# MIZORAM PUBLIC SERVICE COMMISSION

## DEPARTMENTAL EXAMINATIONS FOR
## AE/SDO (CIVIL)
## UNDER POWER & ELECTRICITY DEPARTMENT, NOVEMBER 2016

## ENGINEERING PAPER – II

Time Allowed : 3 hours FM : 100 PM : 40

*Marks for each question is indicated against it.*
*Attempt all questions*

**1**. Give a brief comment on importance of water availability for Hydro-electric/power project. **(4)**

**2.** What are the three components of Runoff? **(3)**

**3.** What are the factors affecting Runoff? **(4)**

**4.** Define Design Flood. **(3)**

**5**. Define Unit Hydrograph. **(3)**

**6.** Mention at least three different methods for measuring discharge of a river. **(3)**

**7.** Theoretical Power potential in Kilowatt can be expressed as: **(2)**

**8.** Name any 5 forces considered for design of Gravity Dams. **(5)**

**9.** What are the two basic requirements of Earthen Dams? **(2)**

**10**. Explain in brief a Swedish circle and its importance in design of earth Dam. **(5)**

**11.** Mention two types of Rockfill dams. **(2)**

**12.** The central core of an earth Dam made up of relatively impervious material like clay, is provided to **(2)**

(a) stop the water
(b) to bring down the seepage through the dam
(c) to bring down the water pressure on the dam.

**13**. Briefly explain Storage type of Hydroelectric project. **(4)**

**14.** Briefly explain Economic diameter of penstock. **(4)**

**15**. What do you understand by Forebay? Mention the purpose for providing a Forebay. **(5)**

**16.** An open canal which leads the water from the power house into the river is called: **(2)**

(a) Power channel (b) Forebay
(c) Desilting chamber (d) Tail race

**17**. Give the full form of the following: **(10)**

(a) FRL (b) MDDL
(c) MWL (d) HFL
(e) DPR (f) MU
(g) kWh (h) kv
(i) cumecs (j) HEP

**18.** Define Trench weir. What are the advantages of Trench weir? **(3+5=8)**

**19.** With the following datas, find out the flow through velocity 'V' and Desilting area 'A' for desilting Chamber: **(10)**

| | |
|---|---|
| Design discharge, $Q_d$ | = 1.00 cumecs |
| Silt flushing discharge, $Q_f$ | = 0.80 cumecs |
| Minimum particle size 'd' to be removed in mm | = 0.25mm |
| Constant 'a' for particle size less than 1mm | = 0.44 |

**20.** What type of turbine should be selected for the following conditions? **(8)**

(a) For low head (2 to 15m)
(b) For medium head (16 to 70m)
(c) For High head (71 to 500 m)
(d) For very high head (500m onwards)

**21.** Write a brief notes on Preliminary Feasibility report and detailed Project report. **(7)**

**22.** Explain Dead storage and Live storage. **(4 )**

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