

Reg.No. _____




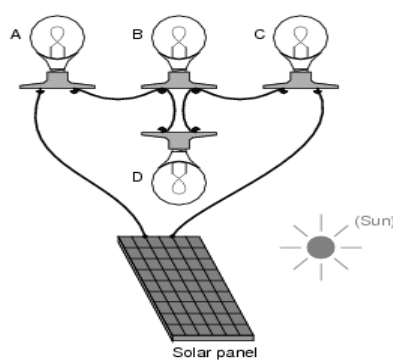
Karunya UNIVERSITY

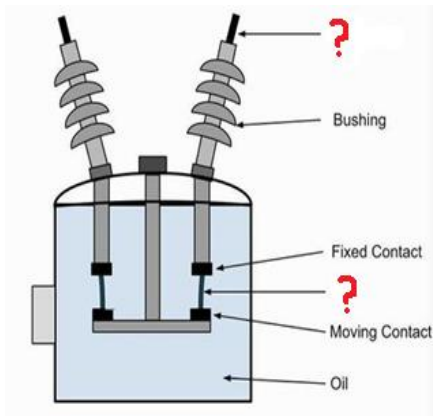
(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 16EE1001
Sub. Name : Electricity for Engineers

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

Q. No.	Questions	Course outcome	Marks
PART-A (40X1=40 MULTIPLE CHOICE QUESTIONS)			
1.	Which of the following is not an electrical quantity?		
	a. Voltage b. Distance c. Current d. Power	CO1	(1)
2.	The flashlight uses a 6 volt battery and has a bulb with a resistance of 150 ohm. When the flashlight is on, how much current will be drawn from the battery?		
	a. 40 mA b. 20 mA c. 10 mA d. 35 mA	CO1	(1)
3.	Identify the value and type of meter for the following element is shown in figure.		
			
	a. 47.2 A, ammeter b. 47.2V, voltmeter c. -47.2V, voltmeter d. -47.2A, ammeter	CO1	(1)
4.	Predict the range of Power transformers used in Power system layout.		
	a. 400 or 800 kV b. 100 or 200 kV c. 300 or 600 kV d. 220 or 500 kV	CO2	(1)
5.	Decide the capacity and state location of Tarapur atomic power station.		
	a. 1400 MW, Karnataka b. 1000 MW, Tamil Nadu c. 1400 MW, Maharashtra d. 1400 MW, Kerela	CO2	(1)
6.	For figure, determine which light bulb(s) will glow brightly, and which light bulb(s) will glow dimly (assuming all light bulbs are identical).		
			
	a. A&B b. A&C c. A&D d. B&C	CO2	(1)
7.	The power plant which utilizes the potential energy of water at a high level to produce electrical energy is		
	a. Thermal b. Hydro c. Nuclear d. all the above	CO2	(1)

8.	Boosters are basically					
	a. Inductor	b. Capacitor	c. Transformer	d. synchronous motor	CO1	(1)
9.	In a substation, current transformers are used to:					
	a. Measuring purpose	b. Protection purpose connecting to relays	c. Both (a) and (b)	d. None of the above	CO3	(1)
10.	Identify the parts is shown in figure.					
						
	a. Conductor & Arc	b. Relay & Arc	c. Breaker & Conductor	d. Insulator & Relay	CO3	(1)
11.	A smart grid is a combination of electric grid and _____					
	a. Information technology	b. Biotechnology	c. Electronics Technology	d. all the above	CO3	(1)
12.	Find the voltage rating of step up transformer in power station.					
	a. 11 kV / 220 kV	b. 8 kV / 220 kV	c. 220 kV / 20 kV	d. 16 kV / 25 kV	CO3	(1)
13.	Earthing conductivity is affected by:					
	a. Moisture content in the soil	b. Chemical composition	c. Concentration of salts in the soil	d. All the above	CO3	(1)
14.	Stones are provided in the substation to:					
	a. To avoid fire accident by draining oil from transformer if leaks	b. To avoid growing of weeds and plants	c. To provide insulation	d. All the above	CO1	(1)
15.	_____ energy meter transmits the recorded energy to the central receiving station through a proper communication network.					
	a. Smart type	b. Induction type	c. transformer	d. none of the above	CO2	(1)
16.	Energy meter measures in _____ unit.					
	a. kW	b. Hz	c. kWh	d. kVAr	CO2	(1)
17.	Tube lights are _____ source of light and their radiation pattern is _____.					
	a. Line, cylindrical	b. point, spherical	c. point, cylindrical	d. surface, rectangular	CO2	(1)
18.	Which appliance will use flat-bottomed pans that make full contact with the cooking coil?					
	a. Electric stove	b. Gas stove	c. Electric iron	d. Microwave oven	CO3	(1)
19.	Infer pressure value for the fluorescent lamp.					
	a. medium	b. low	c. high	d. very high	CO3	(1)
20.	The rate at which electrical energy is supplied to a consumer is known as _____.					

