Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

USN

Fourth Semester B.E. Degree Examination

Mining Machinery

TIME: 03 Hours   **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	*Bloom's Taxonomy Level	Marks
Q.01	a	Explain with a neat sketch, the procedure for rope splicing.	L2	10
	b	A loaded cage weighing 18 tonnes starts from the bottom of a shaft 700m deep with an acceleration of 1.2 m/second sq. the rope weights 12kg/m and has a breaking strain of 184 tonnes. Calculate the maximum pull in the rope and compare its actual factor of safety with the static factor of safety.	L4	10
		OR		
Q.02	a	With the help of neat sketch, explain the principle operation of Direct rope haulage and its limitations.	L2	12
	b	An Endless rope haulage is to be designed to haul 100 tonnes of coal per hour up a gradient of 1 in 15 over a distance of 0.8km. Calculate the H.P of the haulage motor. Given rope friction 1/20; tub friction 1/50; tare of tubs 0.5 tonnes; tub capacity 1 tonne of coal; rope speed 2.5 Km per hour.	L3	08
		Module-2		
Q. 03	a	Explain in detail the construction and operation of an Armoured Flexible chain conveyor with the help of neat labeled diagram.	L2	10
	b	A 90 cm trunk belt is to be installed in a roadway 2500 m long rising 1 in 90. Calculate the power of the motor to run the loaded belt when it is rated to carry 250 tonnes of coal an hour at a speed of 130 meters per minute. Assume the friction factor to be 0.02 and weight of idlers and belt in kg/m run of conveyor to be 70 kgs. The belt takes 60 seconds to pick up the velocity.	L4	10
		OR		
Q.04	a	Name the different types of locomotives used in underground mines.	L1	4
	b	Compare the relative merits and demerits of different types of locomotives used in underground mines.	L2	10
	c	A locomotive hauls a train of 250 tones on a level track at a uniform speed of 45 km per hour. The frictional resistance is 5 kg per tones. Find the effective H.P (horse power) expended.	L3	6
		Module-3		
Q. 05	a	What is the function of a detaching hook? Where it is used?	L1	5
	b	Draw a neat sketch of a King Detaching Safety Hook showing its different	L2	15

		parts and its position if an over-winding occurs.		
		OR		
Q. 06	a	What do you understand by the terms total head, suction head, delivery head and resistance head with reference to pumping?	L1	8
	b	A turbine pump is required to work under the following conditions RPM 1450, capacity 3000 liters/min total head from all causes 310mH, angle of curvature of the impeller blade θ= 30° (barkward curved), manometric efficiency 0.7, radial velocity of water 2.5 m/sec. Determine the number of impellers, their diameter and width of each impeller.	L4	12
		Module-4		
Q. 07	a	Discuss in details the construction of a coal plough with the help of neat labeled diagram along with limitations.	L2	10
	b	Discuss in details the construction of a Road Header with the help of neat labeled diagram along with limitations.	L2	10
		OR		
Q. 08	a	Discuss in details the construction and operation of SDL with the help of neat labeled diagram.	L2	10
	b	Discuss in details the construction and operation of Shuttle car with the help of neat labeled diagram.	L2	10
		Module-5		
Q. 09	a	List out different types of shovel used in surface mining operations.	L1	4
	b	Discuss in details the construction and operation of a rope shovel with the help of neat labeled diagram.	L3	16
		OR		
Q. 10	a	Discuss in details the construction of a Bucket wheel excavator with the help of neat labeled diagram.	L3	12
	b	Mention the types of buckets used in Bucket wheel excavator with the help of neat sketch.	L1	08

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.