

Model Question Paper -1 with effect from 2020-21(CBCS Scheme)

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Fifth Semester B.E. Degree Examination Mine Electrical Engineering

TIME: 03 Hours

Max. Marks: 100

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

Module – 1			
Q.1	(a)	Explain the Scope and importance of Electrical Engineering in Mining.	4
	(b)	Define Electric Drive? Explain with a block diagram.	10
	(c)	Explain i) Slip Ring Induction Motor Drive, ii) Ward Leonard DC Motor Drive and iii) Converter fed DC Motor Drive employed for the control of Mine winders.	06
OR			
Q.2	(a)	Explain any 10 Indian Electricity Rules applicable to Mining.	10
	(b)	List out the difference between AC and DC Drives.	05
	(c)	Discuss the status of AC and DC Drives.	05
Module – 2			
Q.3	(a)	Briefly Explain Series, Shunt and compound DC Motors.	10
	(b)	Explain Armature control and flux control methods of speed control of DC Shunt Motor.	10
OR			
Q.4	(a)	Explain briefly, Rheostatic, Plugging and regenerative braking of a DC Shunt Motor.	06
	(b)	With neat graphs, explain the Open Circuit characteristics, internal Characteristics and External Characteristics of a DC shunt Generator.	06
	(c)	A 250V dc shunt motor has armature resistance of 0.25Ω on load it takes an armature current of 50A and runs at 750 rpm. If the flux of the motor is reduced by 10% without changing the load torque, find the new speed of the motor.	08
Module – 3			
Q.5	(a)	With Neat diagram, explain the construction and working principle of a three phase Induction Motor.	10
	(b)	List the methods employed for speed control of induction motors and explain any two methods.	05
	(c)	Derive the EMF equation of an alternator.	05
OR			
Q.6	(a)	Explain Plugging of an Induction Motor.	04
	(b)	With a neat diagram, explain the working of an alternator.	10
	(c)	With a neat sketch, explain the working principle of a synchronous motor.	06
Module – 4			

Q.7	(a)	Explain with a neat diagram, the working principle of Air break Circuit Breaker.	10
	(b)	Explain the types of motor enclosures in mining.	10
OR			
Q.8	(a)	Differentiate between Flame Proof apparatus and Intrinsically safe apparatus.	05
	(b)	Explain the principle of underground Signaling in mining.	05
	(c)	Draw a single line diagram of surface power distribution in underground mines. Explain in brief.	10
Module – 5			
Q.9	(a)	Define i. Reflectance, ii. Steradian, iii. Candel power, iv. Luminous intensity, v. Illuminance, vi. MHCP, vii. MHSP, viii. Glare, ix. Lumen, x. Solid Angle.	10
	(b)	Explain the standards for mine lighting at different places in a mine.	10
OR			
Q.10	(a)	Write a note on LED Lighting, giving its advantages over other types of lighting.	10
	(b)	Write a note on general lighting in underground and surface mines.	10

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
Question		Bloom's Taxonomy Level attached	Course Outcome	Programme Outcome
Q.1	(a)	L2	01	01
	(b)	L1	02	01
	(c)	L2	02	01
Q.2	(a)	L2	01	01
	(b)	L1	02	01
	(c)	L2	02	01
Q.3	(a)	L2	02	01
	(b)	L2	02	01
Q.4	(a)	L2	02	01
	(b)	L2	02	01
	(c)	L3	02	02
Q.5	(a)	L2	02	01
	(b)	L1	02	01
	(c)	L2	02	01
Q.6	(a)	L2	02	01
	(b)	L2	02	01
	(c)	L2	02	01
Q.7	(a)	L2	05	01
	(b)	L2	05	01
Q.8	(a)	L4	05	01
	(b)	L2	05	01
	(c)	L2	03	01
Q.9	(a)	L1	04	01
	(b)	L2	05	01
Q.10	(a)	L2	04	01
	(b)	L2	04	01
Bloom's Taxonomy Levels	Lower order thinking skills			
	Remembering(knowledge): <i>L</i> ₁	Understanding Comprehension): <i>L</i> ₂	Applying (Application): <i>L</i> ₃	
	Higher order thinking skills			
	Analyzing (Analysis): <i>L</i> ₄	Valuating (Evaluation): <i>L</i> ₅	Creating (Synthesis): <i>L</i> ₆	

