

MIZORAM PUBLIC SERVICE COMMISSION

DEPARTMENTAL EXAMINATIONS FOR JUNIOR GRADE OF M.E.S. (AE/SDO) UNDER PUBLIC WORKS DEPARTMENT, GOVERNMENT OF MIZORAM, DECEMBER, 2019.

MECHANICAL ENGINEERING PAPER – I

Time Allowed : 3 hours

FM : 100 PM : 40

The figures in the margin indicate full marks for the questions.

Attempt only 5 (five) questions.

1. (a) Discuss the importance of cooling system in diesel engines. Differentiate between water cooling system and air cooling system in petrol engines. (5+5=10)
(b) Describe with suitable sketch power transmission system in four stroke diesel engine. (10)
2. (a) Illustrate the application of electrical energy in transport vehicles. (10)
(b) Name alternative fuels that can be relatively easily used in conventional Compression ignition engines and discuss any one of them. (10)
3. (a) Name at least four prime movers generally used in construction works. (4)
(b) Differentiate between conveying equipment and hoisting equipment. (6)
(c) Explain classification of Construction Equipment. (10)
4. (a) Explain the main applications of Earth compaction and Bituminous carpeting equipment. (10)
(b) Discuss various types of Earth Moving equipment. (10)
5. (a) What are the specific factors behind selection of construction equipment? Explain any one of them. (6+4=10)
(b) Explain in brief the following types of calculating depreciation: (5×2=10)
 - (i) Straight-line depreciation method
 - (ii) Double declining method
6. (a) Define preventive maintenance. Explain briefly the merits of inventory management principles related to preventive maintenance. (3+7=10)
(b) Describe the salient features of perfect repair cycle. (10)
7. (a) Elaborate important procedures to be followed for hiring of construction equipment. (10)
(b) You are supposed to hire a Bulldozer of a particular model, explain how you will calculate hiring rates. (10)

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