

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER 2012****Subject code: 731204****Date: 26/12/2012****Subject Name: Flood Management****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Explain the graphical method of flood routing. **07**
(b) Describe the various structural methods adopted for control of flood. **07**
- Q.2 (a)** What are the factors that affect the flood in river? **07**
(b) Write brief note on: **07**
 (i) Importance of flood estimation. (ii) Causes of flood.
- OR**
- (b)** Explain briefly the following terms: **07**
 (a) Risk (b) Design flood (c) Standard projected flood.
 (d) Probable maximum flood (e) Safety margin
 (f) Submergence (g) Flood Hazards.
- Q.3 (a)** What do you understand by routing of a flood? Write the basic equations in hydrologic reservoir routing. **07**
(b) Describe the Modified Plus method of flood routing. **07**
- OR**
- Q.3 (a)** Describe the trial and error method of flood routing. **07**
(b) If the annual flood series data for a catchments are available for N consecutive year, explain a procedure to determine a flood discharge with a return period of T (where $T > N$) by using log Pearson type-III distribution. **07**
- Q.4 (a)** Explain the rational method of computing the peak discharge of a small catchments. **07**
(b) (i) Explain the terms flood, flood frequency and flood hydrograph. **03**
 (ii) Write any four empirical flood formulae developed in India, clearly indicating the units of various terms involved. **04**
- OR**
- Q.4 (a)** Describe the problem of floods and their control with special reference to the Gujarat scene. **07**
Q.4 (b) Flood-frequency computations for river Chambal at Gandhisagar dam by using Gumbel's method, yielded the following results: **07**
- | | |
|-------------------------|--------------------------------------|
| Return period T (years) | Peak flood (m^3/s) |
| 50 | 40,809 |
| 100 | 46,300 |
- Estimate the flood magnitude in river with a return period of 500 years.
- Q.5 (a)** What do you understand by the terms 100-years average return period flood? Briefly explain salient features of Gumbel's method of flood frequency analysis. **07**
(b) Write in detailed the classification of flood by giving the appropriate examples. **07**
- OR**
- Q.5 (a)** Derive the Muskingum channel routing equation **07**
 $O_2 = C_0 I_2 + C_1 I_1 + C_2 O_1$
 Where I_i are the inflows, C_i the constants and O_i the outflows.
(b) Explain the following phenomena with sketch: **07**
 (i) Translation of peak
 (ii) Attenuation of peak
