

3) THE FOLLOWING EQUATIONS DESCRIBE THE PRODUCER/CONSUMER BEHAVIOUR. EXPLAIN THEM.

$$\text{Eq 1) } T_{gi} P_{gi} = - \underbrace{B_{gi} - C_{gi} \times P_{gi}}_{\text{CONST}} + \underbrace{\lambda}_{\text{VARIABLE}}, \quad i = 1, 2, \dots, m$$

$$\text{Eq 2) } T_{dj} P_{dj} = B_{dj} + C_{dj} P_{dj} - \lambda, \quad j = 1, 2, \dots, m$$

WHERE P_{gi} = POWER SUPPLY OF PRODUCER "i"

P_{dj} = POWER DEMAND OF CONSUMER "j"

$B_{gi} + C_{gi} \times P_{gi}$ = MANAGERIAL COST OF SUPPLIER "i"

$B_{dj} + C_{dj} \times P_{dj}$ = MANAGERIAL BENEFIT OF CONSUMER "j"

λ = PRICE OF POWER

T_{gi} = SUPPLY SYSTEM CONSTANT, T_{dj} = CONSUMER DEMAND CONSTANT

ANSWER THE ABOVE EQUATIONS DESCRIBE THE FOLLOWING QUALITATIVE BEHAVIOUR

- A GENERATOR INCREASES ITS PRODUCTION WHEN POWER PRICE EXCEEDS ITS PRODUCTION COST (Eq 1)

- CONSUMERS INCREASE THEIR USAGE OF ELECTRICITY WHEN THE BENEFIT EXCEEDS THE POWER PRICE (Eq 2)

- SUPPLY &

IF SUPPLY

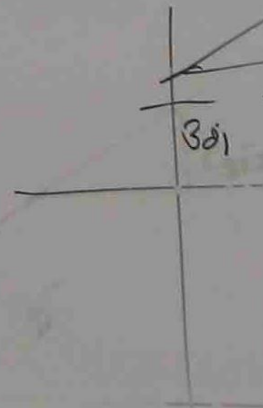
IF DEMAND

TO BALANCE THE SU

- INCREASE THE COM

- ENCOURAGE (OR)

- ADJUST POWER PR



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- Supply & Demands must be BALANCED.

IF SUPPLY EXCEEDS THE DEMAND, POWER STATION WILL LOSE THE BENEFIT

IF DEMAND EXCEEDS THE SUPPLY, POWER STATION WILL BE OVER LOADED.

TO BALANCE THE SUPPLY & DEMAND, THE FOLLOWING STRATEGIES ARE UTILIZED

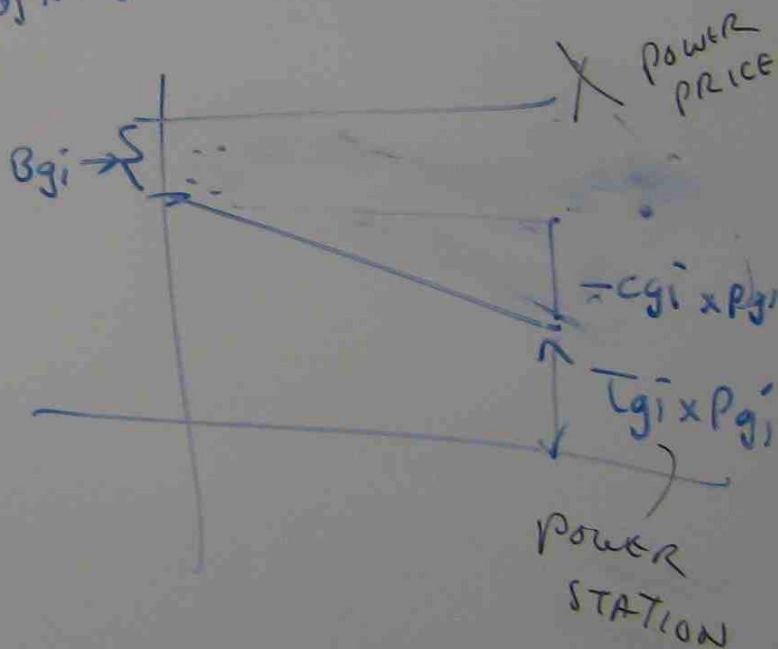
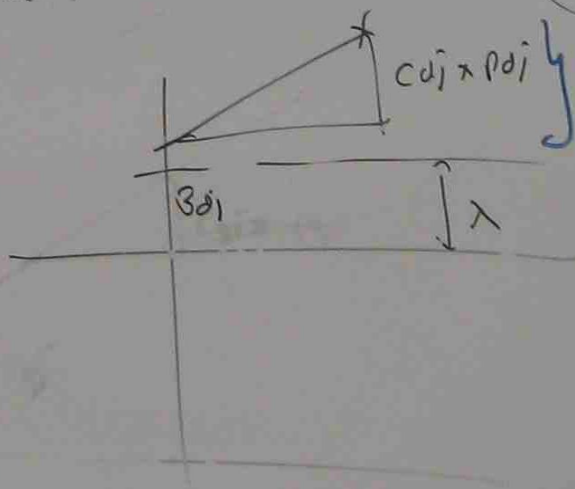
- INCREASE THE COMPETITION

