

**GUJARAT TECHNOLOGICAL UNIVERSITY**

B.E. Sem-IV Remedial Examination Nov/ Dec. 2010

**Subject code: 140902****Date: 03 / 12 / 2010****Subject Name: Electrical Power****Time: 03.00 pm – 05.30 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

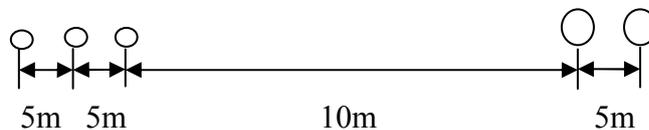
- Q.1** (a) Draw and label the schematic arrangement of a Thermal power station. **08**  
 (b) With the help of neat diagrams explain the relative advantages and disadvantages of Radial, Ring Main and Interconnected Grid systems of distribution. **06**

- Q.2** (a) Draw the layout and explain how electrical power is generated in a Combined Cycle Power Plant. **08**  
 (b) Explain in brief: (i) Surge Tank (ii) Super Heater (iii) Economizer. **06**

**OR**

- (b) Write a short note on Nuclear Reactors. **06**

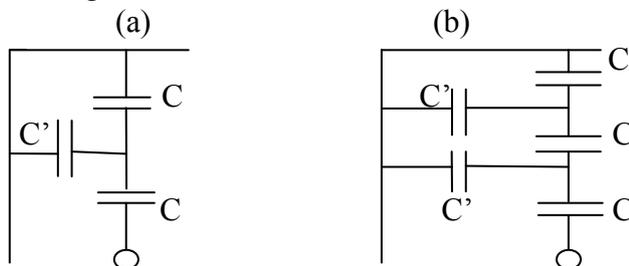
- Q.3** (a) One circuit of a single phase transmission line is composed of three solid 0.5 cm radius wires. The return circuit is composed of two solid 2.5 cm radius wires. The arrangement of conductors is as shown below. Find the inductance of the complete line in mH/km. **08**



- (b) What is string efficiency? Explain the methods of improving string efficiency. **06**

**OR**

- Q.3** (a) In the following figs., which represent equivalent capacitor arrangements for strings of suspension insulators,  $C' = 0.125C$  and the maximum voltage across any unit is not to exceed 13.2 kV. Find the maximum voltage that each arrangement can withstand. **08**



- (b) Derive the expression for the capacitance of a three phase overhead line with unsymmetrical spacing. **06**

- Q.4** (a) Derive the expression for the most economical power factor. **08**  
 (b) Write a short note on Pressure cables. **06**

**OR**

- Q.4** (a) Explain the causes and disadvantages of low power factor. **08**  
(b) What is Neutral Grounding? List the advantages of Neutral Grounding. **06**
- Q.5** (a) Explain the various equipments used in a substation. **08**  
(b) Explain (1) Skin Effect (2) Proximity Effect. **06**
- OR**
- Q.5** (a) Explain a solar pond based power plant with the help of a neat diagram.. **08**  
(b) Explain Ferranti Effect with the help of vector diagram. **06**

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