

				Sub	ject	Coc	le: I	KEE	501
Roll No:									

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BTECH (SEM V) THEORY EXAMINATION 2023-24 **POWER SYSTEM - I**

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

Attempt all questions in brief. 1.

Qno.	Question	Marks	CO
a.	Differentiate between renewable and non renewable energy?	2	1
b.	What is a diversity factor?	2	1
c.	What is skin effect?	2	2
d.	Is corona more in AC or DC?	2	2
e.	What do you mean by sag template?	2	3
f.	Define the term sag?	2	3
g.	What do you mean by self GMD & mutual GMD?	2	4
h.	Write the main causes of insulation failure?	2	4
i.	Discuss the underground cable losses?	2	5
j.	Differentiate between overhead lines and underground cables?	2	5
	SECTION B	2	, ,
2.	Attempt any three of the following:	10.	
Qno.	Question	Marks	CO

2. Attempt any three of the following:

	O V ·		
Qno.	Question	Marks	CO
a.	What are the equipments used in sub- station? Discuss them?	10	1
b.	State & prove Kelvin's law for size of conductor for transmission line. Discuss its limitations.	10	2
c.	Write a short note on the factors that affect sag.	10	3
d.	A double circuit single phase line have conductor a_1 & a_2 which carry the current in one direction .Conductor b_1 & b_2 carry the current in return direction. The diameter of each conductor is 25 mm. Calculate the inductance of the line per km if D_1 =1mt & D_2 =2mt.	10	4
e.	Discuss different types of insulating materials used in power system?	10	5

3. Attempt any one part of the following:

Qno.				Question				Marks	CO
a.	A generating station has the following daily load cycle:								1
	Time (Hours) 0—6 6—10 10—12 12—16 16—20 20—24								
	Load (M W)	40	50	60	50	70	40		
	Draw the load curve and find								
	(i) maximum o	1							
	(iii) average lo								
b.	Give the layou	it of thern	nal power	plant and e	xplain its co	omponents i	n details?	10	1



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4. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	Classify different types of supply system and compare the volume of conductor	10	2
	DC two wire system and 3-φ 3-wire system?		
b.	Analyze the performance of medium transmission line (T model). Draw phasor	10	2
	diagram and derive relation for ABCD parameters.		

5. Attempt any *one* part of the following:

Qno.	Question	Marks	CO
a.	An insulator string consists of three units, each having a safe working voltage of 15 kV. The ratio of self-capacitance to shunt capacitance of each unit is 8: 1. Find the maximum safe working voltage of the string. Also find the string efficiency.	10	3
b.	Discuss different methods of improving string efficiency?	10	3

6. Attempt any *one* part of the following:

Qno.	Question		Marks	СО
a.	Explain Catenary method for finding the sag in a transmission line?	02/	10	4
b.	Explain rigorous method for long transmission line?	V _O	10	4

7. Attempt any *one* part of the following:

Qno.	Question	Marks	СО
a.	Discuss the inter-sheath grading of cables. What are practical difficulties in the grading of cables?	10	5
b.	Find the most economical diameter of a single core cable to be used on 66 KV, 3-phase system. If the peak permissible stress is not to exceed 50 KV/m. Also find overall diameter.	10	5