

Ex:/F/GEO/XIV/82/2019

**BACHELOR OF SCIENCE EXAMINATION, 2019**

(3rd Year, 2nd Semester)

**GEOLOGICAL SCIENCES**

**Hydrogeology & Geomorphology**

**Paper : XIV**

Time : Two hours

Full Marks : 50

Use separate answer-script for each group.

**GROUP - A (25 marks)**

**Hydrogeology**

Answer any *five* questions.

1. What is 'wilting point'? How does it differ from 'field capacity'? Discuss the importance of wilting point for the formation of soil-water zone. 1+2+2
2. Draw a schematic flow chart of hydrologic cycle. Discuss the role of interflow and base flow for the sustainability of groundwater storage. 3+2
3. What is piezometric surface? Discuss the geohydrological conditions, when a confined aquifer may behave like an unconfined aquifer. What is transmissivity? 2+2+1

(Turn Over)

(2)

4. Discuss the effect of major parameters of a porous media those control its permeability. What is coefficient of percolation? How is it related with porosity? 3+1+1
5. What is 'total hardness' of a water sample? What is its unit? How water is classified in different caegories on 'total hardness' measure? 2+1+2
6. Distinguish between (any *two*) 2.5x2=5
- (a) Pellicular water and Hygroscopic water
- (b) Water content and Degree of saturation
- (c) Total Dissolve Solids and Turbidity of water
7. Completely oven dried cylindrical core of an aquifer rock material having a base diameter of 6 cm and length of 10 cm weights 650 gm. After prolonged immersion in water and complete saturation its weight increased to 730 gm. Calculate the porosity and void ratio of the aquifer rock. 5

(3)

**GROUP - B (25 marks)**

**Geomorphology**

Answer *q. no. 8* and any *two* from the rest.

8. Write short notes on (any *two*) 2.5x2=5
- (a) Horst and graben
- (b) Stalagmites
- (c) Yardang
9. What do you understand by the terms : 'Landform' and 'Geomorphology'? What are the different orders of relief in landforms? With sketches describe different types of drainage patterns under a watershed body. 3+3+4
10. With the help of sketches describe the landforms created by erosional and depositional activities in glacial environment. Explain with sketches the floodplain landscape and related features. 6+4
11. Describe the landforms formed by erosional activities in desert condition. Describe different types of dunes . Answer with sketches. 5+5