Ministry of Higher Education
& Scientific Research
Muthanna University
College of Science
Department of Mathematic
4 Com. application

Subject: Foundation mathematics II
Stage: first
Date: / /2017
Time :

10. 06. 2017

((Assessment of the final exam for the second semester))
Academic year 2016 -2017

45

Remark\\Twelve mark for every question and six mark for every branch.

Q1\ A\Define and give example with it is solution for the following terms:
1-Semi-group 2- Great common divisor 3- Prime number

B\ Let $(P(x),*,\#)$ is a mathematical system which defined by:
(1) $A\#B = A \cap B$ (2) $A*B = A \cup B$ for all $A,B \in P(x)$. Does $(P(x),*,\#)$ is number system?

Q2\ A\ Prove that the mathematical system $(Z,+)$ is a belain group s.t $a+b=[m+p,n+q]$ For all $a,b \in Z$ and $a=[m,n]$ and $b=[p,q]$.

B\ Let $f(n)=a^n-1$, $n>1$. Then $f(n)$ is prime only if $a=2$ and n is prime.

Q3\ A\ Prove that the mathematical system $(Q,\leq)$ is totally ordered set.

B\ If $(x,a)=1$ and $(x,b)=1$ then $(x,ab)=1$.

Q4\ A\Prove that the mathematical system $(Q,+,.)$ is a field of rational number.

B\ Let z,w are two complex number. Then $|z+w| \leq |z|+|w|$.

Q5\ A\ Cube of any integer is of the form $9K, 9K \mp 1, 9K+8$.

B\ Two integers a and b, both not zero are relatively prime iff $1=ax+by$ for some $x,y \in Z$.

Best of luck