

## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program/course: M.Tech PE  
Subject: Statistical Methods in Geosciences  
Code : MATH 804  
No. of page/s: 2

Semester – III  
Max. Marks : 100  
Duration : 3 Hrs

### Section-A

Answer all questions

- [5X4=20]
1. Explain the term 'degree of freedom' [5]
  2. What do you mean by binomial distribution [5]
  3. Differentiate between Q-Q plot and normal Q-Q plot [5]
  4. Write in brief on stratified kriging [5]

### Section – B

Answer all questions

- [5X12=60]
5. . Two weighing machine 'A' and 'B' have been used to measure the same sample which has an ideal weight of 150 gm. After multiple measurements it was found that there is slight variation in the readings in both machines as given in Table. Which machine is more accurate and why? [12]

Machine A	Machine B
150.2	150.1
150.3	149.5
149.5	150.2
150	150.1
150.4	149.7
149.6	150.4

6. Geoscientic investigation of last 50,000 years has reveals that there is rate of occurrence of 1 earthquake in 100 years long interval. Find out the probability of occurrence of 0, 2, 3 earthquakes in a time span of 100 years. [12]

7. Write a short note on a) Spline method b) correlation coefficient [12]
8. Discuss in detail on conditional simulation and its characteristics [12]
9. Explain in detail on 'F-test' hypothesis. How this hypothesis is useful in hydrocarbon exploration? [12]

OR

Explain in detail on 't-test' hypothesis. How this hypothesis is useful in hydrocarbon exploration? [12]

**Section – C**

**Answer all questions**

**[1X20=20]**

10. Discuss in detail about the theory of ordinary kriging with suitable example. Explain in brief on other forms of kriging [13+7]

OR

Explain in detail on IDW and polynomial method of interpolation. What is the difference between exact and inexact method of interpolation? [18+2]

\*\*\*\*END\*\*\*\*