

B.E. (Aeronautical Engineering) Sixth Semester (C.B.S.)  
**System Modelling & Simulation Paper – III**

P. Pages : 2

Time : Three Hours

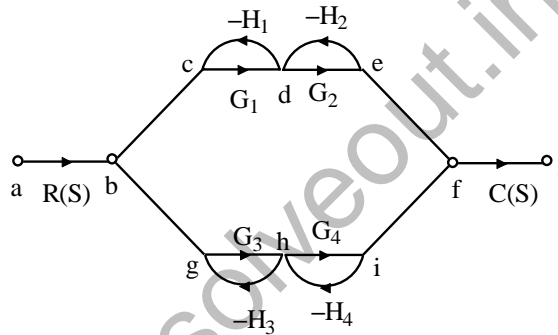


TKN/KS/16/7516

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
  2. Solve Question 1 OR Questions No. 2.
  3. Solve Question 3 OR Questions No. 4.
  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Solve Question 11 OR Questions No. 12.
  8. Due credit will be given to neatness and adequate dimensions.
  9. Assume suitable data whenever necessary.
  10. Diagrams and chemical equations should be given whenever necessary.
  11. Illustrate your answer whenever necessary with the help of neat sketches.
  12. Use of non programmable calculator is permitted.

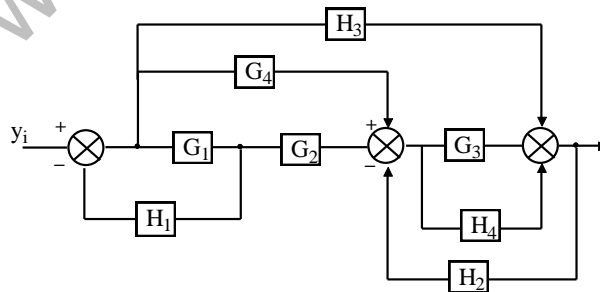
1. a) Find the transfer function of the following signal flow-graph. 8



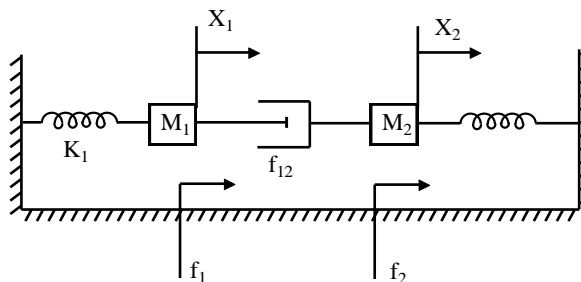
- b) Define signal flow graph. Explain three rules of signal flow algebra. 6

**OR**

2. a) Determine the transfer function  $\frac{C(S)}{R(S)}$  of figure using block reduction techniques. 8



- b) Write differential equations for the mechanical system shown in Fig. below: 6



3. a) What do you mean by stochastic activities explain it in detail. Also write about various types of activities. **7**
- b) Write short notes on the following with an example. **7**  
 i) Entity ii) Attribute
- OR**
4. a) Explain the steps involved in simulation study with the aid of flowchart. **8**
- b) List out various models used in system modeling. **6**
5. a) What are the various types of system studies ? Elaborate the system analysis study by considering part of the corporate model. **7**
- b) Explain full scale corporate model with a block diagram in detail. **6**
- OR**
6. a) Discuss in detail about a model that works on the co-ordination of environment, plant and management segments. **7**
- b) Explain with a neat sketch about management segment. **6**
7. a) Explain control system of power steering mechanism. **5**
- b) i) Explain briefly with schematic & block diagram the working of temperature control system in furnace. **4**  
 ii) Explain pressure control system in steam boiler. **4**
- OR**
8. a) Differentiate between AC & DC servo motors ? **7**
- b) Explain the control system of liquid level control with neat labeled diagram ? **6**
9. a) Define Simulink and state the steps involved with appropriate diagram for building a block. **7**
- b) Write short note on MATLAB with its applications and also write why we are using it ? **6**
- OR**
10. a) What are virtual blocks ? Name different types of block names & the conditions under which block will be virtual. **6**
- b) Write short notes on: - **7**  
 i) Moving block in a model. ii) Duplicating block in a model.
11. a) Write short notes on **any three**. **13**  
 i) VOR System. ii) DME (Distance Measuring Equipment)  
 iii) ILS (Instrument Landing System) iv) LoRaN (Long Range Navigation)
- OR**
12. a) Write short note on an instrument that is used to measure the slant range distance and based on radio signals. **8**
- b) Explain the principle and working of an instrument used for landing purpose of an aircraft. **5**

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