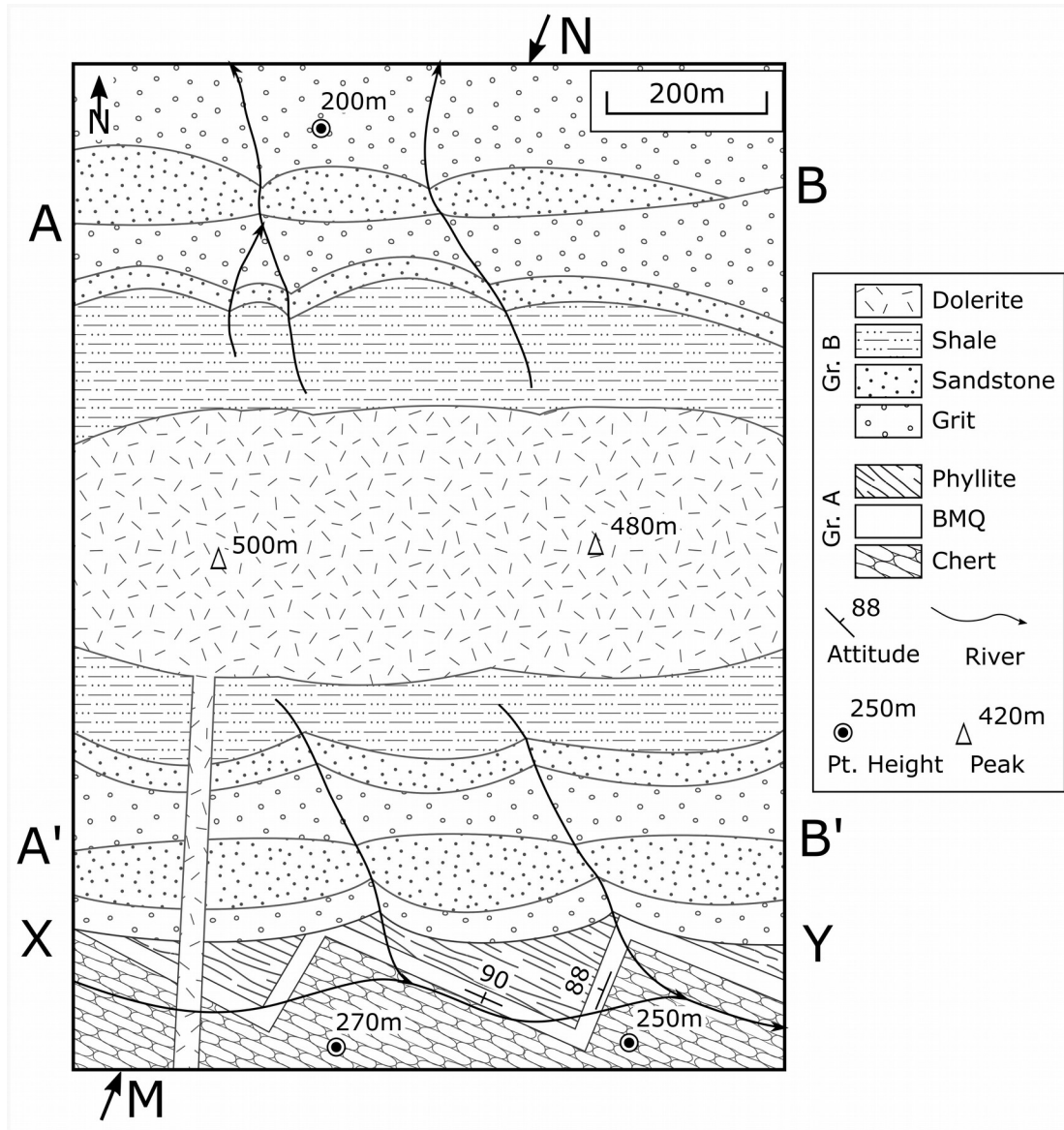# Sample Question

GEB/Test 2

- There are <u>twenty six</u> questions in all. Answer all the questions. Maximum possible score is 100.

