BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Tech.(EE)]-2021
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.]
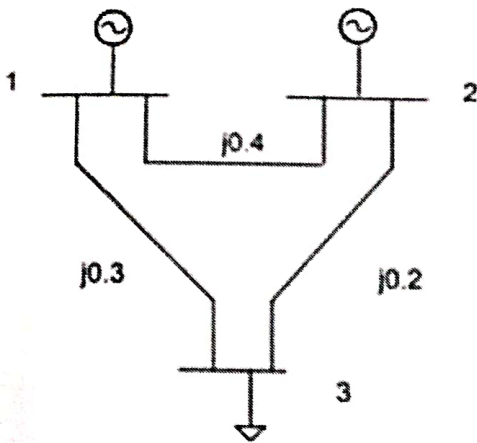
Group-A
(Multiple Choice Type Question)　　　　　　　1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the quantity whose unit is MVar

a) Active power　　　　　　　　　b) Reactive power
c) Apparent power　　　　　　　　d) None of the above

(ii) Indicate the correct option of the value of per unit quantity in either side of transformer

a) same　　　　　　　　　　　　b) greater in primary side
c) greater in secondary side　　　　d) Both primary and secondary sides

(iii) Choose the correct option from the following :_____ plant does not use fossil fuel.

a) Thermal　　　　　　　　　　　b) Nuclear
c) Diesel　　　　　　　　　　　　d) Solar

(iv) Identify the main type of distribution system in India

a) Radial　　　　　　　　　　　　b) parallel
c) loop　　　　　　　　　　　　　d) all of the above

(v) Choose the permissible limit of voltage variations allowed in the distribution systems.

a) 0.02　　　　　　　　　　　　　b) 0.05
c) 0.1　　　　　　　　　　　　　　d) 0.06

(vi) Select the type of distribution preferred in residential areas

a) Single phase, two wire.　　　　　b) Three phase, three wire
c) Three phase, four wire　　　　　d) Two phase, four wire

(vii) Identify the property of Ybus matrix

a) square matrix　　　　　　　　　b) rectangular matrix
c) triangular matrix　　　　　　　　d) None of the above

(viii) Select the other name of load bus in terms of specified parameters

a) PV bus　　　　　　　　　　　　b) PQ bus
c) PQV bus　　　　　　　　　　　d) none of the above

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(ix) Choose the correct option of the following: a system is having 1 slack bus, 1 generator bus and 3 load buses. Find the dimension of the Jacobian matrix

    a) 1x1   b) 2x2

    c) 4x4   d) 5x5

(x) Identify the right one: a short circuit occurs in a transmission line (neglect line capacitance) when the voltage wave is going through zero, the maximum possible momentary short circuit current corresponding to

    a) Twice the maximum of symmetrical short circuit current   b) Maximum of short circuit current

    c) Thrice the maximum of symmetrical short circuit current   d) Four times the maximum symmetrical short circuit current

(xi) 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

(xii) Choose the most serious consequences of a major uncleared short circuit fault can be

    a) blow of fuse   b) fire

    c) heavy voltage drop   d) none of the above

(xiii) Identify the parameter which does not affect the stability of power system

    a) excitation of generator   b) reactance of transmission lines

    c) reactance of generator   d) losses

(xiv) Identify the correct option: swing equation is related to

    a) First order derivative of rotor angle   b) Second order derivative of rotor angle

    c) Third order derivative of rotor angle   d) none of the above

(xv) Identify relays used for phase faults on long line

    a) Impedance relay   b) Reactance relay

    c) Resistance relay   d) none of the above

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Explain the reason of fault occur in a power system   (3)

3. Compute the expression of per unit impedance, per unit voltage and per unit current in terms of base MVA.   (3)

4. Discuss the advantages of using admittance (Ybus) matrix   (3)

5. Describe the underground distribution substations in distribution network   (3)

6. Explain about synchronous reactance   (3)

OR

Explain about subtransient reactance.   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Illustrate the reason of Neutral current in star connection being equal to three times of zero sequence current.   (5)

8. Compute the Ybus matrix of the system as shown in figure (5)

9. Discriminate the radial and loop distribution systems (5)
10. Describe the functions of circuit breaker and batteries. (5)
11. Explain the operating principle of the Buchholz relay. (5)
12. Illustrate the assumptions made while drawing the impedance diagram (5)

OR

Two generators rated 10 MVA, 13.2 KV and 15 MVA, 13.2 KV are connected in parallel to a (5) bus bar. They feed supply to 2 motors of inputs 8 MVA and 12 MVA respectively. The operating voltage of motors is 12.5 KV. Assuming the base quantities as 50 MVA, 13.8 KV, represent the per unit reactance diagram. The percentage reactance for generators is 15% and   that   for   motors   is   20%.

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