C. U. SHAH UNIVERSITY

Winter Examination-2022

Subject Name: Electrical Power Utilization and Traction

Subject Code: 4TE07EUT1 Branch: B.Tech (Electrical)

Semester: 7 Date: 25/11/2022 Time: 11:00 To 02:00 Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1		Attempt the following questions:	(14)
	a)	In tramways which of the following motor is used?	1
		[1] DC Shunt Motor	
		[2] DC Series Motor	
		[3] AC 3-Phase Motor	
		[4] AC 1-Phase capacitor start motor	
	b)	Long distance railways use which of the following?	1
		[1] 250 V DC	
		[2] 25 kV single phase AC	
		[3] 25 kV two phase AC	
		[4] 25 kV three phase AC	
	c)	Water cooler tank is made up of	1
		[1] stainless steel	
		[2] Aluminum	
		[3] Copper	
		[4] Brass	
	d)	Which of the following is not the application of electrolysis?	1
		[1] Refining of metals	
		[2] Electroplating	
		[3] Electro-deposition	
		[4] Synthesizing leather	
	e)	Which of the following is not the advantage of electrolysis?	1
		[1] Energy required is low	
		[2] Industrial chemical can be produced	
		[3] Efficient process	
	_	[4] Cost effective process	
	f)	The metal surface for electrical resistance welding must be	1
		[1]lubricated	
		[2] rough	
		[3] cleaned	



		[4] moistened	
	g)	Which welding process uses consumable electrodes?	1
	0,	[1] TIG	
		[2] MIG	
		[3] Laser	
		[4] All of the above	
	h)	Electronic components are joined by which of the following methods?	1
		[1] brazing	
		[2] soldering	
		[3] spot welding	
		[4] seam welding	
	i)	has the highest value of thermal conductivity.	1
	,	[1] copper	
		[2] aluminum	
		[3] brass	
		[4] steel	
	i)	Which of the following will need the highest level of illumination?	1
	3,	[1] Railway platform	
		[2] Hospital wards	
		[3] Bed room	
		[4] Proof reading	
	k)	Which of the following will need lowest level of illumination?	1
		[1] Auditorium	
		[2] Railway platform	
		[3] Fine engraving	
		[4] Display	
	1)	The illumination level in houses is in the range	1
		[1] $10 - 20$ Lumen / m^2	
		[2] 25 - 50 Lumen / m^2	
		[3] $60 - 90$ Lumen / m^2	
		[4] 100 - 140 Lumen / m ²	
	m) Which of the following motor can be referred as a universal motor?	1
		[1] Permanent magnet motor	
		[2] DC Shunt motor	
		[3] DC Series motor	
		[4] DC compound motor	
	n)	In DC motors, which of the following types of breaking is called	1
		plugging?	
		[1] Reverse current Braking	
		[2] Friction Braking	
		[3] Regenerative Braking	
		[4] Rheostat Braking	
A 44	4		
	npt an	y four questions from Q-2 to Q-8	(1.4)
Q-2	(a)	Attempt all questions	(14)
	(a)	Enlist the advantages of electric drives	(3)
	(b)	Illustrate the characteristics of different mechanical loads used in electric drives.	(4)
	(c)	Enlist the various electric breaking and explain in detail any two	(7)



methods.

Q-3		Attempt all questions	(14)
	(a)	Enlist the different types of lamps and its area of application.	(3)
	(b)	Give the general ideas about modern street lighting.	(4)
	(c)	Discuss construction and working of incandescent lamp and discharge	(7)
		lamp.	
Q-4		Attempt all questions	(14)
	(a)	Draw thermostat control circuit for domestic water heater	(3)
	(b)	Draw and explain the induction heating principle.	(4)
	(c)	Explain the various applications of dielectric heating in industrial field.	(7)
Q-5		Attempt all questions	(14)
	(a)	Discuss principle of arc production.	
	(b)	Give comparative statements between AC and DC arc welding.	
	(c)	Explain principle of resistance welding. Illustrate various types of	
		resistance welding	
Q-6		Attempt all questions	(14)
	(a)	Discuss principle of galvanizing.	(3)
	(b)	Explain principle of anodizing and its applications.	(4)
	(c)	Illustrate electroplating process on non-conducting materials.	(7)
Q-7		Attempt all questions	(14)
	(a)	Explain principle of air conditioning.	(3)
	(b)	Discuss refrigeration cycle.	(4)
	(c)	Illustrate the electrical circuit used in water cooler.	(7)
Q-8		Attempt all questions	(14)
	(a)	Enumerate the advantages of electric traction.	(3)
	(b)	Discuss different accessories for track electrification.	(4)
	(c)	Draw and explain block diagram of electric locomotive with description	(7)
		of various equipment and accessories.	

