ELIZADE UNIVERSITY
FACULTY OF BASIC AND APPLIED SCIENCES
DEPARTMENT: PHYSICAL AND CHEMICAL SCIENCES
PROGRAMME: APPLIED GEOPHYSICS **EXAM TITLE: DEGREE EXAMINATION**
COURSE CODE & TITLE: AGP 419 – GEOPHYSICAL TIME SERIES ANALYSIS

TIME ALLOWED: 2 hrs **SEMESTER/SESSION: FIRST / 2020/2021**

INSTRUCTIONS: Write your matriculation number on the cover page of the exam booklet.

HOD's SIGNATURE

Attempt any four (4) questions

1 (a) Consider a filter with impulse response (2, -1, 1, 3, -2), evaluate the system using geometric operation of sliding assuming input (1, -1). Use graph to explain the convolution operation.

(b) Explain the importance of unit impulse in system analysis. Use sketches to illustrate your answer.

15 Marks

2 For a set of signals with inputs 100 Hz, 200 Hz, 250 Hz and 300 Hz Hz sampled at 2 msec, 4 msec and 8 msec, determine for each input (i) Output (ii) Maximum recoverable frequency and (iii) Alias

15 Marks

3 (a) The earth is a filter. Explain using diagram(s).

(b) Using z - Transform, finds the following convolution: (2, -1)* (4, 3, 2, 1)

15 Marks

4 (a) Write briefly on the following:

i. Nyquist Frequency ii. Dynamic range iii. Linear Phase Shift

(b) Describe the effect of time shift on the phase and symmetry of a typical wavelet

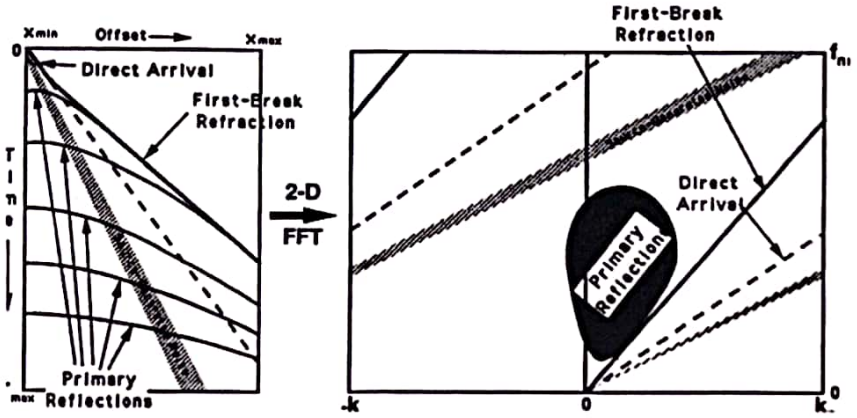
15 Marks

5 (a) Assume an analogue function is recorded by a digital system. Discuss the determining factors for a proper reproduction of the original function.

(b) Highlight the importance of time series analysis in reflection seismology.

15 Marks

6 (a) The figure below is a T-X and F-K plane. Describe how the figure can be used to enhance the signal-to-noise ratio.



(b) Explain using diagram the term "Fourier Transform"

15 Marks