



AMERICAN UNIVERSITY OF BEIRUT
Geology Department
Geology 224
Final Exam



June 24, 1998

Student Name: _____

Part I. Choose the best answer (56 pts.)

1. As Mesozoic was the time of the break up of . . . , the similarity of depositional conditions between Arabia and central Iran prevailed in Palaeozoic
 - a. Laurasia . . . ceased
 - b. Pangaea . . . ceased
 - c. Laurasia . . . continued
 - d. Pangaea . . . continued

2. Although it is difficult to separate it from Upper Permian, Triassic was marked by partial quite extensive . . . episodes.
 - a. transgressional
 - b. regressional
 - c. taphrogenic
 - d. orogenic

3. During Mesozoic, the Arabian region was in . . . latitudes and was low lying with . . . terrigenous clastic deposition.
 - a. high to middle . . . large
 - b. low to middle . . . large
 - c. high to middle . . . little
 - d. low to middle . . . little

4. Short episodes of gypsiferous coloured . . . deposition of a continental to near-shore facies dominated early Triassic.
 - a. shale and limestone
 - b. limestone and sandstone
 - c. shale and sandstone
 - d. limestone and dolomite

5. As the Triassic advanced an increasing periodic shallow-water limestone and dolomite deposition often interbedded with . . . becoming similar to Khuff depositional times.
 - a. anhydrite
 - b. shale
 - c. rock salt
 - d. sandstone

6. The aeromagnetic data from Jordan, . . . data from Lebanon and stratigraphic facies for the older Jurassic of the maritime of Lebanon and Syria indicate that the underlying crust is . . .
 - a. gravity . . . oceanic
 - b. seismic . . . oceanic
 - c. gravity . . . continental
 - d. seismic . . . continental

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7. Terminal Jurassic (or earliest Cretaceous in some places) witnessed differential vertical uplift of blocks over many parts of Arabia except the . . . margin which continued to subside.

- a. north-western b. north-eastern
c. western d. southern
-

8. In late Cretaceous, . . . open sea . . . were the predominant facies.

- a. pelagic . . . carbonates b. neritic . . . carbonates
c. pelagic . . . muds d. neritic . . . muds
-

9. The central Arabian arc is trending . . . and bordered to the . . . by the central Arabian graben trough system.

- a. N-S . . . east b. E-W . . . south
c. N-S . . . west d. E-W . . . north
-

10. The NE-SW trending Huqf-Haushi . . . (Infra-Cambrian to early Palaeozoic) was reactivated later and continued to influence facies and thickness development in Palaeozoic and Mesozoic.

- a. Ga'ara axis b. Ga'ra graben
c. Ja'alan axis d. Ja'alan graben
-

11. The Rub-al-Khali basin is a . . . epicratonic basin and it has apparently originated in the early Palaeozoic as a sag basin.

- a. Holocene b. Quaternary
c. Pliocene d. Tertiary
-

12. In the Levant, Triassic evaporites are exposed to the surface in the cores of some of the . . . asymmetric anticlines.

- a. eastern Hermon b. south-eastern Palmyrides
c. western Hermon d. north-western Palmyrides
-

13. The . . . crescentic-shaped belt of ophiolites along the eastern edge of Arabia was emplaced in . . . Cretaceous.

- a. discontinuous . . . early b. continuous . . . early
c. discontinuous . . . late d. continuous . . . late
-

14. The development of early Cretaceous lateritic horizons and the presence of discontinuous, but extensive, . . . levels in the Levant indicate that the climate was warm and
- a. lignite . . . humid b. evaporite . . . humid
c. lignite . . . dry d. evaporite . . . dry
-
15. Mesozoic rocks of the central Arabian outcrop area (Saudi Arabia) are extensively exposed in an . . . fashion to the . . . of the Palaeozoic rim of the Arabian shield.
- a. arcuate . . . west b. elliptic . . . west
c. arcuate . . . east d. elliptic . . . east
-
16. Mesozoic outcrops in the eastern and northern Arabian margin are restricted to the Zagros and eastern Taurus ranges, but there are limited Mesozoic outcrops in
- a. eastern Syria b. western Iraq
c. eastern Saudi Arabia d. southern Iraq
-
17. In southern Arabia, Mesozoic rocks are . . . well and widely exposed in different portions of plateau outcrop erosion windows, and in the . . . of uplifts and mountains.
- a. continuously . . . cores b. discontinuously, but . . . cores
c. continuously . . . margins d. discontinuously, but . . . margins
-
18. At the south-western end of Arabia, terminal Cretaceous saw the initial phases of . . . uplift and . . . fracturing with flood basalt outpourings.
- a. epeirogenic . . . shear b. orogenic . . . shear
c. epeirogenic . . . tensional d. orogenic . . . tensional
-
19. Haynes and McQuilan (1974) pointed that the Zagros suture zone is divisible into the following (from NE to SW) zones: stable block of the Iranian "continent", . . . and Arabian platform part.
- a. Zagros crush, simply folded, trench, imbricate
b. trench, imbricate, Zagros crush, simply folded
c. imbricate, Zagros crush, simply folded, trench
d. Zagros crush, trench, imbricate, simply folded
-
20. The Cenozoic opened with a Palaeocene . . . covering almost the entire Arabian Platform except for
- a. regression . . . Yemen b. transgression . . . Yemen
c. regression . . . Oman d. transgression . . . Oman
-

