AMERICAN UNIVERSITY OF BEIRUT
Geology 224
Final Exam

Student Name:_____ February 5, 1996

Part I. Choose the best answer (40 pts.)

1. The Cenozoic opened with a Paleocene transgression covering almost the entire Arabian platform except for:

a. Oman
b. Yemen
c. Jordan
d. Lebanon

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2. By the late Lower Eocene shoaling over eastern Arabia gave rise to . . . deposition of . . . formation.

a. evaporitic . . . Rus
b. sandstone . . . Rus
c. evaporitic . . . Umm-er Radhuma
d. sandstone . . . Umm-er Radhuma

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3. At the beginning of its formation the sea entered to the Red sea from north depositing a great thickness of . . . providing the . . . rock of oil in the Gulf of Suez.

a. organically rich marls . . . source
b. sands . . . reservoir
c. evaporites . . . sealing
d. carbonates . . . reservoir

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4. In the northern Levant there is ample evidence of . . . differential vertical movements which led to the foundering of the eastern Mediterranean floor and further uplift of the Levantine coastal range.

a. Eocene
b. Oligocene
c. Miocene
d. Pliocene

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5. In the eastern part of Arabia the shallow sea way shoaled and became isolated in Middle Miocene giving rise to Lower Fars:

a. sandstones
b. evaporites
c. shales
d. carbonates

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6. In explaining the Late Miocene Mediterranean Messinian salinity crisis, data favored the . . . model.

a. shallow water-shallow basin
b. shallow water-deep basin
c. deep water-shallow basin
d. deep water-deep basin

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7. During the Late Neogene and Pleistocene basaltic volcanism was widespread within the Levant fracture to either side, mainly in the Hawran area, covering . . . sq.km.

a. 4500
b. 45000
c. 3400
d. 34000

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8. In Oman . . . salts moved with piercement to the surface in Late Tertiary.

a. Permo-Carboniferous
b. Devonian
c. Silurian
d. Infracambrian-Cambrian

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9. The . . . fracture zone runs along SE boundary of Arabia for . . . km, 500 of which comprise the active segment.

a. Carlsberg . . . 1000
b. Owen . . . 1000
c. Owen . . . 2000
d. Carlsberg. . . 2000

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10. Spreading center (Cochrane 1983) was established in the Red Sea 4-5 MA at . . . ^{o}N (Latitude), this has extended southward and northward.

a. 15
b. 17
c. 21
d. 23

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11. Girdler (1985) concluded that oceanic lithosphere . . . present in the northern Red Sea, . . . magnetic anomalies

a. is . . . but without
b. is . . . with
c. is not . . . in spite of the presence of
d. is not . . . as there are no

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12. Girdler (1985) concluded that northern Red Sea evolved in 3 phases: 1. Gulf of Suez (. . . MA); 2. Early Aqaba-Dead Sea (. . . MA); and 3. Late Aqaba-Dead Sea (. . . MA).

a. 31-24 . . . 24-16 . . . 4.5-0
b. 43-34 . . . 24-16 . . . 4.5-0
c. 28-21 . . . 18-12 . . . 5-0
d. 25-18 . . . 16-8 . . . 5-0

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13. In Afar region the presence of . . . Precambrian/Mesozoic blocks posed many problems for the reconstruction of the margins to pre-separation positions.

a. Danakil and Sokotra
b. Aisha - Ali Sabieh and Farsan
c. Danakil and Aisha - Ali Sabieh
d. Farsan and Sokotra

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14. Dubertret (1932) developed the hypothesis of . . . movement and suggested that the Sinai-Levant block moved southwards for . . . km.

a. dextral . . . 160
b. dextral . . . 110
c. sinistral . . . 160
d. sinistral . . . 110.

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15. Quenelle (1951,58,59) developed the . . . motion model and suggested . . . phases of movement.

a. dextral . . . 2
b. sinistral . . . 2
c. dextral . . . 3
d. sinistral . . . 3

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16. The Gulf of Oman is floored by . . . crust 70-100 M.A. defined according to . . . because there is no magnetic sea floor spreading lineations.

a. oceanic . . . radiometric dating
b. oceanic . . . heat flow evidence
c. continental . . . radiometric dating
d. continental . . . heat flow evidence

Part II. A. Answer One of the following two questions (10 pts.)

