Reg. No.															

Question Paper Code	13267

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Fourth Semester

Electrical and Electronics Engineering

20EEPC402 - TRANSMISSION AND DISTRIBUTION

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	If is the radius of the solid conductor, its GMR (self GM(D) is (a) 0.7788r (b) 0.8787r (c) 0.8877r (d) 0.7887r	*1*	*K1*	*CO1*
2.	Skin effect depends upon (a) Cross-section of conductor (b) supply frequency (c) permeability of conducting material (d) all of the above	*1*	*K1*	*CO1*
3.	In a bundled conductors the spacing between sub conductors is approximately _____ (a) 3.5cm (b) 80cm (c) 40cm (d) 20cm	*1*	*K1*	*CO1*
4.	If we increase the length of transmission line , the charging current will (a) Increase (b) Decrease (c) Remains the same (d) can't be determined	*1*	*K1*	*CO1*
5.	What does the nominal Pi model of a medium transmission line concentrate at the center? (a) Resistance (b) Inductance (c) Capacitance (d) Conductance	*1*	*K1*	*CO2*
6.	The shunt admittance in the nominal T model represents the distributed _____ of the transmission line. (a) Resistance (b) Capacitance (c) Inductance (d) Reactance	*1*	*K1*	*CO2*
7.	How does the length of long transmission line impact parameter assumptions? (a) Length has no effect on assumptions (b) Lumped parameters become more accurate (c) Distributed parameters are no longer reasonable (d) Medium transmission lines are preferred	*1*	*K1*	*CO2*
8.	What is the potential gradient at the conductor surface when corona begins? (a) Higher than the disruptive gradient (b) Equal to the breakdown gradient (c) Lower than the disruptive gradient (d) Equal to the critical gradient	*1*	*K1*	*CO2*
9.	The sag of a transmission line conductor in summer is (a) less than that in winter (b) more than that in winter (c) same as in winter (d) none of the above	*1*	*K1*	*CO3*
10.	Desired Impulse Ratio for pin type insulators is approximately? (a) 1.2 (b) 1.3 (c) 1.4 (d) 1.5	*1*	*K1*	*CO3*
11.	In a transmission line conductors galloping arises due to (a) asymmetrical layers of ice formation (b) vortex phenomenon in light winds (c) heavy weight of line conductors (d) adoption of horizontal conductor configuration	*1*	*K1*	*CO3*
12.	ACSR is used in place of copper in overhead lines because of (a) higher current carrying capacity (b) being lighter in weight (c) economy (d) higher tensile strength	*1*	*K1*	*CO3*
13.	Conduit pipe is generally employed for protection of (a) Unsheathed cables (b) Armoured cables (c) PVC sheathed cables (d) All of the above	*1*	*K1*	*CO4*

14.	Capacitance grading of cable means (a) use of dielectrics in different concentrations (b) introduction of capacitances at various lengths of cable to counter the effect of inductance (c) use of dielectrics of different permittivity's (d) grading according to capacitance per km length of the cable	*1*	*K1*	*CO4*
15.	The belted type construction is not suitable for cables used for voltages exceeding 22 kV because of (a) development of both radial and tangential stresses (b) formation of vacuous spaces (c) local heating caused by power loss at the centre filling owing to leakage current produced by tangential stresses along the impregnated paper insulation resulting in breakdown at any time (d) all of the above	*1*	*K1*	*CO4*
16.	The lead sheath of the cable may get damaged due to (a) mechanical injury (b) crystallization of lead through vibrations (c) chemical action with impurities present in the soil when buried in earth (d) all of the above	*1*	*K1*	*CO4*
17.	Which of the following statements is FALSE? (a) Single-phase system has many advantages over a three-phase system (b) The supply frequency of a single-phase AC system in India is 50 Hz (c) To develop a polyphase system, the armature winding in a generator is divided into the required number of phases (d) A three-phase system is found to be more economical.	*1*	*K1*	*CO5*
18.	Distributors fed at both ends has an advantage of (a) Continuous supply (b) Fault isolation (c) Economical (d) All of the above	*1*	*K1*	*CO5*
19.	A substation which perform the switching operations of power transmission lines are called___ (a) Transformer substation (b) Switching substation (c) Industrial substation (d) intermediate substation	*1*	*K1*	*CO5*
20.	Which of the following is used to maintain constant voltage in the feeder circuit? (a) Induction regulator (b) Booster (c) Tap changer (d) Phase advancers	*1*	*K1*	*CO5*

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21.	Define proximity effect.	*2*	*K1*	*CO1*
22.	Why the transmission systems are mostly overhead systems?	*2*	*K1*	*CO1*
23.	What is Ferranti Effect?	*2*	*K1*	*CO2*
24.	Define Voltage Regulation.	*2*	*K1*	*CO2*
25.	What is stringing chart? What is its use?	*2*	*K1*	*CO3*
26.	What is the purpose of insulation in a cable?	*2*	*K1*	*CO3*
27.	Outline the conductor materials in cables.	*2*	*K2*	*CO4*
28.	How cables are classified based on operating voltage?	*2*	*K1*	*CO4*
29.	Why transmission lines are 3 phase 3 wire circuits while distribution lines are 3 phase 4 wire circuits?	*2*	*K1*	*CO5*
30.	What is a ring main distributor?	*2*	*K1*	*CO5*

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31.	a)	Interpret an expression for inductance of a three phase line with unsymmetrical spacing. Also explain the transposition of conductors.	*10*	*K2*	*CO1*
		OR			
	b)	Develop an expression for inductance from the fundamentals of a single phase transmission system.	*10*	*K2*	*CO1*
32.	a)	Illustrate the steps involved to determine regulation and transmission efficiency for medium lines using nominal- π method.	*10*	*K2*	*CO2*
		OR			
	b)	Illustrate the procedure for finding the transmission efficiency and voltage regulation of a long transmission line.	*10*	*K2*	*CO2*
33.	a)	In a 33kV overhead line, there are three units in the string of insulators. If the capacitances between each insulator pin and earth is 11% of self-capacitance of each insulator, Identify the distribution of voltage over 3 insulators and the string efficiency.	*10*	*K3*	*CO3*
		OR			
	b)	Develop the formula for string efficiency and voltage distribution over string insulator.	*10*	*K3*	*CO3*
34.	a)	Explain the methods of grading of cables and also list out the properties of insulating materials used for the cables.	*10*	*K2*	*CO4*
		OR			
	b)	Explain the classification of cables and discuss their general construction.	*10*	*K2*	*CO4*
35.	a)	Explain in detail the design consideration in distribution systems.	*10*	*K2*	*CO5*
		OR			
	b)	Summarize the details of overhead and underground cables.	*10*	*K2*	*CO5*
36.	a) i)	Infer the performance of overhead line with armoring of cables.	*5*	*K2*	*CO4*
	ii)	Explain in detail the interconnected system distribution.	*5*	*K2*	*CO5*
		OR			
	b) i)	Illustrate the disadvantages of overhead line without armoring of cables.	*5*	*K2*	*CO4*
	ii)	Explain in detail the solid grounding.	*5*	*K2*	*CO5*