Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**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**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **16EE1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRICITY FOR ENGINEERS** | **Max. marks :** | **100** |

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| **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).  http://sub.allaboutcircuits.com/images/quiz/00040x01.png | | | |  |  |
|  | 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) |

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| 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. indictor | 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) |

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| **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 alttitude 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. | 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.  Table.1   |  |  | | --- | --- | | **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) |
| 53. | What is a hybrid vehicle? Write down the different types of hybrid vehicles and their operation. | CO3 | (10) |

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