1. Discuss the Aden Trap Series.
2. Discuss the summary of the opening of the Gulf of Aden and Red Sea.

B. Answer one of the following questions, provided it is not the topic of your presentation (10 pts.)

1. The Mediterranean Messinian salinity Crisis.
2. The origin of the Eastern Mediterranean lithosphere.
3. The Taurus Fold belt.
4. The East African rift.

Part III. Describe the presented formation correlation in terms of deposition, lithology, paleogeography and paleoclimate (20 pts).

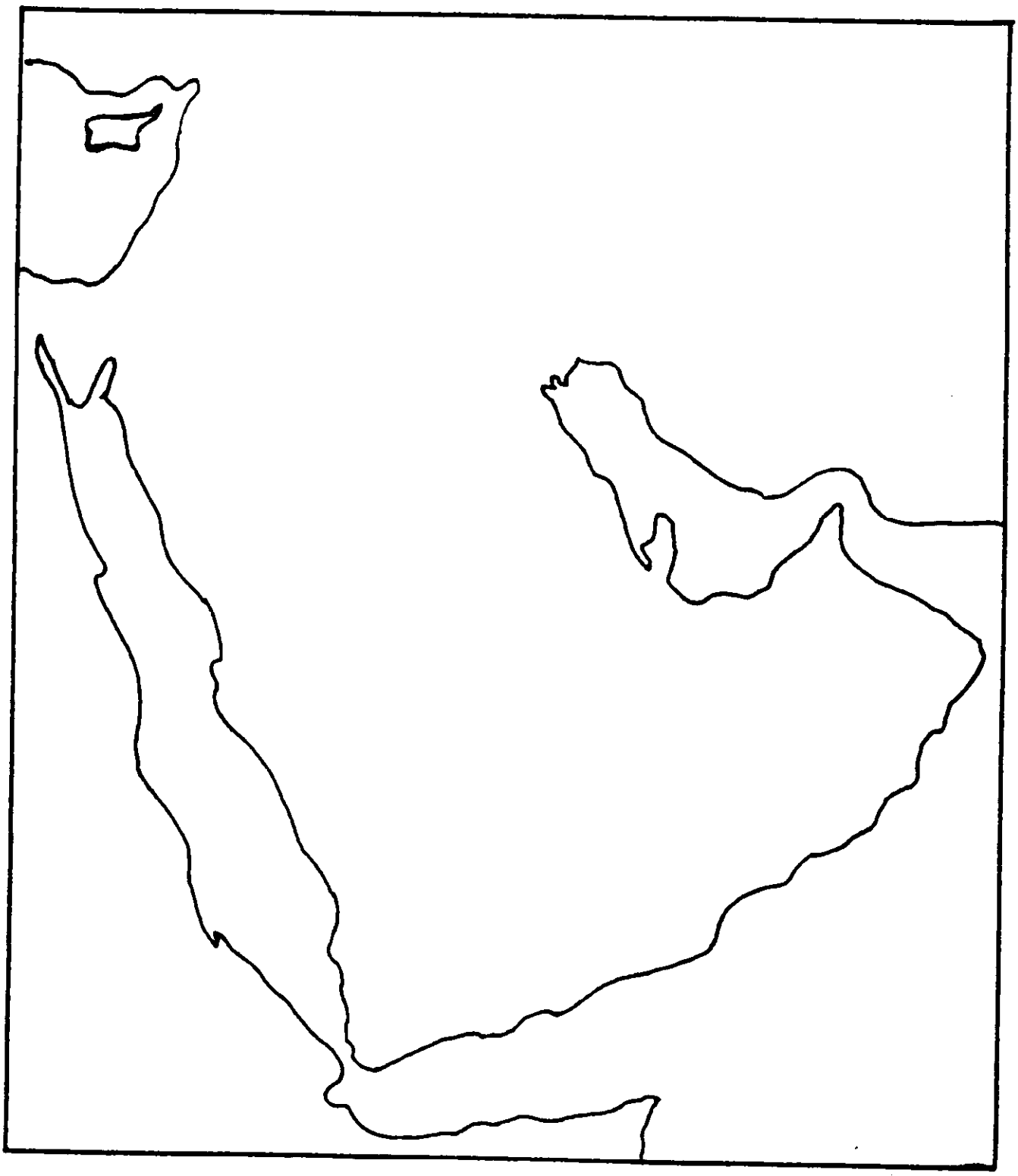
Part IV. Draw on Figure 1(page 4).