- ENCOURAGE (OR) DISCOURAGE THE CONSUMERS TO USE ELECTRICITY

- ADJUST POWER PRICE

BENEFIT

$= T_{oj} \times P_{oj} = \text{CONSUMER}$



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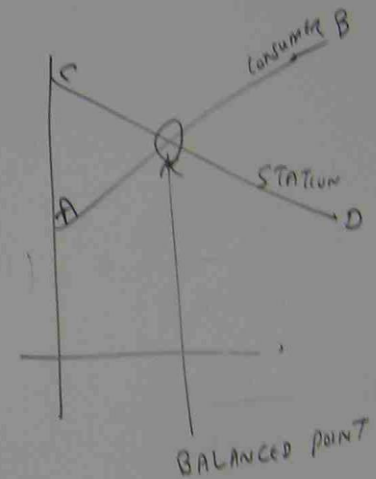
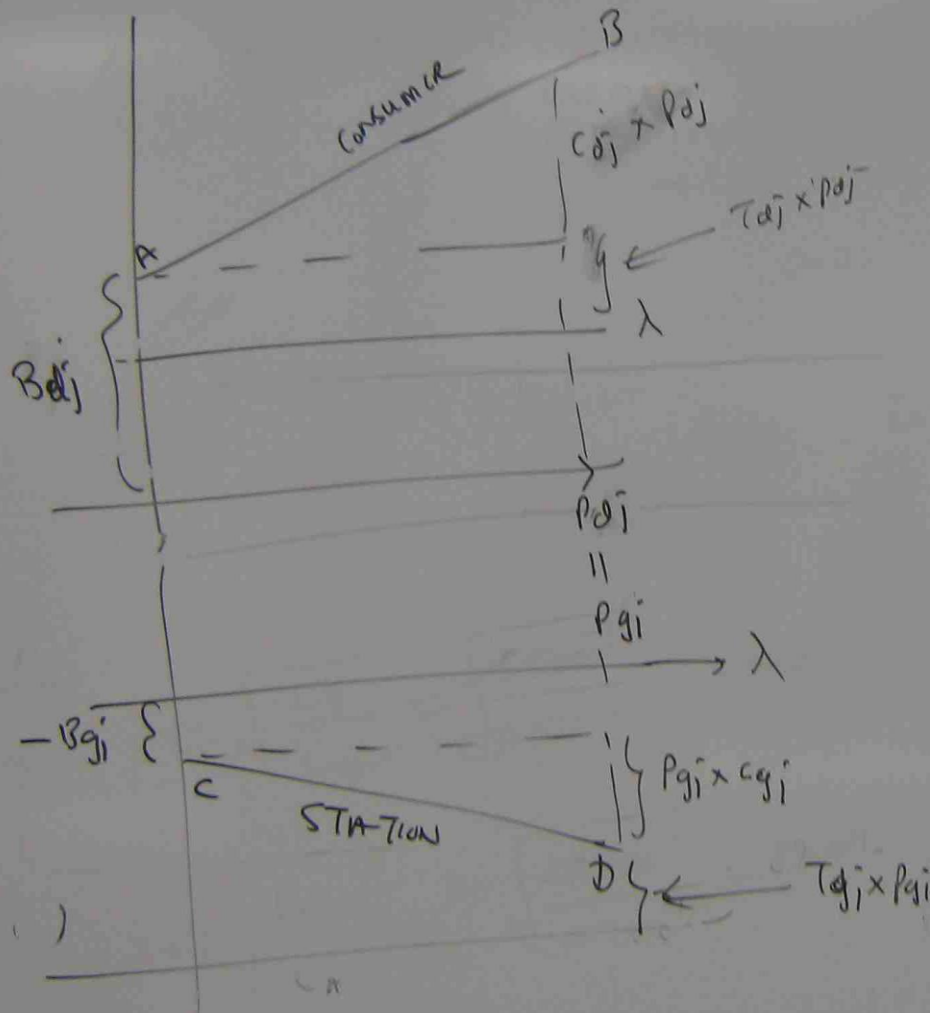
POWER