Part I – one question	1 x 25 = 25
Part II – five questions	5 x 8 = 40
Part III – five questions	5 x 4 = 20
Part IV – fifteen questions	15 x 1 = 15
Total marks	**100**

Part I

(*One question, twenty five marks*)

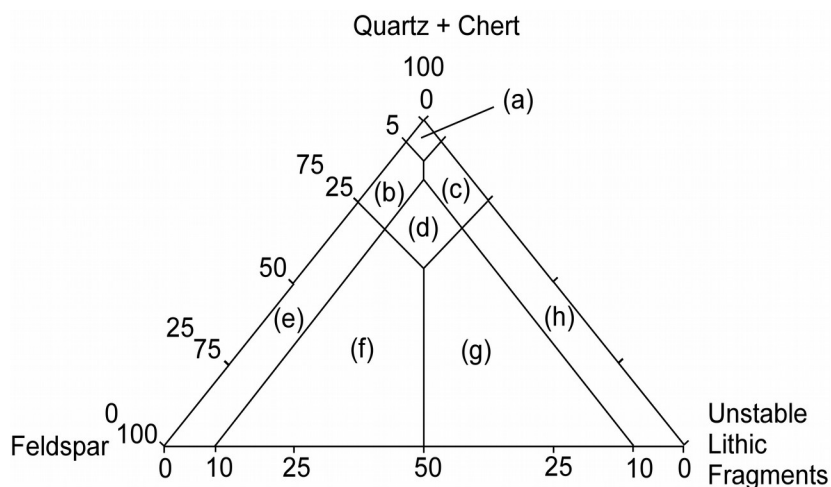1.

Interpret the geological map and answer the following.

A) Comment on the nature of contact (XY) between Gr. A and Gr. B.

B) If you interpret the contact surfaces AB and A′B′ as faults, give reasoning for the same. Give probable dip directions of the faults. If you interpret these boundaries in a different manner, explain your answer.

C) Give the orientations of the fold axial planes and the fold hinges in Gr. A. Can the folds be considered as open neutral folds?

D) Is the repetition of outcrops of different units of Gr. A around the central Dolerite horizon due to a fold? Give reasons for your answer. If you have alternative interpretation for this repetition, state and justify the same.

E) Draw a sketch cross-section along line MN.

Part II
(*Five questions, eight marks each*)

2. Write (in brief) the palaeoclimate prevailing during the deposition of Permian and Triassic sediments in the Gondwana basins of peninsular India.

3. Elucidate the following statement "Paleo species are mostly morphospecies"

4. Write briefly on the spatial and spectral resolution of a satellite image.

5. Sandstone classification of Dott (1964) is given in the figure below. (i) Match the letters (a) - (h) written in the figure with the given rock-types: quartzarenite, lithic arkose, lithic subarkose, sub litharenite, feldspathic litharenite, arkose, arenite and sub arkose. (ii) How this classification changes with increase in matrix content from ~0 to ≥ 15% and then (iii) to ≥ 75%. Use a labeled diagram to explain.

6. How do you define a facies? Give an example of facies in a shallow marine deposit. How delineation of parasequence is related to identification of facies?

Part III

(*Choose the correct answer from the given alternatives and justify. Five questions, four marks each*)

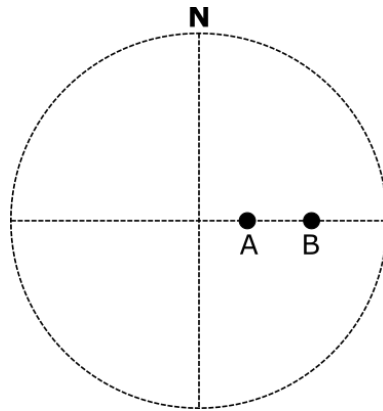7. The modal composition of sandstones is reliable indicator of

A) Tectonics of the sedimentary basin

B) Palaeogeographic setting of the depositional milieu

C) Tectonic setting of the provenance terrain

D) Processes of diagenitic changes

8. *Stegosaurus* are not found in Triassic deposits of Spiti area. Because

A) *Stegosaurus* is not found in Triassic

B) *Stegosaurus* is terrestrial and Spiti Triassic deposits are marine

C) Both (A) and (B) makes the occurrence impossible

D) *Stegosaurus* is a deep marine swimmer and Triassic deposits of Spiti are shallow marine.

