


Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2019

Programme Name: B.Tech- ASEA

Semester : V

Course Name : Measurements and Instruments

Time : 03 hrs

Course Code : ECEG 3015

Max. Marks : 100

Nos. of page(s) : 02

Instructions:

SECTION A

All the questions in this section are compulsory

S. No.		Marks	CO
Q 1	Describe with neat sketches the following type of primary detecting elements. a) Bourdon Tubes b) Bellows c) Diaphragms	5	CO3
Q 2	Explain the following with examples a) Accuracy b) Precision	5	CO1
Q 3	Explain the key components of Data Acquisition System	5	CO3
Q 4	Describe different parts of CRO	5	CO4

SECTION B

Answer all the questions in this section are compulsory

Q 5	Define the following with respect to measurements: a. Hysteresis b. Linearity c. Threshold d. Sensitivity e. Noise	10	CO1
Q 6	List and Explain the working of electro-magnetic transducers used for measurement of linear velocity with a neat sketch and list out the advantages and disadvantages	10	CO2
Q 7	Explain the working of Pitot Static Tube, discuss all the significant advantages and disadvantages	10	CO3

Q8	<p>A sample of metal, temperature versus resistance has following measured values</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>T(°F)</th> <th>R(Ω)</th> </tr> </thead> <tbody> <tr> <td>60</td> <td>106.0</td> </tr> <tr> <td>65</td> <td>107.6</td> </tr> <tr> <td>70</td> <td>109.1</td> </tr> <tr> <td>75</td> <td>110.2</td> </tr> <tr> <td>80</td> <td>111.1</td> </tr> <tr> <td>85</td> <td>111.7</td> </tr> <tr> <td>90</td> <td>112.2</td> </tr> </tbody> </table> <p>Calculate the linear approximation of resistance versus temperature between 60°F and 90°F.</p>	T(°F)	R(Ω)	60	106.0	65	107.6	70	109.1	75	110.2	80	111.1	85	111.7	90	112.2	10	CO4
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SECTION-C																			
Q9	<p>Explain the construction of a linear variable differential transformer. Explain how the magnitude and direction of the displacement of core of an LVDT detected</p> <p style="text-align: center;">Or</p> <p>Describe the working and construction of of resistance thermometers. Describe the materials used for RTDs, along with properties. Sketch their typical characteristics</p>	20	CO5																
Q10	<p>How does a GPS work and how is it interfaced with ATMEGA 32. Elaborate in detail the following with respect to GPS</p> <ol style="list-style-type: none"> a. What is NMEA data? b. Explain \$GPGGA string c. Write a Flow chart for extracting GPGGA String 	20	CO5																

