

This question paper contains **3** printed pages]

**Roll No.**

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S. No. of Question Paper : **1980**

Unique Paper Code : **2193010012**

Name of the Paper : **Application of Hydrogeology in Industries and Mining**

Name of the Course : **B.Sc. (H) Geology**

Semester : **VI**

Duration : **3 Hours**

Maximum Marks : **90**

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

Attempt any *five* questions.

*All* questions carry equal marks.

1. What do you understand by the term “dynamic groundwater resource” ?  
Explain the various methods recommended by the Groundwater Resource Estimation Committee (GEC) 2015 for quantifying the different components of groundwater recharge and extraction in command areas. 2+16=18
  
2. Discuss the need for water audit and the protocols for carrying out a water audit for a thermal power plant, detailing data collection procedures, preparation of a water circuit, identification of losses and formulation of recommendations. 18

P.T.O.

3. Discuss the following : 4+14=18
- (a) The category of Industries requiring Impact Assessment Report (IAR) for No Objection Certificate (NOC) by Central Ground Water Authority (CGWA).
  - (b) General guidelines for preparing an IAR, detailing the components and procedural framework.
4. Discuss the following : 6+12=18
- (a) The basic differences between a Comprehensive Hydrogeological Report (CHR) and an Impact Assessment Report (IAR).
  - (b) Estimation of mine seepage in an open-cast mine using neat sketch. Elaborate on reporting of the results in context of the Comprehensive Hydrogeological Reports (CHR).
5. Write an essay on National Water Policy (2012) of India. 18
6. In the context of the guidelines issued by the Central Groundwater Authority for regulating and controlling groundwater extraction in India : 9+9=18
- (a) Discuss about the specific conditions for grant of No Objection Certificate for mining projects.
  - (b) Discuss about the specific conditions for grant of No Objection Certificate for Industrial uses.

7. In the context of the Central Ground Water Authority (CGWA) guidelines to regulate and control groundwater extraction in India, write short notes on the following : 6+6+3+3=18

- (a) No Objection Certificate (NOC) for groundwater extraction in infrastructure projects.
- (b) Provisions of the Environment Protection Act 1986 that are pertinent to the functioning of the Central Ground Water Authority.
- (c) The categories of consumers exempted from seeking No Objection Certificate for groundwater extraction.
- (d) Certification of Water Auditors and accreditation of Groundwater consultants/professionals.

8. Discuss the following : 10+8=18

- (a) Analytical modelling in the context of Impact Assessment Report (IAR) for Industries.
- (b) Regulations and prescribed timeframes governing the renewal of a No Objection Certificate (NOC).