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

- a. Pliocene . . . vertical b. Oligocene . . . vertical
c. Pliocene . . . horizontal d. Oligocene . . . horizontal
-

22. 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. shales
c. evaporites d. carbonates
-

23. In Paleogene, the . . . side of Arabia underwent . . . tectonics with broad uplift (large dome).

- a. eastern . . . tensional b. eastern . . . compressional
c. western . . . tensional d. western . . . compressional
-

24. In explaining the late Miocene Mediterranean Messinian salinity crisis, data favoured the . . . model.

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

25. In Oman, . . . salts moved with piercement to the surface in late Tertiary.

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

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

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

27. In Yemen the . . . salt was extruded to the surface in late Cenozoic.

- a. Cambrian b. Devonian
c. Permian d. Jurassic
-

28. According to heat flow evidence, the Gulf of Oman is floored by . . . crust . . . M.A.

- a. oceanic . . . 30-50 b. continental . . . 30-50
c. oceanic . . . 70-100 d. continental . . . 70-100
-

29. The . . . fracture zone runs along the SE edge of Arabia for 2000 km, . . . of which comprise the active segment. (Bonus)

- | | |
|---------------------|--------------------|
| a. Owen . . . 1000 | b. Owen . . . 500 |
| c. Sheba . . . 1000 | d. Sheba . . . 500 |
-

Part II. Using the map (figure 1) write the names of the numbered structural features indicating their types (basin, high, axis, graben, arch ...) (14 pts.)

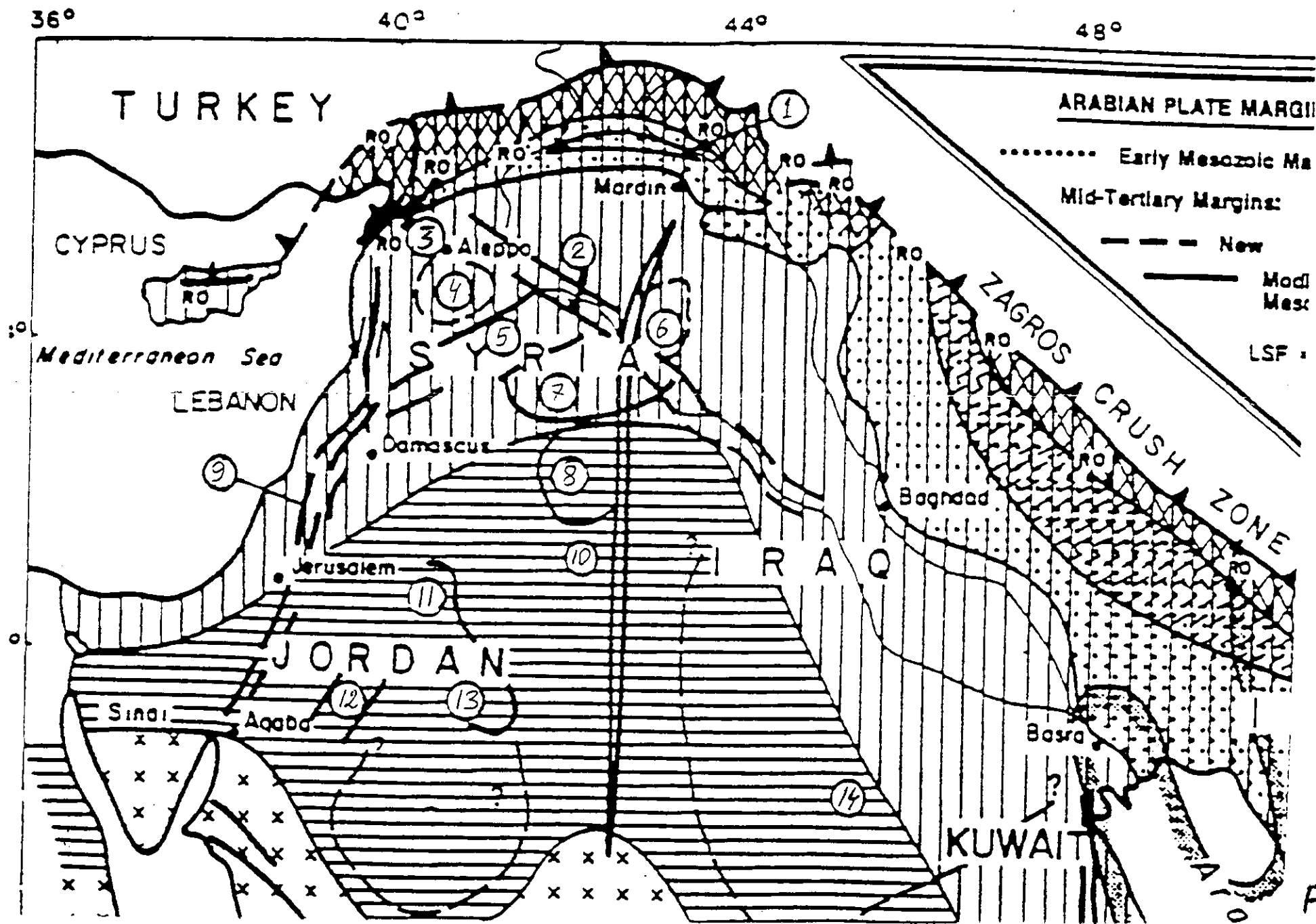
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|------------|------------|
| 1. _____, | 2. _____, |
| 3. _____, | 4. _____, |
| 5. _____, | 6. _____, |
| 7. _____, | 8. _____, |
| 9. _____, | 10. _____, |
| 11. _____, | 12. _____, |
| 13. _____, | 14. _____, |
-