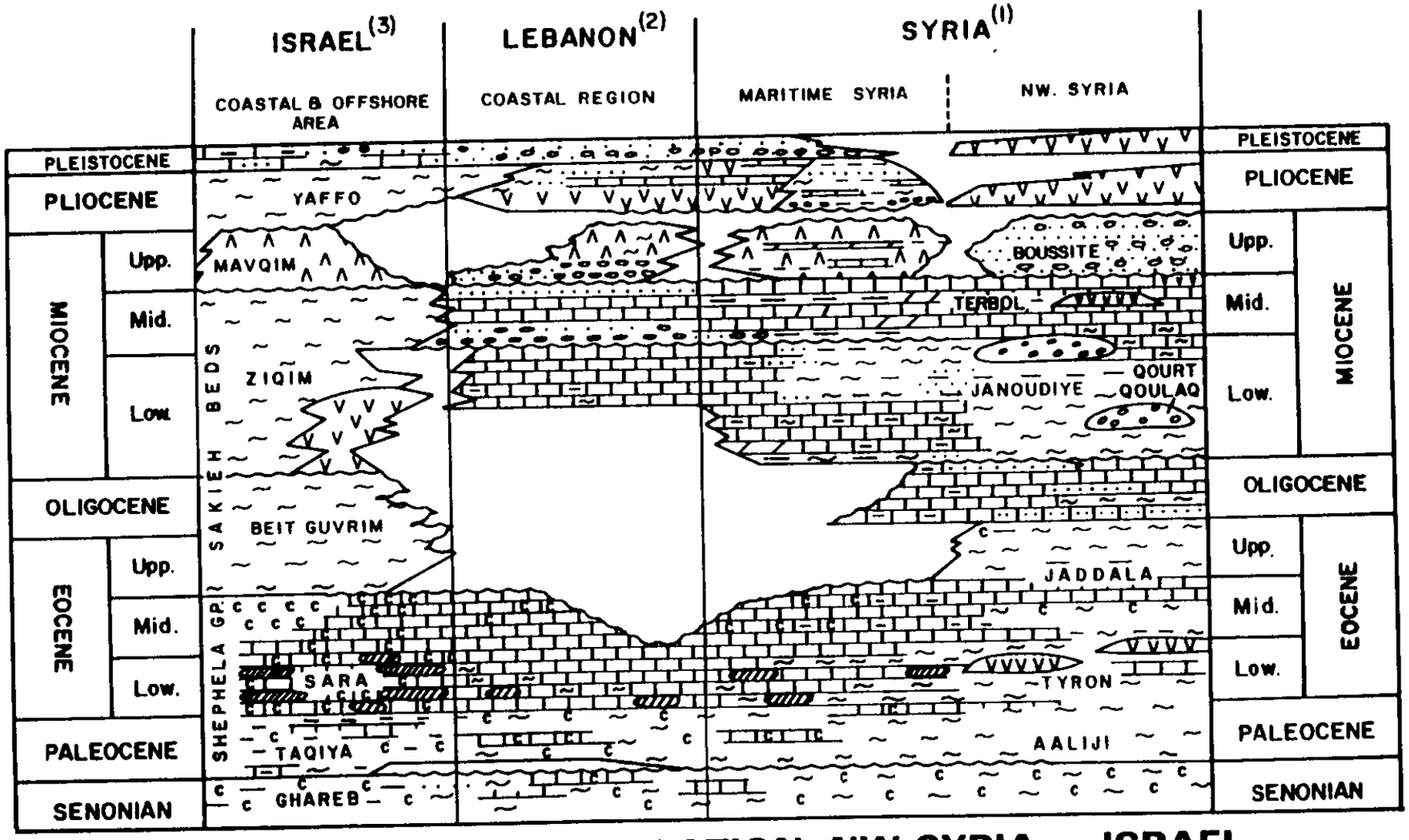
a. The extension of the Gulf of Aden and the Red Sea axial zone; the Levant fracture; and the Taurus and Zagros thrust zones.

b. The approximate location and extension of Palmyrid aulacogen; Tabuk, Azrak, Widyan and Rub al Khali basins; Jawf-Marib and Central Arabian graben and trough systems; Aleppo, Hail-Jauf-Ga'ara, Rutbah and Hadhramout archs and highs; and Najd fault system.

GOOD LUCK

Figure 1.





CENOZOIC FORMATIONS CORRELATION: NW SYRIA – ISRAEL