

MIZORAM PUBLIC SERVICE COMMISSION
DEPARTMENTAL EXAMINATIONS FOR JUNIOR GRADE OF M.E.S. (AE/SDO)
UNDER POWER & ELECTRICITY DEPARTMENT,
GOVERNMENT OF MIZORAM, JULY, 2022.

ENGINEERING PAPER – II
CIVIL WING

Time Allowed : 3 hours

FM : 100 PM : 40

Marks for each question is indicated against it. Attempt all questions.
Use of scientific calculator is allowed.

PART A (50 MARKS)

1. Write down any five assumptions made in Terzaghi's theory of consolidation. **(2×3=6)**
2. Give the name of the tests used for finding optimum moisture content of soil. **(3)**
3. Design a septic tank for a small colony of 50 persons with daily sewage flow of 150 litres per head per day. (Assume detention period of 48 hours) **(10)**
4. Design a rectangular beam with the following data. **(15)**
 - (a) Type of support - simply supported
 - (b) Clear span - 6m
 - (c) Width of support - 50cm each.
 - (d) Grade of concrete - M15
 - (e) Grade of steel - Fe415
 - (f) Super imposed load - 30kN/m

(Assume any other missing data)
5. Explain: **(2×3=6)**
 - (a) Finess
 - (b) Consistency test for Cement.
6. What are the factors considered for minimum spacing between reinforcement bars in RCC? **(2)**
7. Give a brief description of the following (Design of reinforced cement concrete) **(2×4=8)**
 - (a) Working stress method.
 - (b) Limit state method.

PART B (50 MARKS)

8. Analyse rate for providing and laying of 1:1.5:3 (proportion) reinforced cement concrete excluding cost of centering and shuttering, finishing and reinforcement using the following given data. (15)

Requirement of materials & labour for 10cum of concrete:

Cement	-	80bags @ D500/bag.
Stone aggregate	-	10.5cum @ D2000/cum.
Sand	-	4.25cum @ D2500/cum.
Mason	-	1.7manday @ D800/manday.
Unskilled labour	-	20mandays @ D500/manday.
Water charge	-	1%
CP & OH	-	15%

9. What are the three steps of getting Environmental clearance? (3×2=6)
10. What details (reports) are required to be submitted along with the application of Environmental clearance? (4×2=8)
11. Projects are classified in to two categories for application of Environmental clearance. What are the two categories and name the authority that can approve each category? (3×2=6)
12. State any three special provisions made for land acquisition in the area occupied by scheduled caste and scheduled tribe. (2×3=6)
13. What is the composition of Expert group formed by the Government to evaluate Social Impact Assessment report? Who shall be the chairperson of the Expert Group? (8+1=9)

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