17351

21314

3 Hours/100 Marks

Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*

(2) Answer ***each*** *next main question on a* ***new*** *page.*

(3) Illustrate your answers with ***neat*** *sketches* ***wherever*** *necessary.*

(4) Figures to the ***right*** *indicate* ***full*** *marks.*

(5) Assume suitable data, if ***necessary****.*

(6) Use of Non-programmable Electronic Pocket Calculator is ***permissible****.*

(7) Mobile Phone, Pager and any other Electronic Communication devices are ***not permissible*** *in Examination Hall.*

MARKS

1. Attempt **any ten** of the following : **20**

a) Differentiate between Hydrograph and Hyetograph.

b) What is base flow and negative base flow ?

c) Define cyclonic precipitation.

d) Why the runoff is being more from fan shaped catchment area ?

e) Define flood routing.

f) Define :

i) Aquifer

ii) Aquiclude

g) Differentiate between shallow well and deep well.

h) What is incrustation ?

i) What is the purpose of shrouding ?

MARKS

j) What are the depth conditions for which sounding rod and echo sounder used ?

k) Write the Dicken's and Ryve's formulae to estimate the flood discharge.

l) What is meant by stream gauging ?

m) Define hydrology and hydrologic cycle.

n) Define sedimentation.

2. Attempt **any four** of the following : **16**

a) Explain the importance of hydrology.

b) Describe briefly different types of precipitation with neat sketches.

c) What are the different types of rain gauges ? Describe any one with neat sketch.

d) What are different methods of computing average depth of precipitation ? Describe the procedure of any one.

e) State the factors affecting run-off.

f) Define the following terms :

1) Catchment area

2) Average annual rainfall

3) Run-off and surface run-off

4) Yield of a drainage basin.

3. Attempt **any two** of the following : **16**

a) Precipitation station X was inoperative for part of a month during which a storm occurred. The respective storm totals at three surrounding stations A, B and C were 107, 89 and 122 mm. The normal annual precipitation of stations X, A, B and C are respectively 978, 1120, 935 and 1200 mm. Estimate the storm precipitation for station X.

b) Explain how the consistency of data of a rain gauge station is checked.

c) Explain any one method to determine recurrence interval.

MARKS

4. Attempt **any four** of the following : **16**

   a) Discuss the assumptions made in the application of unit hydrograph.

   b) What are the limitations of unit hydrograph theory ?

   c) What are the uses of unit hydrograph ?

   d) What is DAD curve ? Write down equation of DAD curve.

   e) What are the points considered while selecting a guage site ?

   f) Explain the current meter method to measure velocity of flow with sketch.

5. Attempt **any four** of the following : **16**

   a) Explain the rational method of computing peak discharge of a small catchment.

   b) Explain electromagnetic method to calculate the discharge of stream.

   c) Explain the strainer type tube well with sketch.

   d) Explain the pumping test for determination of yield of open well.

   e) Explain rotary method to sunk the deep tube well.

   f) A tube well of 30 cm diameter penetrates an unconfined aquifer. During the pumping test following data was obtained :

      a) Height of static water level from bottom of aquifer = 50 m.

      b) Height of drawdown from bottom of aquifer = 45 m.

      c) Radius of circle of influence = 300 m.

      d) Coefficient of permeability = 50 m/day.

   Calculate the discharge of the well.

MARKS

6. Attempt **any four** of the following : **16**

a) Why failure of tube well occurs ?

b) What is meant by development of well ? What are the methods of development ?

c) Calculate the specific capacity of an open well from the following data :

Initial depression head = 5 m

Final depression head = 2 m

Time of recuperation = 2 hrs

Diameter of well = 3 m

d) Define flood routing. What is the necessity of it ?

e) Explain in brief modified pulse routing method.

f) How the silting in reservoir is controlled ?