) Briefly explain why modern carbonate sedimentation is generally restricted to shallow water, tropical, marine environments (10 points).

SECTION 2 – ANSWER **ONE** OF THE FOLLOWING TWO QUESTIONS ON THE PAPER PROVIDED.

QUESTION 3 (10 POINTS)

Discuss how you might use carbonate fabric preservation to distinguish the chemical environment of diagenesis (marine, vadose, or burial) in carbonate rocks.

QUESTION 4 (10 POINTS)

Show that you understand the concept of facies analysis by briefly discussing the development of facies models and the significance of Walther’s law in interpreting ancient sedimentary environments.

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SECTION 3 – ANSWER **TWO** OF THE FOLLOWING THREE QUESTIONS ON THE PAPER PROVIDED.

QUESTION 5 (15 POINTS)

Compare and contrast braided and meandering fluvial systems in terms of hydraulic energy, sediment load, channel development, and development of primary facies. Use annotated sketches if necessary.

QUESTION 6 (15 POINTS)

Explain how velocity and density differences (hypopycnal, hyperpycnal, homopycnal flow) between fluvial and standing waters affects the distribution (delta shape) and foreset geometry of deltaic deposits. Use annotated sketches if necessary.

QUESTION 7 (15 POINTS)

Describe the dominant hydrologic conditions and mechanisms of sediment transport and deposition in the following regions of a siliciclastic marine shelf:

