Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

Online End Semester Examination, May- 2021

Course Name: Mine Plant Design **Semester: VIII**
Programme Name: B. Tech, Mining **Time: 03 hrs**
Course Code: PEMI 4009 **Max. Marks: 100**

SECTION A (30 Marks)			
Q 1	Define the conveyor belt nomenclature with suitable illustration	**05**	**CO1**
Q 2	List the various types of sinters used in steel melting furnace	**05**	**CO1**
Q 3	Summarize the main targets of CHP, highlighting the significance of each	**05**	**CO2**
Q 4	Differentiate between stripping ratio & cutoff stripping ratio	**05**	**CO2**
Q 5	Discuss the procedure in selection of wire ropes	**05**	**CO3**
Q 6	A Coal Seam encountered at a depth of 120 mtrs. The seam has a vertical depth of occurrence up to 300 mtrs. Throughout the entire depth, coal thickness is 70 mtrs. Calculate the stripping ratio.	**05**	**CO3**
SCETION B (10*5=50 Marks)			
Q 7	Define the process of agglomeration and its significance in sintering	**10**	**CO2**
Q 8	Define Match Factor. Using the concept, find out the MF with given set of information and its significance Loading time of loader: 6 minutes Truck cycle time: 24 minutes Number of trucks: 8	**10**	**CO3**
Q 9	Arrange the various units of CHP in order of increasing imporatnce	**10**	**CO1**
Q 10	For an opencast mine, volume of ore is **120 m^3**. Density of ore is **1.5t/ m^3.** The distance from active mine area to dumping site: **7 kms** Capacity of dumper: **10 m^3**. Loading capacity of 2 laborers and driver is **5m^3/ hr** Hauling speed is **20 and 30 kms/ hr respectively** Dumping time: **3 minutes** Effective working time: **45 minutes/ hr** Number of dumper: **1** Find out total time for transportation. Compare the same with mechanized loader of capacity **75 m^3/ hr.**	**10**	**CO4**
Q 11	Calculate the penetration & drilling rate of a DTH Drill machine in an open cast mine Rock Strength : **80 MPa**	**10**	

	Standard hole diameter for DTH Drill: **220 mm** Bench Height: **25 mtrs**, desired subdrill: **20% of BH** Hole diameter: **120 mm** Length of drill rod: **10 mtrs** Setting time: **8 minutes**, Rod & bit changing time: **10 minutes** each Bit life: **80 mtrs** **OR** In a mechanical operation, for hoisting purpose wire ropes need to be selected. The initial information is as follows Class of rope**: 6*37, class 2** D/d**: 17** Load to be lifted**: 10KN** Tensile strength of rope lies in the range **160-175 kgf/ mm^2** Using the same, calculate the most suitable wire diameter for this operation (Use the specification Table shared)		**CO3**
SECTION C (20 Marks)			
Q 12	Three operators namely A, B & C work in an opencast mine. The generalized delays are same for all 3. The delay components are Lunch time: **30 mins** Cleaning time: **10 mins** Tea break: **10 mins** Shift hour: **8 hrs** Total cycle time+ loading/ unloading time For A: **5 Minutes** For B: **3 Minutes** For C: **2 Minutes** Find out the operator's efficiency. Based on their efficiencies, give suitable conclusion	**15+5 20**	**CO4**