Part III. Answer only two of the following three questions (20 pts.)

1. Outline the tectonic overview of Mesozoic.
 2. Discuss the summary of the opening of the Gulf of Aden and Red Sea.
 3. Give the conclusion on the evolution and development of the Levant (Dead Sea) Fracture system.
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Part IV. Describe, in only one page, the presented formations correlation (figure 2) in terms of Palaeogeography, lithology and deposition (10 pts.)

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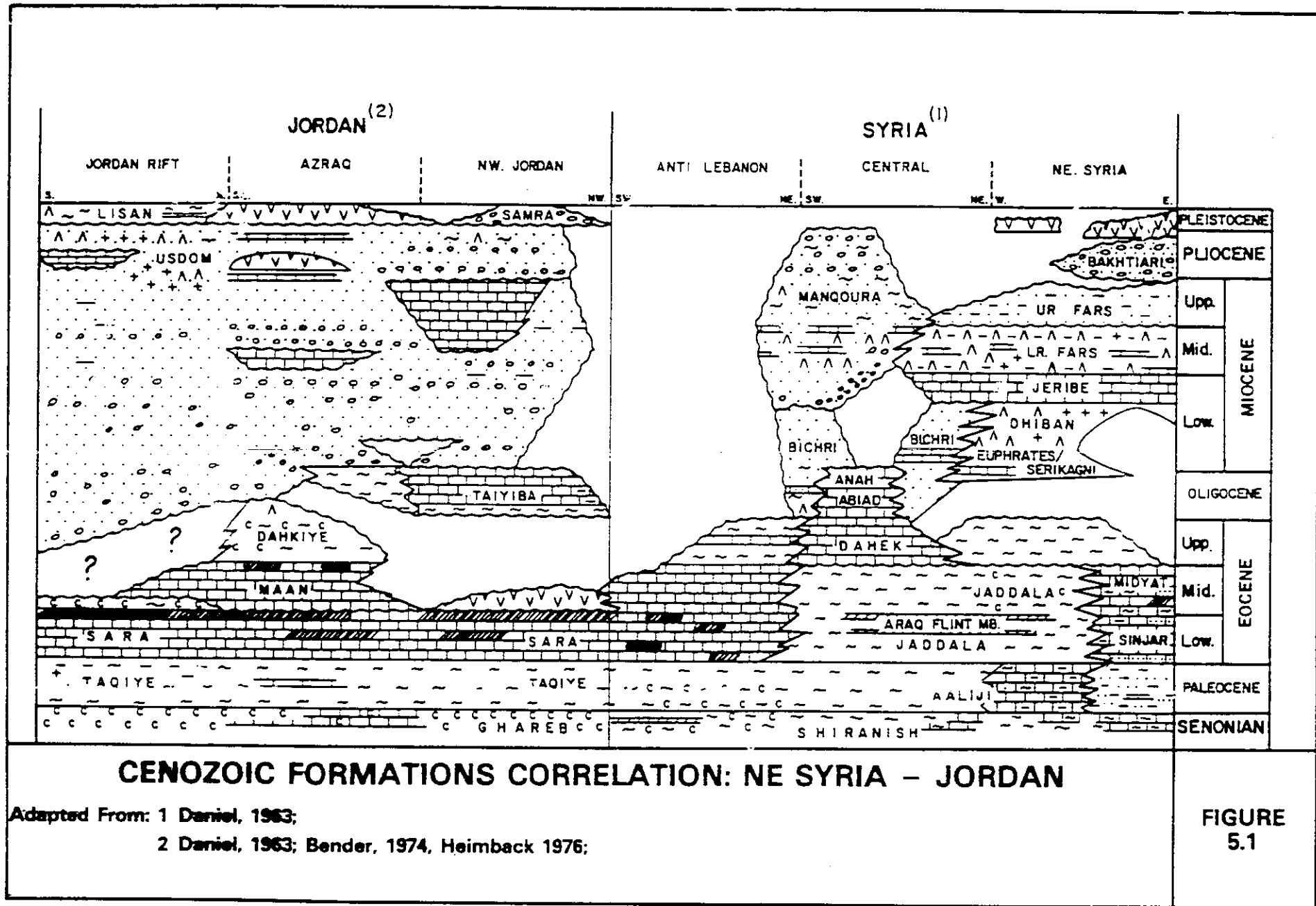


Fig. 2