(P_{g, 2})

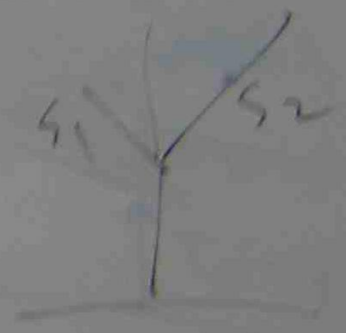
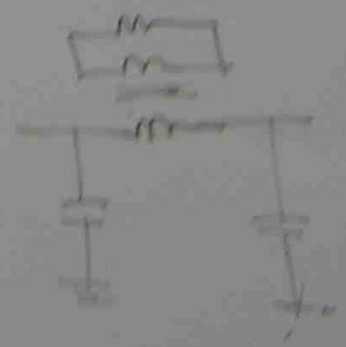
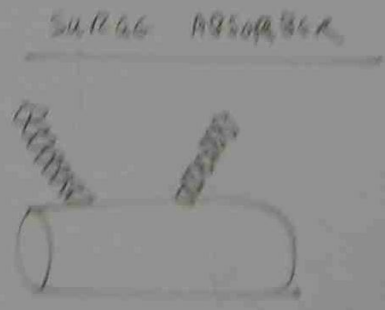
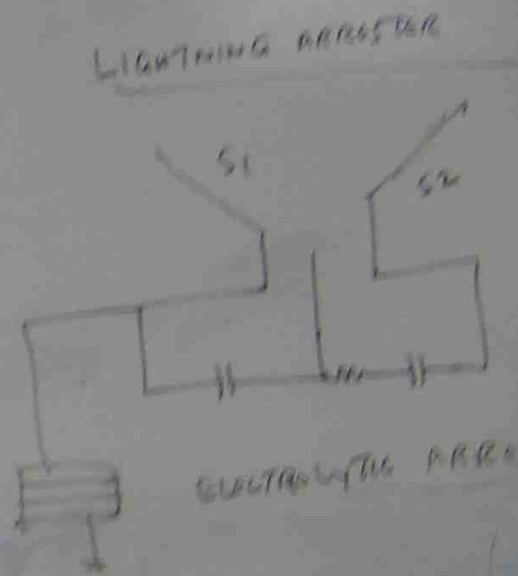
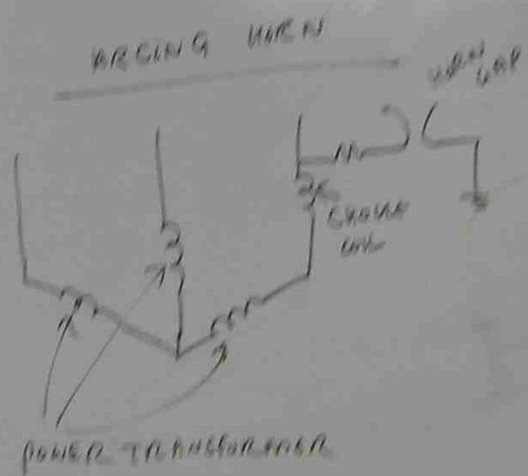
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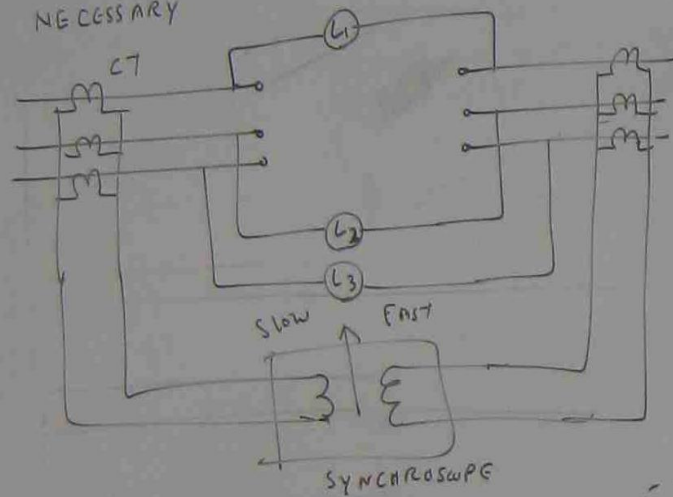
ADDITIONAL



