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10MN44

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021
Mining Machinery – I

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO full questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. Explain the power generation by Electricity with its Application, Merits and Demerits. **(10 Marks)**

b. Explain the power generation by compressed air with its application, Merits and Demerits. **(10 Marks)**

2 a. The drilling operation has to be carried out in one of the development faces being an engineer what are the parameters do you consider while distributing the compressed air from surface to the underground face for drilling operation. **(10 Marks)**

b. Explain with a neat sketch, the percussive mechanism in the Jack hammer. **(10 Marks)**

3 a. With neat sketch, explain main and tail rope haulage. **(08 Marks)**

b. Explain the techno – economic indicies of mine transport system. **(06 Marks)**

c. Explain the essential of good haulage track. **(06 Marks)**

4 a. Explain the Rope splicing with a sketch. **(10 Marks)**

b. Explain the Reliance copel with a neat sketch. **(10 Marks)**

PART – B

5 a. Draw a neat sketch and explain a Battery charging layout of an Electric battery locomotive. **(06 Marks)**

b. A battery locomotive weighs 4 tonnes and pulls a train of 12 mine cars up an incline of 1 in 55. If the train is accelerated from rest up the incline to speed of 23km / hr in 22 secs. Find the weight of each mine car if the locomotive is 260 horse powers. Assume rolling friction is 1/60. **(14 Marks)**

6 a. With a neat sketch, explain the belt conveyor with its merits and demerits. **(12 Marks)**

b. A 900 mm trunk belt is to be installed in a roadway of 2000 m long rising 1 in 100. Calculate the power of the motor to run the loaded belt when it is rated to carry 280 tonnes of coal an hour at a speed of 125 m/min. Assume F to be 0.02 and G to be 70 kgs. The belt takes 80 sec to pick up the velocity. **(08 Marks)**

7 a. Explain Mechanical Breaking system. **(10 Marks)**

b. Explain the Koepe winding systems. **(10 Marks)**

8 a. Write a detailed note on maintenance management of mining machinery. **(08 Marks)**

b. With neat sketch, explain about skip and cage. **(12 Marks)**

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