9. In the given stereogram, if A and B are the poles of the two limbs of a cylindrical fold, then

A) Fold axial plane dips towards east and the fold axis is horizontal, trending north-south

B) Fold axial plane dips to west and fold axis is horizontal, trending north-south

C) Fold axial plane is horizontal and fold axis is vertical

D) Fold axial plane is vertical and the fold axis plunging towards north

10. Thin section studies of a rock shows orthopyroxene grains rimmed by hornblende which in turn is rimmed by biotite. The texture represents

A) Equilibrium cystallisation
B) Disequilibrium crystallisation
C) Retrograde metamorphism
D) Prograde metamorphism

11. Pure albite has less SiO_2 by wt% than pure orthoclase. In a perthite exsolved albite lamellae should contain

A) Same wt % of silica as the original solid solution
B) More wt % of silica than the host feldspar
C) Less wt % of silica than the host feldspar
D) Less wt % of silica than the original solid solution.

Part IV

(*Choose the correct answer from the given alternatives. **No** justification is required.*

Fifteen questions, one mark each)

12. Continental early Triassic deposits of India is devoid of

A) Coal

B) Red beds

C) Sandstones

D) Dykes and sills

13. *Barapasaurus* is a

A) Theropod dinosaur

B) Sauropod dinosaur

C) Ornithopod dinosaur

D) Pteropod dinosaur

14. Bilinear image resampling method is not suitable for

A) Landsat 7 imagery

B) Panchromatic imagery

C) Digital elevation model

D) Thematic raster

15. The Andes Mountains of South America are a result of which type of plate boundary?

A) Convergent

B) Divergent

C) Transform

D) They are not related to a plate boundary

16. The Earth's external heat engine is not responsible for which of the following

A) Climate

B) Erosion

C) Tides

D) Winds

17. 3-D dunes are

A) A type of antidune

B) Large dunes common in deserts

C) Curved crested asymmetric bedforms

D) A straight-crested subaqueous dune

18. Clastic sedimentary rocks are classified on the basis of

A) Composition of the framework grains

B) Size of the framework grains

C) Relative proportion of framework grains, matrix and cement.

D) All of the above

19. Siwalik Group of rocks were deposited in a

A) Rift basin
B) Strike-slip basin
C) Sag basin
D) Foreland basin

20. Paleomagnetic pole tells us about

A) Latitudinal position
B) Longitudinal position
C) Both latitudinal and longitudinal position
D) Anisotropy of magnetic susceptibility

21. Which of the following is NOT a direct source of information on mantle petrology?

A) A diorite pluton
B) A lamproite dyke
C) A kimberlite pipe
D) Sheeted dykes

22. In iron rich metapelites cordierite is usually considered to be produced by

A) Low T, low P metamorphism
B) Low P, high T metamorphism
C) High P, high T metamorphism
D) Intermediate P, intermediate T

23. Which of the following is NOT in correct stratigraphic order?

A) Peninsular Gneiss-Closepet granite-Gulcheru Quartzite-Vempalle Formation
B) Gulcheru Quartzite-Vempalle Fm-Tadpatri Fm-Pulivendla Formation
C) Older Metamorphic Group-Older Metamorphic Tonalite Gneiss-Iron Ore Group-Dhanjori Group
D) Aravalli Supergroup-Delhi Supergroup-Erinpura Granite-Malani rhyolites

24. What is the common feature of the alluvial fan, delta and deep marine fan systems?

A) Dominance of gravity flow deposits
B) Dominance of sub-aerial channel deposits
C) Radiating palaeocurrent pattern
D) Stacking of repeated fining-upward successions

25. *Otoceras* Zone is a

A) Biostratigraphic Unit
B) Lithostratigraphic Unit
C) Magnetostratigraphic Unit
D) Chronostratigraphic Unit

26. Two colorless minerals show low relief and first order grey interference color. The probable mineral pair is

A) Olivine and pyroxene
B) Quartz and hornblende
C) Quartz and feldspar
D) Feldspar and nepheline