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**Selection for the Post of Technician Grade III Rankers Quota in Electrical
Department in Madurai Division on 2nd March 2013.**

Duration -3 Hrs

1 x 10 = 10

Part – A. Write expansion of the abbreviations-

- (1) MCB
- (2) DCP
- (3) OLP
- (4) ACB
- (5) AC
- (6) SWG
- (7) PVC
- (8) PCB
- (9) TPN
- (10) UPS

Part- B. Fill up the blanks:

1 x 10 = 10

- (1) The unit of resistance is _____
- (2) Power drawn in a DC circuit is the product of _____ and _____
- (3) OD and ID of the pipe are given. The thickness of pipe is _____
- (4) The instrument used for measuring insulation value is _____
- (5) The unit of current is _____
- (6) _____ is used for improving power factor.
- (7) 1 HP is equal to _____ Watts
- (8) The two terminals of diode are _____ and _____
- (9) Instrument used for non-contact temperature measurement is _____
- (10) Capacitor is used in FL circuit for _____

Part – C Choose the correct answer:

1 X 10 = 10

- (1) Maximum temperature permitted for class 'A' insulation
 - (a) 180°C
 - (b) 105°C
 - (c) 120°C
 - (d) 155°C
- (2) The brushes of electrical motors are made of
 - (a) carbon
 - (b) copper
 - (c) cast iron
 - (d) steel
- (3) Which of the following is the best conductor of electricity
 - (a) Copper
 - (b) Aluminium
 - (c) Iron
 - (d) PVC
- (4) One unit of energy measured in AC circuit is equivalent to
 - (a) one watt hour
 - (b) one kilowatt hour
 - (c) one kilowatt
 - (d) one watt

- (5) Frequency of Domestic Electric Supply in India is
 (a) 60 Hz (b) 100 Hz
 (c) 0 Hz (d) 50 Hz
- (6) Voltage of Domestic Electric Supply in India is
 (a) 230V DC (b) 110V AC
 (c) 230V AC (d) 110 V DC
- (7) Equipment used to convert DC into AC
 (a) capacitor (b) rectifier
 (c) inverter (d) battery
 (e) dynamo
- (8) Reading of a megger when the equipment is open circuited
 (a) infinity (b) 500 ohms
 (c) zero (d) 10 meg ohms
- (9) A 2 ohms resistor when 1 ampere current is passed will dissipate a power of
 (a) 2 watts (b) 4 watts
 (c) 0.5 watts (d) 0.25 watts
- (10) A closed switch has a resistance of
 (a) infinity (b) zero
 (c) about 500 ohms (d) about 50 ohms

Part – D Say Yes or No.

1 X 10 = 10

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|--|-----------|
| (1) A stepup transformer increases power | Yes / No |
| (2) A Generator converts Mechanical Energy in to Electrical Energy | Yes / No |
| (3) Single Phase preventer in a three phase motor circuit –
For smooth starting | Yes / No |
| (4) Lead Acid cell is a storage device | Yes / No |
| (5) As per Ohms LAW current (I) is a product of Voltage (V) and
Resistance (R) (ie)- $I = V \times R$ | Yes / No |
| (6) A current transformer is to measure current in a high current installations. | Yes / No. |
| (7) A Gloves is a personal protective Device | Yes / No |
| (8) A voltmeter is connected in Parallel to the Circuit | Yes / No |
| (9) Porcelain is a Conductor | Yes / No |
| (10) The Voltage between one Phase to Neutral in a 3 Phase circuit
is 375 V | Yes / No |

Part – E. Answer Any Five Questions in Brief

2 X 5 = 10

- (1) Will a 3 phase motor continue to run even if the fuse of one phase is blown while running?
- (2) 1 No., 4 ohm, and 1 No., 6 Ohms resistance are connected in series with 24 V battery. What is the current drawn from battery?
- (3) What is meant by 3 phase 4 wire, 400 V supply?
- (4) Name Any five safety items to be provided in 11KV/433V substation?
- (5) What are the cases where regional language, Hindi & English should be used?
- (6) What is Ohm's Law?
- (7) How to test a diode?

Part –F Answer Any five in Details -

5 X 10 = 50

- (I) Write short notes
 1. Non-conventional Energy
 2. UPS system
- (2) What ten Energy conservation measures for Electrical power side?
- (3) Explain proficiency in Hindi and working knowledge in Hindi.
- (4) Explain the working principle of a 3 phase induction motor?
- (5) Calculate the energy bill of 3 phase, 60 KVA load at pF 0.8 working for 8 hours daily for a month of 30 days and the energy charges at R.5/unit.
- (6) Draw with a sketch explain the working principle of a transformer.
- (7) Convert
 - (a) the fraction $\frac{7}{20}$ into percentage
 - (b) 5.03 mts. into mm
- (c) What is the total weight in gms of the four metal pieces with each weighing 1.2Kg, 400 gms, 750gms, 2KG
