PAPER ID-310127

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM V) THEORY EXAMINATION 2024-25
POWER SYSTEM - I

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

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question	CO	Level
a.	Discuss power system network including various levels of voltages distributed over the entire system.	1	K2
b.	What is meant by Transmission and Distribution system for any power system?	1	K2
c.	Describe the advantages of Bundled Conductors used in transmission systems.	2	K2
d.	What are the advantages of high transmission voltage?	2	K2
e.	Explain the different types of insulators and their applications in power transmission lines.	3	K2
f.	Give advantages of vibration dampers.	3	K1
g.	Describe the role of GMD and GMR in calculation of line parameters.	4	K2
h.	Write the advantages of double-circuit transmission lines.	4	K1
i.	Write important properties of insulating materials used in underground cables.	5	K1
j.	Compare overhead lines to underground cables.	5	K3

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

Q no.	Question	CO	Level
a.	Explain the layout and working of hydro-electric power plants with suitable diagrams and their site selection criterions.	1	K3
b.	Compare 3-Phase 4 wire Supply System with 2 Wire DC System. Give the Diagram for each System.	2	K5
c.	Explain the methods of equalizing the potential across string and insulators string efficiency.	3	K4
d.	Explain the inductance calculation procedure of three phase lines with unsymmetrical spacing.	4	K4
e.	Write short notes on grading of cables.	5	K3

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

Q no.	Question	CO	Level
a.	Construct the layout and examine the working of different types of Cogeneration CHP systems.	1	K3
b.	Discuss with suitable example and diagram the load sharing between base load and peak load plant in power system.	1	K3

PAPER ID-310127

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM V) THEORY EXAMINATION 2024-25
POWER SYSTEM - I

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

4. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Explain "skin effect" and "proximity effect" when referred to overhead power transmission lines.	2	K3
b.	Elaborate the Formation process of Corona Effect and List the Factors affecting the formation of corona effect in transmission lines.	2	K3

5. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Explain the sag-templates with the help of diagrams. Explain how this is useful for location of towers and stringing of power conductors.	3	K3
b.	Determine and explain the expression for catenary curve in power transmission line.	3	K3

6. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	A 3 phase transmission line has its conductor at the corners of an equilateral triangle with side 3 m and the diameter of each conductor is 1.63 cm. Find the inductance per phase per km of the line.	4	K4
b.	Derive an expression for the capacitance per km of a single-phase line taking into account the effect of ground.	4	K4

7. Attempt any *one* part of the following: 10 x 1 = 10

Q no.	Question	CO	Level
a.	Summarize with a neat sketch, the construction of a 3-core belted type cable. Also list its advantages.	5	K3
b.	The capacitance of a 3-core lead sheathed cable measured between any two of the conductors with sheath earthed is 0.19 μF per km. Determine the equivalent star connected capacity and the kVA required to keep 16 kms of the cable charged when connected to 20 kV, 50 Hz supply.	5	K3