

No. of Printed Pages : 03

Roll No.

H-102

B. Tech. EXAMINATION, Dec. 2017

(Eighth Semester)

(B. Scheme) (Re-appear Only)

(BME)

BME-404-B

BIOLOGICAL CONTROL SYSTEMS

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

(3-27/17)M-H-102

P.T.O.

1. Define state variables. Explain the matrix representation of state equations. Also discuss the relationship between state equations and transfer function. **15**
2. Explain the following terms : **15**
 - (a) Characteristic equation
 - (b) Eigen values and Eigen vectors
 - (c) State transition matrix.
3. Discuss in detail about the controllability canonical form. How the controllability of linear systems can be assessed ? **15**
4. Discuss in detail about the modelling and block diagram of pupil control system. **15**
5. What do you mean by thermoregulation ? Explain the mathematical model of the controlled process of the body. **15**
6. Elaborate the phenomena of modelling the body as compartments. Also discuss the multi-compartmental system with example. **15**

7. Explain the transfer function model of receptors. **15**
8. Discuss the skeletal muscle servomechanism with diagram. **15**