

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, July 2020

Course: Automation & Robotics Engineering

Program: M. Tech

Course Code: ECEG 7005

Semester: II

Time: 03 hrs.

Max. Marks: 100

Instructions:

1. Attempt all the questions (Theory, Numerical, Case study etc.) on A4 size blank sheets.
2. Attempt all questions serially as per question paper.
3. Answer should be neat and clean. Draw a free hand sketch for circuits/tables/schematics wherever required.
4. Scan the whole answer script and check the resolution carefully before upload on the blackboard. Note that answer scripts will be considered for evaluation only through Blackboard. No other mode of submission is acceptable.
5. You are expected to be honest about each attempt which you make to progress in life

SECTION A [Case Based Study/design] 40 Marks

S. No.		Marks	CO
Q 1	Design the pneumatic circuits for the following: (i) To control the motion of a single-acting cylinder. (ii) To control the motion of a double-acting cylinder. (iii) To control the motion of a motor.	20	CO1 & CO2
Q 2	Illustrate and discuss the construction, working, design, and mounting of hydraulic and pneumatic cylinders with the help of neat sketches. OR With the help of a sketch, explain the working of a pneumatic cylinder of double acting type controlled by appropriate flow regulating and control valves.	20	CO3 & CO4

SECTION B [Numerical and Short/broad Answers] 60 Marks

Q 4	With the help of neat diagram explain and design the sequence control circuit.	10	CO4
Q 5	With the help of a neat sketch, show the various parts of hydraulic and pneumatic double-acting cylinders. OR	10	CO3

NOTE : The submission time of the Question Paper Answer Sheet is 24 Hrs from the scheduled time (exceptional provision due to extraordinary circumstance due to COVID-19 and due to internet connectivity issues in the far-flung areas).

No Submission will be entertained after 24 Hrs

	Illustrate the types of motors and list the parameters for motor ratings for industrial process.		
Q 6	Draw the symbols of following: (i) Check Valve (ii) Sequence Valve (iii) Counterbalance Valve (iv) Time Delay Valve (v) Twin Pressure Valve (vi) Shuttle Valve	10	CO 4
Q 7	Draw a basic block of a circuit showing the reservoir, accessories, pressure relief valve, and the pump and tank lines.	5	CO1
Q 8	Compare and discuss the distinct types of compressors.	5	CO4
Q 9	Elucidate venturi effect. Give the name of important pneumatic equipment, which uses this principle.	5	CO2
Q 10	With the help of proper diagram differentiate between an open center and a closed center type of directional control valve.	5	CO3
Q 11	Elucidate the difference between LVDT and RVDT with the help of proper circuit diagram.	5	CO1
Q 12	Compare hard automation with soft automation and list the strategies for automation	5	CO2

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