*This question paper contains 3 printed pages.*

1327 *Your Roll No.* .....

**B.Sc. (Hons.) / III** **A**

GEOLOGY— Paper XII (*i*)— Environmental Geology

(Admissions of 2004 and onwards)

*Time* : 3 hours *Maximum Marks* : 45

*(Write your Roll No. on the top immediately on receipt of this question paper.)*

*Attempt any five questions. All questions carry equal marks.*

1. Discuss the idealized soil profile in humid climate with the help of a schematic diagram.

2. What important parameters are required for preparing a Landslide hazard zonation map? Explain giving a case study with suitable example.

3. Write notes on any two:

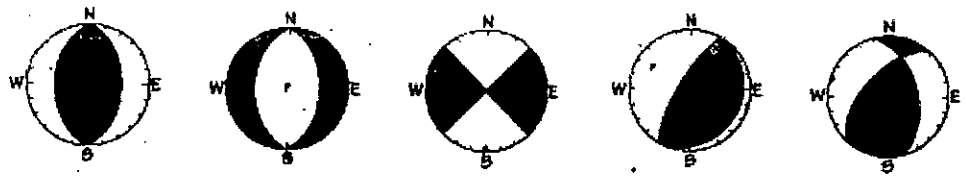
a) Soil forming factors

b) Climatic hazards

c) Seismic zonation of India

4. Describe Land-Use/ Land-Cover classification. What is its significance for managing various environmental related projects? Give brief procedure for making such map using remote sensing data.

5. What do you understand by fault plane solution? How will you plot the beach ball diagram? Identify and describe the attitude of faults based on focal plane solution given below:




(a) (b) (c) (d) (e)

6. What do you understand by flood hazard zonation map? Describe the factors responsible for floods giving an Indian example? What is the probability of occurrence of a flood which has a record for recurrence interval of 25 years, during a 10 year period?

7. Plot the following on Indian map and write short notes on any two:

a) Regions of high Inland Salinity Contamination

b) Regions of high Arsenic Contamination

c) Regions of high Cyclone effects.

8. In the given data for major ion concentration which sample has highest ion percentage error beyond permissible limit. Plot the Durov diagram discarding the data having high error.

| Sr. No. | Ca | Mg | Na | K | $HCO_3$ | $SO_4$ | Cl | EC | pH |
|---|---|---|---|---|---|---|---|---|---|
| | meq/L | meq/L | meq/L | meq/L | meq/L | meq/L | meq/L | uS/cm | |
| 1 | 3.106 | 1.28 | 1.166 | 0.023 | 4.021 | 0.341 | 1.045 | 1189.2 | 7.1 |
| 2 | 3.349 | 1.249 | 1.201 | 0.021 | 4.649 | 0.383 | 0.627 | 1027.2 | 7.5 |
| 3 | 2.242 | 0.393 | 0.857 | 0.021 | 2.254 | 0.395 | 0.627 | 839.61 | 7.1 |
| 4 | 1.960 | 0.378 | 0.621 | 0.012 | 2.787 | 0.262 | 0.208 | 606.37 | 7 |
| 5 | 1.384 | 0.613 | 0.475 | 0.056 | 2.117 | 0.349 | 0.207 | 781.92 | 6.9 |
| 6 | 2.504 | 1.341 | 3.976 | 0.361 | 4.464 | 0.808 | 1.045 | 1706.7 | 7 |