	a. EB bill	b. Tariff	c. Energy consumption	d. All the above	CO3	(1)
21.	The _____ indicates the energy consumption level of the device.					
	a. star label	b. delta label	c. BEE	d. digital meter	CO3	(1)
22.	Electrical heating is based on the principle that when _____ passes through a medium, heat is produced.					
	a. voltage	b. current	c. power	d. none of the above	CO3	(1)
23.	Joule heating also known as _____ heating.					
	a. ohmic and resistive	b. resistive	c. eddy current	d. all the above	CO1	(1)
24.	_____ heating is a technology for heating indoor and outdoor areas.					
	a. Fan	b. Radiant	c. Storage	d. none of the above	CO1	(1)
25.	Which type of sensor is used for door installations?					
	a. PIR	b. Contact sensor	c. Active	d. Magnetic switch	CO2	(1)
26.	If electrical wires and appliances are overheated due to high electric current they cause					
	a. fires	b. burns	c. both a and b	d. freezing	CO2	(1)
27.	_____ is a device used to detect thieves.					
	a. Transducer	b. door	c. sensor	d. Security device	CO2	(1)
28.	The advantage of a tubeless tyre over tube type tyre is					
	a. Slow air leakage	b. Better fuel efficiency	c. Less chances of running flat	d. All of these	CO3	(1)
29.	Which of the following application requires high starting torque?					
	a. Lathe machine	b. Centrifugal pump	c. Locomotive	d. Air blower	CO3	(1)
30.	Induction motor operation depends on					
	a. rotating magnetic field	b. stationary magnetic field	c. either of these	d. none of the above	CO1	(1)
31.	Which single phase ac motor will you select for record players and tape recorders?					
	a. Hysteresis motor	b. Shaded pole motor	c. Reluctance motor	d. none of the above	CO1	(1)
32.	The motor used in household refrigerators is					
	a. DC series motor	b. DC shunt motor	c. Universal motor	d. Single phase induction motor	CO2	(1)
33.	Which of the following motor used in mixers?					
	a. Repulsion motor	b. Reluctance motor	c. Hysteresis motor	d. Universal motor	CO2	(1)
34.	A device which acquires a physical quantity and converts it into a form suitable for processing					
	a. Display Device	b. Sensor	c. Amplifier	d. Transformer	CO2	(1)
35.	A Float is used to measure _____.					
	a. Pressure	b. Level	c. Density	d. Current	CO2	(1)
36.	Hall Effect can be used to measure					
	a. Magnetic field	b. Current	c. Rotational speed	d. All of the above	CO2	(1)
37.	Which of the following devices exhibit inverse piezoelectric effect.					
	a. microphone	b. ultrasonic detector	c. crystal oscillator	d. strain sensor	CO1	(1)
38.	The _____ sensors are commonly used in robots for obstacle avoidance.					

	a. Capacitive	b. Hall effect	c. Ultrasonic	d. Magnetic	CO1	(1)
39.	The necessary requirement for an automatic system is _____					
	a. sensor	b. inductor	c. device	d. feedback element	CO2	(1)
40.	The rotation of an aircraft about the x axis is called _____.					
	a. yaw	b. roll	c. pitch	d. twist	CO2	(1)

PART B(8 X 5 = 40 MARKS) (ANSWER ANY EIGHT)

