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
   (a) stop the water
   (b) to bring down the seepage through the dam
   (c) to bring down the water pressure on the dam. (2)
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:
   (a) Power channel  (b) Forebay
   (c) Desilting chamber  (d) Tail race (2)
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 data, find out the flow through velocity ‘V’ and Desilting area ‘A’ for desilting Chamber:\(10\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design discharge, (Q_d)</td>
<td>1.00 cumecs</td>
</tr>
<tr>
<td>Silt flushing discharge, (Q_f)</td>
<td>0.80 cumecs</td>
</tr>
<tr>
<td>Minimum particle size ‘d’ to be removed in mm</td>
<td>0.25mm</td>
</tr>
<tr>
<td>Constant ‘a’ for particle size less than 1mm</td>
<td>0.44</td>
</tr>
</tbody>
</table>

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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