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**B.Tech. (Sem. - 7<sup>th</sup>/8<sup>th</sup>)**  
**IRRIGATION ENGINEERING - II**  
**SUBJECT CODE : CE - 410**  
**Paper ID : [A0628]**

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

**Instruction to Candidates:**

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

**Section - A**

**Q1)**

**(10 × 2 = 20)**

- a) What is meant by 'piping' on foundation of a weir?
- b) What do you understand by exit gradient?
- c) What are spillways?
- d) What is the difference between a weir and a barrage?
- e) What is meant by 'Canal escapes'?
- f) What are modules?
- g) What are meant by falls?
- h) Define syphon and super passage.
- i) What is meant by 'cross drainage works'?
- j) Define stream lines and equipotential tine lines?

**Section - B**

**(4 × 5 = 20)**

**Q2)** Write short note on 'Bligh's creep theory for seepage flow'.

**Q3)** Why it is necessary to control silt entry in the canal? What methods are adopted for the purpose?

Q4) Design a pipe outlet for the following data :

Full supply discharge at the head of water course = 100 lit/sec.

F.S.L. in distributary = 206.00m

F.S.L. in water course = 205.00m

Q5) How does a diversion weir aligned? Draw a neat sketch showing the different components of a diversion weir scheme.

Q6) Discuss briefly the components of various types of falls with neat sketches.

### Section - C

(2 × 10 = 20)

Q7) What is meant by the terms 'Flexibility', 'Proportionality', 'setting' and 'sensitivity' as applied to modules. Derive equation's for them and discuss relation between these terms.

Q8) Explain how will you determine the following in design of a siphon aqueduct:

(a) Waterway of the drain and cross sectional area of the barrel.

(b) Head loss through siphon barrel.

(c) Uplift pressure due to seepage flow.

Q9) Design a 1.5 metres sarda type fall for a canal carrying a discharge of 40 cumecs with the following data :

Bed level u/s = 105.0m

Bed level d/s = 103.5m

Side slopes of channel = 1:1

F.S.L. upstream = 106.8 m

F.S.L. down stream = 105.3 m

Berm level u/s = 107.4 m

Bed width u/s and d/s = 30 m

Safe exit gradient for Khosla's theory = 1/5

