Civil Engineering – questions for test preparation

1. How is the equation

$$a_n(t)x^{(n)} + a_{n-1}(t)x^{(n-1)} + a_{n-2}(t)x^{(n-2)} + \ldots + a_1(t)x' + a_0(t)x = f(t)$$

called?

2. What are the coefficients of the equation

$$a_n(t)x^{(n)} + a_{n-1}(t)x^{(n-1)} + a_{n-2}(t)x^{(n-2)} + \ldots + a_1(t)x' + a_0(t)x = f(t)?$$

3. When is the equation

$$a_n(t)x^{(n)} + a_{n-1}(t)x^{(n-1)} + a_{n-2}(t)x^{(n-2)} + \ldots + a_1(t)x' + a_0(t)x = f(t)$$

homogeneous?

4. What is the order of equation

$$a_n(t)x^{(n)} + a_{n-1}(t)x^{(n-1)} + a_{n-2}(t)x^{(n-2)} + \ldots + a_1(t)x' + a_0(t)x = f(t)?$$

5. What is an initial value problem?

6. What is a fundamental system of a differential equation?

7. What is the Wronskian of an ODE?

8. How can one construct a solution to a differential equation from its fundamental system?

9. What is an ODE with constant coefficients?

10. What is the characteristic polynomial of an ODE with constant coefficients?

11. How is the general solution of an inhomogeneous ODE with constant coefficients constructed?

12. What is a particular solution of an ODE with constant coefficients?