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| **Al-Mustansiriyah University**  **Faculty of Engineering**  **Computers & Software Eng. Dept.**  **undergraduate studies**  **Exam : 1st Semester Exam** |  | **Subject: Control Examination**  **Time: 1.5 Hours (90 min)**  **Date: 03 / 2 /2018** |
| **2017 – 2018 Max.Mark: 15 marks** | | |
| ***NOTE: ANSWER ALL QUESTIONS***  **Q1**: The unit step response of a open loop system is given by;    Find the *G*(*s*) for this system then answer: **a)** what is the order and the type of this O.L. system  **b)** state the complete range of *k* for which the system is stable using root locus.  **Q2:** answer **One** from: **(5 Marks)**  **A)** if the D.E for second order C.L system is: , then:  **i)** Determine the values of ? at *t*=1 sec., If unit impulse input is apply to test this system.  **ii)** Is the output response oscillated?, stable?, Justify your answer.  **B)** Consider the C.L system;    **(i)** Draw the states diagram for this C.L system.  **(ii)** determine the values a, b, c, and if the output time response for the above system is given by the following Equation:    **Q3:** Answer **Two** from following: **(5 Marks)**  **a)** The output of a system is given by , determine the D.E if the input  is unit step,  **b)** Prove the Es.s for a unity f/b system with plant of type two third order (which has a pole at -3 and k=5) if the input .  **c)** For the block diagram shown in Fig.(1). Obtain the overall T.F if G1=G2=s.  **G­1**  **G2**  +  +  -  +  +  +  **R**  **C**  **Fig.(1)** | | |
| **Examiner: Ekhlas Hameed Karam Head of Department:** **Assist.Prof. Nasir Ahmad** | | |