AQ – 2685

Second Semester M. E. Civil (Env. Engg.) P. T. (CGS) Examination

WATERSHED MANAGEMENT

Paper - 2 SCEE– 1

P. Pages : 3

Time : Three Hours | | Max. Marks : 80

Note : (1) Separate answer book must be used for each section in the subject Geology, Engineering material of civil branch and separate answer-book must be used for Section A & B in Pharmacy and cosmetic Tech.
(2) All questions carry marks as indicated.
(3) Answer **Three** questions from Section A and **Three** questions from Section B.
(4) Due credit will be given to neatness and adequate dimensions.
(5) Assume suitable data wherever necessary.
(6) Illustrate your answer wherever necessary with the help of neat sketches.
(7) Use pen of Blue/Black ink/ refill only for writing the answer book.

SECTION A

1. (a) Describe hydrological cycle with neat sketch and explain different phases in it. 7

   (b) Explain in detail concept of storage. 6

2. (a) What is energy budget ? Draw a neat sketch showing the average annual energy budget for the earth and explain in detail. 7

   (b) Explain "role of water in energy sphere". 6

3. What are the various methods of estimating evaporation from water bodies ? Describe how evaporation is measured by using atmometer. 14

4. Define 'evapotranspiration'. Explain in detail the various approaches for measuring evapotranspiration. 13

5. Ordinates of 4-ho unit hydrograph are given' using this, derive the ordinates of 2-hour unit hydrograph for the same catchment.

Time (h)	Ordinates of 4 hUH(m^3/sec)
0	0
4	20
8	80
12	130
16	150
20	130
24	90
28	52
32	27
36	15
40	5
44	0

13

SECTION B

6. (a) Describe the Recovery test method to determine the transmissivity of the aquifier. 6

(b) Design a tube well for the following data :—

(i) Yield required = 0.08 cumec.

(ii) Thickness of confined aquifier = 30 m

(iii) Radius of circle of influence = 300 m

(iv) Permiability coefficient = 60 m/day.

(v) Draw down = 5 m. 8

7. (a) Write in detail about "salt water intrusion and its prevention". 6

(b) What is infiltration gallery ? Explain how the length of infiltration gallery will be calculated by using Darcy's equation and state the assumptions made. 7

8. Explain watershed development and management with respect :

(i) Characterization of watershed criteria.

(ii) Basic data collection and interpretation.

(iii) Establishment of watershed research station. 13

9. (a) List and explain general objectives of watershed management. 7

(b) What are non–point sources of pollution ? Discuss the legislation of the same'. 6

10. (a) Explain in detail the methods of Rain water harvesting. 7

(b) Discuss the Role of NGO's and community participation in Rainwater harvesting. 6