Q.P. Code: 19EE0211 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations July-2022

ELECTRICAL POWER GENERATION & TRANSMISSION SYSTEMS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1		Draw a neat schematic diagram of a hydro-electric plant and explain the functions of various components.	**L1**	**12M**

OR

2	**a**	Explain the function of chimney and precipitator.	**L2**	**6M**
	b	Mention the merits and demerits of steam power plant.	**L4**	**6M**

UNIT-II

3		Compare thermal, hydro and nuclear power plants on the basis of technical, mechanical and economical aspects.	**L3**	**12M**

OR

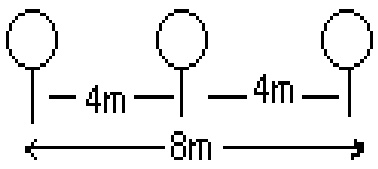
4	**a**	Explain the principle of operation Nuclear Reactor.	**L2**	**6M**
	b	Explain about Nuclear Fission and Chain reaction.	**L2**	**6M**

UNIT-III

5	**a**	What is Skin effect? Explain.	**L1**	**6M**
	b	Determine the inductance/phase/km of a double circuit 3-phase line. The radius of each conductor is 20mm and the conductors are placed on the circumference of an imaginary circle at a distance of 7m forming a regular hexagonal figure.	**L6**	**6M**

OR

6	**a**	Derive an expression for the inductance per phase for a 3-phase overhead transmission line when conductors are symmetrically placed.	**L3**	**6M**
	b	Calculate the inductance per phase of a three –phase transmission line as shown in following fig. The radius of the conductor is 0.5cm. The lines are un-transposed.	**L2**	**6M**



UNIT-IV

7		Evaluate the generalized circuit constants for (i) short transmission line (ii) medium line nominal T method (iii) medium line nominal Π method.	**L5**	**12M**

OR

8		Derive expression for voltage regulation of medium transmission lines using nominal -π method with equivalent circuit and necessary phasor diagram.	**L2**	**12M**

UNIT-V

9	**a**	Each line of a three phase system is suspended by a string of three identical insulators of self capacitance of C farad. The shunt capacitance of connecting metal work of each insulator is 0.2C to earth and 0.1C to line. Calculate the string efficiency of the system and also calculate string efficiency if a guard –ring increases the capacitance to the line of metal work of the lowest insulator to 0.3C.	**L5**	**6M**
	b	What do you understand by grading of insulators? Explain.	**L1**	**6M**

OR

10	**a**	Derive the expression for sag for equal supports.	**L2**	**6M**
	b	Each conductor of a three phase over head line is suspended from a cross arm of a steel tower by a string of 4 suspension insulators. The voltage across the second unit is 14.2kv and across the third 20kv. Find the voltage between the conductors and the string efficiency.	**L3**	**6M**

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