


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022			
Course: Research Methodology Program: M.Sc. (Chemistry/Physics) Course Code: PHYS 8020		Semester: III Time : 03 hrs. Max. Marks: 100	
Instructions: Not Applicable			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	a) Define the term 'Research statement'. b) Differentiate between copyright and trademark.	2 x 2 = 4	CO1
Q 2	Draw a Research process flowchart highlighting the importance of research design.	4	CO1
Q 3	Illustrate the layout of a Research report.	4	CO3
Q 4	Comment on the sources of sampling errors in data measurement.	4	CO2
Q 5	The procedure of testing hypothesis requires a researcher to adopt several steps. Describe in detail all the steps involved in hypothesis testing.	4	CO2
SECTION B (4Qx10M= 40 Marks)			
Q 1	Define skewness in the data and discuss a common method of measuring it.	4 + 6 = 10	CO2
Q 2	Clarify how patents serve as an exclusive right to the applicant.	10	CO1
Q 3	Discuss a Least Square Estimation model for regression analysis.	10	CO3
Q 4	Compare Karl Pearson's coefficient and Spearman's coefficient. OR Explain a method to test the hypothesis for mean.	10	CO2
SECTION-C (2Qx20M=40 Marks)			
Q 1	a) Briefly describe Path Analysis as a multivariate technique.	2 x 10 = 20	CO3

	<p>b) Write a short note on the usage of ANOVA in linear regression analysis.</p> <p style="text-align: center;">OR</p> <p>a) Elaborate the features of a Research report. b) Illustrate the importance of bibliography in context with Research report.</p>		
Q 2	<p>a) Highlight the common characteristics of IPR. b) Discuss different Research designs in detail.</p>	2 x 10 = 20	CO1