41.	List the hydro power plants situated in various places across India.	CO1	(5)
42.	Elaborate the concept of smart energy meter with a neat sketch.	CO1	(5)
43.	Sketch the wiring diagram for a residential building.	CO1	(5)
44.	Explain the concept of Compact Fluorescent Lamp used in your home with neat sketch.	CO2	(5)
45.	Comment on the top most battery manufacturing industries in India.	CO2	(5)
46.	Briefly explain the concept of burglar alarm system with design strategies.	CO2	(5)
47.	Mention the application and role of induction motor in textile industry.	CO3	(5)
48.	What are the basic types of electric vehicles in use today?	CO3	(5)
49.	Assume that you have been assigned the task of applying technology to optimize the usage of water in a nearby village by preventing wastage of water due to overflow. Design a strategy for the same using necessary measurement and control techniques.	CO3	(5)
50.	Illustrate the concept of altitude measurement in an aircraft using a gyro.	CO2	(5)

PART C(2 X 10 = 20 MARKS) (ANSWER ANY TWO)

51.	With a neat layout, explain the operation and working principle of Thermal power generating station.	CO1	(10)																																																		
52.	<p>Compute the unit consumed in your home shown in table.1 (choose your own appliances required to run a home) and suggest few energy saving methods.</p> <p>Table.1</p> <table><tr><th>Appliances</th><th>Rating (watts)</th></tr><tr><td>Incandescent bulbs</td><td>40 or 60</td></tr><tr><td>Fluorescent Tube Light</td><td>40</td></tr><tr><td>Night Lamp</td><td>15</td></tr><tr><td>Mosquito Repellent</td><td>5</td></tr><tr><td>Fans</td><td>60</td></tr><tr><td>Air Coolers</td><td>175</td></tr><tr><td>Air Conditioners</td><td>1500</td></tr><tr><td>Refrigerator</td><td>225</td></tr><tr><td>Mixer / Blender</td><td>450</td></tr><tr><td>Toaster</td><td>800</td></tr><tr><td>Microwave Oven</td><td>1000</td></tr><tr><td>Electric Kettle</td><td>1500</td></tr><tr><td>Electric Iron</td><td>1500</td></tr><tr><td>Water heater – Instant type (1-2 Ltr capacity)</td><td>3000</td></tr><tr><td>Water heater-storage type (10-20 Ltr capacity)</td><td>2000</td></tr><tr><td>Immersion rod</td><td>1000</td></tr><tr><td>Vacuum Cleaner</td><td>700</td></tr><tr><td>Laptop</td><td>65</td></tr><tr><td>Personal computer</td><td>100</td></tr><tr><td>Charger</td><td>5</td></tr><tr><td>Washing Machine</td><td>300</td></tr><tr><td>Water Pump</td><td>750</td></tr><tr><td>TV</td><td>100</td></tr><tr><td>Audio system</td><td>50</td></tr></table>	Appliances	Rating (watts)	Incandescent bulbs	40 or 60	Fluorescent Tube Light	40	Night Lamp	15	Mosquito Repellent	5	Fans	60	Air Coolers	175	Air Conditioners	1500	Refrigerator	225	Mixer / Blender	450	Toaster	800	Microwave Oven	1000	Electric Kettle	1500	Electric Iron	1500	Water heater – Instant type (1-2 Ltr capacity)	3000	Water heater-storage type (10-20 Ltr capacity)	2000	Immersion rod	1000	Vacuum Cleaner	700	Laptop	65	Personal computer	100	Charger	5	Washing Machine	300	Water Pump	750	TV	100	Audio system	50	CO2	(10)
Appliances	Rating (watts)																																																				
Incandescent bulbs	40 or 60																																																				
Fluorescent Tube Light	40																																																				
Night Lamp	15																																																				
Mosquito Repellent	5																																																				
Fans	60																																																				
Air Coolers	175																																																				
Air Conditioners	1500																																																				
Refrigerator	225																																																				
Mixer / Blender	450																																																				
Toaster	800																																																				
Microwave Oven	1000																																																				
Electric Kettle	1500																																																				
Electric Iron	1500																																																				
Water heater – Instant type (1-2 Ltr capacity)	3000																																																				
Water heater-storage type (10-20 Ltr capacity)	2000																																																				
Immersion rod	1000																																																				
Vacuum Cleaner	700																																																				
Laptop	65																																																				
Personal computer	100																																																				
Charger	5																																																				
Washing Machine	300																																																				
Water Pump	750																																																				
TV	100																																																				
Audio system	50																																																				

53.	What is a hybrid vehicle? Write down the different types of hybrid vehicles and their operation.	CO3	(10)
-----	--	-----	------

ALL THE BEST