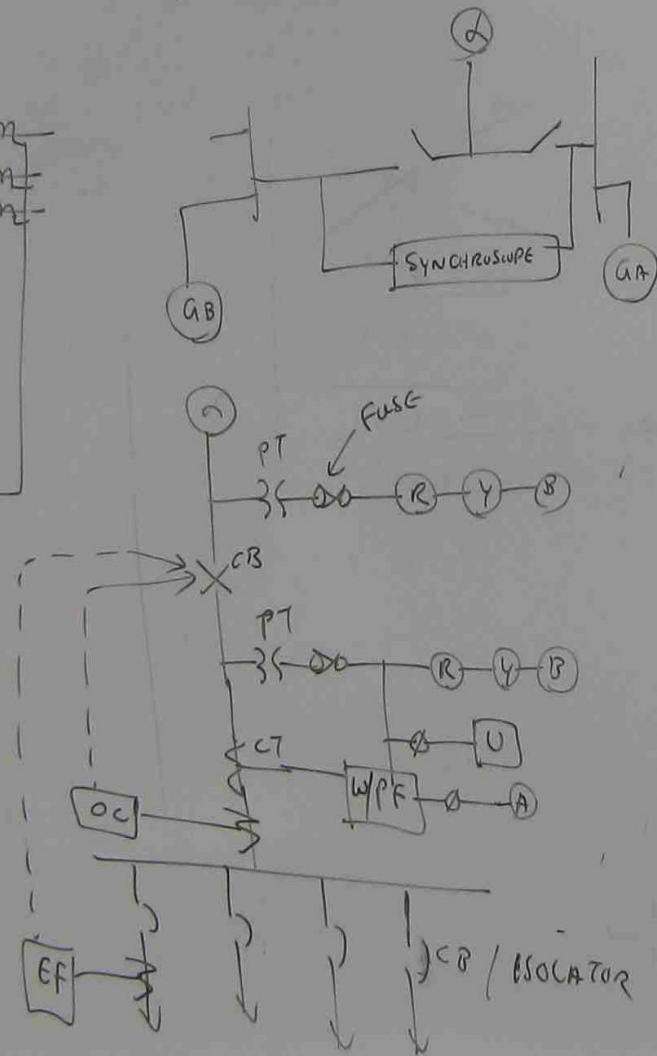
(b) SKETCH THE FOLLOWING
 (i) ARGING WREN (ii) LIGHTNING ARRESTOR (iii) SURGE ABSORBER



7) SKETCH THE BASIC METERING ARRANGEMENT IN SUBSTATION CONSISTING OF SYNCHROSCOPE, VOLTMETER, AMMETER, P.F. METER, EARTH FAULT & OVER CURRENT RELAYS. APPLY CT & PT AS NECESSARY



L_1, L_2, L_3 - LAMPS.



8) EXPLAIN COMBINED HEAT AND POWER SYSTEM.

IN COMBINED HEAT AND POWER SYSTEM, FUEL SOURCE CAN BE NATURAL GAS, FUEL OIL, COAL, WOOD CHIP (OR) BIO GAS ETC.

THE COMBINED HEAT AND POWER (CHP) SYSTEM USES THE FUEL TO PRODUCE ALL OR PARTS OF THE ELECTRICAL ENERGY AND THERMAL ENERGY OUTPUT TO FACILITY.

9) EXPLAIN THE FUEL CELL WITH SKETCH

