

UNIVERSITY OF KERALA

SCHOOL OF DISTANCE EDUCATION

SEMESTER II M.Sc. Mathematics Assignment/Case analysis

Real Analysis II MM222

- 1) Give an example of a function such that $|f|$ is measurable but f is not
- 2) Show that a measurable function of a continuous function is not necessarily measurable
- 3) Find the cardinality of the class of measurable function
- 4) Show that $\int_0^1 f_n(x) dx = 0$, where $f_n(x)$ is
 - i) $\frac{\log_{(x+n)} e^x}{n} \cos x$
 - ii) $\frac{nx}{1+n^2x^2}$
 - iii) $\frac{nx \log x}{1+n^2x^2}$
- 4) Give an example where $F' = f$ does not hold even when F' exist
- 5) Describe the ring generated by the finite open intervals.
- 6) If $f \in L(X, \mu)$ and g is measurable function such that $|g| \leq k|f|$; a.e where k is a constant, then $g \in L(X, \mu)$
- 7) Let $f_n \in L^2(a, b)$, $n=1,2,3,\dots$ $f \in L^2(a, b)$ and $\lim \|f_n - f\|_2 = 0$
Show that $\int_a^b f^2 dx = \lim \int_a^b f_n^2$
8. Show that if $f_n \rightarrow f$ in measure and $g_n \rightarrow g$ in measure, then
 $f_n + g_n \rightarrow f + g$

Assignment Questions

M.Sc . Mathematics S2

Computer Programming in C++ MM224

1) Write algorithm and programming in C++ for the following

i) Product of two matrices of any order

ii) Inverse of a square matrix

iii) Bisection method

iv) Newton –Raphson’s method

v) Sorting of name list

vi) To sort the numberlist in ascending order

vi) Display the name of a day in week

vii) Factorial of a number using the concept of function

viii Find nC_r using the concept of function