Code No: RT22024 **R13** SET - 1

II B. Tech II Semester Supplementary Examinations, April-2018
POWER SYSTEMS - I
(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) What are the factors to be consider for selection of site for a thermal power plants
   b) What is mean by nuclear fission
   c) How the distribution systems are classified
   d) Contrast between indoor and outdoor substations
   e) Derive the expression for power factor of cable
   f) Which information you can obtained from load duration curve

PART –B

2. a) What are the functions of economizer and super heater in a thermal power plant?
   b) What are the types of cooling towers and discuss each type of cooling tower with schematic diagram.

3. a) Discuss the internal hazards due to radiations
   b) What are the types of nuclear reaction? Describe briefly

4. a) What is the importance of load p.f. in AC distribution
   b) A 300 m distributor fed from both ends $F_1$and F_2 is loaded uniformly at the rate of 2 A/m run. The resistance of loop is 0.2 Ω/km. Find the minimum voltage and the point where it occurs, if the feeding points F_1 and F_2 are maintained at 225 V and 220 V respectively. Also find the currents supplied from the feeding points F_1 and F_2.

5. a) Classify various types of substations according to service requirements and explain
   b) Discuss the installation and maintenance of gas insulated substations.

6. a) Show that for the same dimensions of a cable with an intersheath can withstand a working voltage of 33% higher than a non-intersheath cable. Assume same homogeneous dielectric and most economical designs for both cables
   b) For the cable shown above, it is given that $R_1 = 3$ cm, $R_3 = 1.2$cm, and R_2=1.5 cm. Find the maximum electric field for an operating voltage of 12.5 kV (i) with capacitance grading and (ii) without capacitance grading.

7. a) Discuss the different classifications of costs of electrical energy.
   b) A generating station has the following daily load cycle

Time(hrs)	:	0-6	6-10	10-12	12-16	16-20	20-24
Load (MW)	:	40	50	60	50	70	40

Draw the load curve and find (i) maximum demand, (ii) units generated per day and (iii) average load and load factor
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