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BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Tech.(EE)-2021/B.Tech.(EE)-2023

Course Name – Power System-II

Course Code - PCC-EE601

(Semester VI)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Identify which of the following is kept fixed in a transformer
 - a) voltage
 - b) frequency
 - c) current
 - d) None of the above
- (ii) A transformer has voltage rating of 220/110 volt. Identify the correct option
 - a) step up
 - b) step down
 - c) isolation
 - d) all of the above
- (iii) Identify the function of a transformer
 - a) To step down or up the AC voltages and currents
 - b) To step down or up the DC voltages and currents
 - c) converts DC to AC voltages
 - d) converts AC to DC voltages
- (iv) Identify the correct option of the part commonly seen in hydro power plant
 - a) pen stock
 - b) heater
 - c) preheater
 - d) condenser
- (v) Choose the component connects the substation to the area where power is to be distributed.
 - a) distributor
 - b) service main
 - c) feeder
 - d) all of the above
- (vi) Choose the design of the distribution to locality of one lac population with medium dense load requirement, we can employ
 - a) radial
 - b) parallel
 - c) ring
 - d) None of the above
- (vii) Select from the option by which Fault calculation is done using computer.
 - a) Y-BUS method
 - b) Z-BUS method
 - c) None of the above
 - d) All of the above
- (viii) Choose the angle by which the shift operator is rotated in unsymmetrical faults

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a) 10 degree
b) 50 degree
c) 90 degree
d) 120 degree

(ix) Identify the range of surge impedance for an overhead transmission line is
a) 20 ohm-30 ohm
b) 40 ohm-60 ohm
c) 12 ohm-13 ohm
d) 400 ohm- 600 ohm

(x) Select the length of short transmission line
a) upto 80 KM
b) 100KM-300 KM
c) 300 KM and above
d) none of the above

(xi) Select the relation between mechanical power and electric power for a generator when accelerating power is zero
a) both powers are unequal
b) both powers are equal
c) can not be determined
d) none of the above

(xii) Select the type of connection for connecting fuse in a circuit
a) series
b) parallel
c) both (a) and (b)
d) none of the above

(xiii) Indicate the condition of air used in air blast circuit breaker
a) must be free from moisture
b) must have least CO₂
c) must be ionized
d) must have oil mist

(xiv) Choose the correct option: The under voltage relay can be used for
a) generator
b) bus bar
c) motor
d) all of the above

(xv) Identify the correct option: the outdoor substations are installed for voltages above _____ for cost and safety.
a) 60 KV
b) 110 KV
c) 33 KV
d) 11 KV

Group-B

(Short Answer Type Questions)

$$3 \times 5 = 15$$

2. Explain the reason of fault occur in a power system. (3)
3. Describe the symbols used to represent Single Line Diagram (SLD). (3)
4. Explain about the electrical quantities which are chosen as base values. (3)
5. Define the importance of swing bus. (3)
6. Explain about synchronous reactance. (3)

OR

Explain about subtransient reactance.

(3)

Group-C

(Long Answer Type Questions)

$$5 \times 6 = 30$$

7. Explain about Fortescue theorem in power system fault analysis. (5)
8. Illustrate the reason of Neutral current in star connection being equal to three times of zero sequence current. (5)
9. State the limitations of load flow analysis using Gauss Seidel method. (5)
10. Illustrate the assumptions made while drawing the impedance diagram. (5)
11. Illustrate the equal area criteria for transient stability analysis in power system. (5)

12. Illustrate the concepts of steady state stability limit and transient stability limit.

(5)

OR

Explain the operating principle of the Buchholz relay.

(5)