Name ....   HA.... row .... col....

1 .	2 .	3 .	4 .	$\sum$

1.(2p) Write the mathematical formulas corresponding to the following statements with the help of the following signs only: propositional connectives, quantifiers, variables varying through set $\mathbb{N}$ and symbols indicated in brackets: *between any two squares there is an even number* $(\cdot, +, =, <)$

2.(1p) Proof or disproof. Variables vary through the set $\mathbb{R}$. $\forall x \forall y \exists z \; x \cdot z = y$.

3.(2p) Proof by induction

$\frac{1}{1\cdot 2} + \frac{1}{2\cdot 3} + \frac{1}{3\cdot 4} + \ldots + \frac{1}{n(n+1)} = \frac{n}{n+1}$

4.(3p) Exhibit truth table for the given formula. Transform the formula into DNF form (e.i. $(x_1 \wedge x_2 \wedge x_3) \vee (..)... \vee (...)$ where x_i is variable or its negation)

$$[(q \vee \sim r) \Rightarrow (p \wedge \sim r)] \Rightarrow [(\sim q \Rightarrow p) \wedge r]$$

Name .... HA.... row .... col....

1 .	2 .	3 .	4 .	$\sum$

1.(2p) Write the mathematical formulas corresponding to the following statements with the help of the following signs only: propositional connectives, quantifiers, variables varying through set $\mathbb{N}$ and symbols indicated in brackets: *between any two even numbers there is an odd number* $(\cdot, +, =, <, 1)$

2.(1p) Proof or disproof. Variables vary through the set $\mathbb{R}$. $\forall z \exists y \exists x \; x \cdot z = y$.

3.(2p) Proof by induction

$\frac{1}{1\cdot 3} + \frac{1}{3\cdot 5} + \frac{1}{5\cdot 7} + \ldots + \frac{1}{(2n-1)(2n+1)} = \frac{n}{2n+1}$

4.(3p) Exhibit truth table for the given formula. Transform the formula into DNF form (e.i. $(x_1 \wedge x_2 \wedge x_3) \vee (..)... \vee (...)$ where x_i is variable or its negation)

$$[(p \vee \sim r) \Rightarrow (q \wedge \sim r)] \Rightarrow [(\sim p \Rightarrow q) \wedge r]$$