

**V-1841**

**B. E. (Eighth Semester) Examination, 2020**

**(For ATKT Students)**

**(Electrical Engg. Branch)**

**(EE-801)**

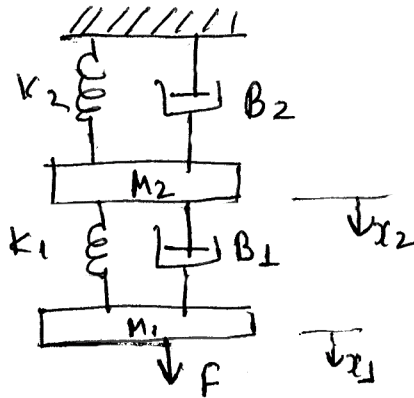
**Paper : First**

**CONTROL SYSTEM**

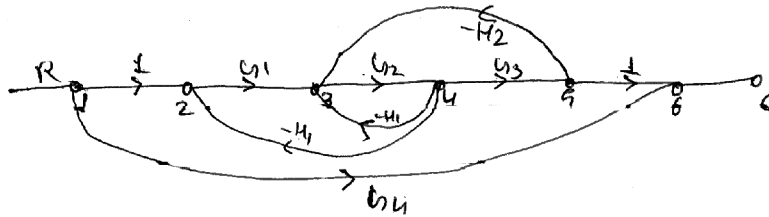
**Maximum Marks : 70**

*Note: Attempt all questions. All questions carry equal marks.*

1. (a) Draw and derive force voltage analogous circuit of following system.



- (b) Determine the transfer function using Mason gain formula.



2. (a) Explain static error coefficient for type-1 system.  
 (b) Derive the expression for second order system fed from step input :  
 (i) Overshoot  
 (ii) Settling time  
 (iii) Rise time
3. (a) What is root locus? Write steps involved in designing of root locus.  
 (b) Determine angle of departure and asymptotic angles of following open loop transfer function.

$$G(s)H(s) = \frac{k}{s(s^2 + 4s + 8)}$$

4. (a) Write the steps to draw polar plot of open loop transfer function.  
 (b) How a stability is determine by Nyquist criterion? Why  $G(s)H(s)$  plane is shifted to  $1 + G(s)H(s)$  plane in Nyquist stability?

5. (a) Sketch the Bode plot for the transfer function

$$G(s) = \frac{1000}{(1 + 0.1s)(1 + 0.001s)}$$

Determine the stability of the system.

- (b) Explain design procedure for phase lead compensation.

## V-1842

### B. E. (Eighth Semester) Examination, 2020

(For ATKT Students)

(Electrical Engineering Branch)

*Paper : Second (EE-802)*

#### POWER SYSTEM PROTECTION

*Maximum Marks : 70*

*Note: Attempt all the five questions. Each question carries equal marks.*

#### Unit-I

1. (a) Explain advantages and disadvantages of per unit system.
- (b) Derive expression for fault current for L-L fault by sequence component. Draw sequence networks for L-L fault.

#### Unit-II

2. (a) What are the advantages of static relays over electromechanical relays?
- (b) Describe the construction, principle of operation and application of a directional over current relay.

#### Unit-III

3. (a) Explain the protection scheme for motors with neat sketch.
- (b) Describe the working of Buchholz relay used for transformer protection.

#### Unit-IV

4. (a) Explain the advantages and disadvantages of SF<sub>6</sub> circuit breaker.
- (b) Describe with the help of neat sketch the construction and working of minimum oil circuit breaker.

#### Unit-V

5. (a) Explain the advantages of numerical relays.
- (b) With reference to static relays, describe the use of the following :
  - (i) Voltage regulator
  - (ii) Smoothing circuit
  - (iii) Time delay circuit

## V-1843

### B. E. (Eighth Semester) Examination, 2020

(For ATKT Students)

(Electrical Engg. Branch)

*Paper : Third (EE-8301)*

#### ADVANCED ELECTRICAL DRIVES

*Maximum Marks : 70*

*Note : Attempt all parts. Each part carries equal marks.*

1. (a) Why we have requirements of Switching strategy in electrical drives?  
(b) What are the elements of Electrical drive systems?
2. (a) Write a short note on Time ration control and Current limit control?  
(b) Derive the expression for dynamic model of DC motor?
3. (a) Explain variable voltage variable frequency control of an induction motor giving it's speed torque characteristics under different modes of operation.  
(b) Write short notes on comparision of V.S.I. and C.S.I. fed induction motor drive.
4. (a) Write and explain the expression for Direct torque and flux for induction motor.  
(b) Draw the phasor diagram of vector control of induction motor.
5. (a) Explain the starting methods of synchronous motor.  
(b) Explain the methods about closed loop simulation of synchronous motor drives.

**V-1844****B. E. (Eighth Semester) Examination, 2020****(For ATKT Students)****(Electrical Engineering Branch)****(EE-8403)*****Paper : Fourth*****E. H. V. A. C & D. C. TRANSMISSION*****Maximum Marks : 70******Note:*** Attempt all questions. All questions carry equal marks.

1. (a) Write short notes on DC links. 2
- (b) What is Graetz circuit? 2
- (c) What are limitation and advantages of AC and DC Transmission? 3
- (d) Compare EHV AC and EHV DC transmission on economic and technical basis. 7
2. (a) What is need for Facts Controller? 2
- (b) What are the causes of reactive power absorbed by HVDC converter sub-station? 2
- (c) Discuss FACTS concept and application. 3
- (d) Describe the basic principle of Thyristor Controlled Phase Shifting Transformer (TCPST). 7
3. (a) What is ground return? 2
- (b) What are harmful effects of AC and DC harmonics? 2
- (c) Explain the principle resonance in shunt filter. 3
- (d) Write a note on Tuned power lines. 7
4. (a) Define delay angle. 2
- (b) Why 400 kV was selected in India? 2
- (c) Explain parallel operation of HVAC and DC system. 3
- (d) Explain the term Extinction angle and its significance in inverter control. 7
5. (a) What is flash back over? 2
- (b) Explain the preventive and protective measures against lightening surges? 2
- (c) Why lightening surges are not decisive in determining clearances of EHV AC lines as against switching surges? 3
- (d) What are travelling waves? Explain attenuation and distortion of travelling waves. 7