c) Explain the term Design flood, Maximum probable flood and standard project flood.

d) What is flood routing of a reservoir? Write the basic equation of flood routing. Explain any one method of flood routing in brief.

OR

For a river valley project, the following results were obtained from flood frequency analysis using Gumbel's method :

Return period (years)	Peak flood (m^3/sec)
40	27000
80	31000

Estimate the flood magnitude with magnitude with a return period 240 years.

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415

Total No. of Questions : 5] *Total No. of Printed Pages : 4*

Roll No .....

CE-602

B.E. VI Semester

Examination, December 2016

Water Resources and Irrigation Engineering

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except Numericals, Derivation, Design and Drawing etc.

v) Assume suitable data wherever needed.

Unit - I

1. a) Write the factors affecting duty.

b) Differentiate base period and crop period.

c) How do you find the frequency of irrigation for a crop?

d) Describe different methods of irrigation with neat sketch. Also discuss their advantages and disadvantages.

OR

After how many days the irrigation water should be applied to the land to ensure efficient irrigation for the following condition :

Field capacity of soil = 30%;

Permanent wilting point = 15%

Dry density of soil = 1.5g/cm^3;

Effective root zone = 0.8m

Daily consumptive use of water = 10mm,

Readily available moisture = 80% of available moisture,

Unit - II

2. a) Differentiate confined and unconfined aquifer.

   b) List out Dupuits assumptions.

   c) Describe flowing artesian well and non flowing artesian well with neat sketch.

   d) What is water logging? Write the causes and effects and prevention of water logging.

OR

The following observation were made on a 300mm diameter well penetrating an unconfined aquifer: rate of pumping = 1800 litre/minute; Drawdown in a test well 30m away = 1.8m; Drawdown in a test well 60m away = 0.6m; Depth of water in a well before pumping = 50m. Determine :

i) Radius of the circle of influence

ii) The coefficient of transmissibility of the aquifer

Unit - III

3. a) Describe Depth-Area-Duration curve with neat sketch.

   b) What is S curve hydrograph? What is the use of S curve?

   c) What is mean by Infiltration Indices?

   d) What is synthetic unit hydrograph? Explain the procedure for derivation of Snyder's synthetic unit hydrograph.

OR

The following are the ordinates for a flood hydrograph resulting from an isolated storm of 6 hours duration.

Time (hour)	0	12	24	36	48	60	72	84	96
Ordinates of flood hydrograph (cumec)	5	15	40	80	60	50	25	15	5

Determine the ordinates of 1cm-6 hour Unit Hdyrograph if catchment area is 450 sq.Km. Assume constant base flow 5 cumecs.

Unit - IV

4. a) Describe aqueduct with neat sketch.

   b) Write the necessity of canal fall.

   c) Under what conditions the emergency spillway is provided?

   d) What is Weir? Discuss briefly the causes of failure of weir on permeable foundation and their remedies.

OR

Design an irrigation channel in alluvial soil according to Lacey's silt theory for the following data : Full supply discharge 50m^3/sec., Lacey's silt factor 1.0 and side slope of channel ½H: 1V.

Unit - V

5. a) Enumerate various tools of flood plain management.

   b) Define flood frequency, recurrence Interval and return period.