n^2 $N(3)+$

/rite in brief, what went /rong in the examination.	n^2 ✓		
ion No :	Mistake Code :	Status :	Concept Involved :

Converse → $q \to p$

Inverse → $\sim p \to \sim q$.

Contrapositive → $\sim q \to \sim p$.

/rite in brief, what went /rong in the examination.	Logically Equivalence → if $p \leftrightarrow q$ is tautology.		
ion No :	Mistake Code :	Status :	Concept Involved :

$$\left.\begin{aligned} p \wedge (p \vee q) &\equiv p \\ p \vee (p \wedge q) &\equiv p \end{aligned}\right\} \text{Absorption laws.}$$

$$p \leftrightarrow q \equiv (p \to q) \wedge (q \to p) \equiv (\sim p \vee q) \wedge (\sim q \vee p)$$

$$\equiv (p \wedge q) \vee (\sim p \wedge \sim q)$$

te in brief, what went ng in the examination.	Usefulness of Logic:

* More precise than natural language.

es please refer to the code index.
carry this booklet in each test analysis session.

* Used in hardware or Software specification or verification.

Signature of the subje

Test Details : ....

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Date : ....

Question No :	Mistake Code :	Status :	Concept Involved :

SAT → Determines a statement in PL is satisfiable

↳ CNF (so that we can reject the sentence easily)

Normal Forms:

Given two compound proposition, A, B are logically equalent

Write in brief, what went wrong in the examination.	reduce A and B to store standard forms called normal forms and decide

Question No :	Mistake Code :	Status :	Concept Involved :

- To determine a compound proposition $A(P_1, P_2 \ldots)$ where $P_1, P_2 \ldots$ are variables is tautology, contradiction or satisfiable

Elementary Product → A product of variable

Sum → Sum of variables

Write in brief, what went wrong in the examination.	DNF → Sum of EPs CNF → Product of ESs

Question No :	Mistake Code :	Status :	Concept Involved :

MINTERM → product of each variable appears exactly

SOP - we use MINTERM.

MAXTERM → Sum of each variable " "

POS - we use MAXTERM

Write in brief, what went wrong in the examination.	MINTERMS ARE DUALS OF MAXT

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p→q.

Date : ....

Test Details : ....

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Question No :	Mistake Code :	Status :	Concept Involved :

PCNF → POS (or) conjunction of Minterms.

PDNF → SOP (or) Disjunction of Minterms

Conversion

DNF → PDNF :

• Find DNF

Write in brief, what went wrong in the examination.

• Missing terms – Negation law ($P \vee \sim P \equiv T$)

then distributive law.

Question No :	Mistake Code :	Status :	Concept Involved :

• Identical Minterms are deleted.

A function that contains 2^n minterms is equal to logical 1.

Argument → A sequence of statements the ends with a conclusion

Write in brief, what went wrong in the examination.

Question No :	Mistake Code :	Status :	Concept Involved :

Law of Detachment → modes ponens

Method of denying → modus tollens

Chain rule → Hypothetical Syllogism.

Write in brief, what went wrong in the examination.

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Test Details : Types of Inference : Date :

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Question No :	Mistake Code :	Status :	Concept Involved :

Deduction → Valid deduction guarantee the truth of the conclusion

~~Ab~~ Induction → Truth of the conclusion is not guaranteed

Abduction → Inference based on the best explaination.

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Logical Inference : → Create new sentences that logically follow from a set of (KB) sentences.

Sound → inference rule cretes no contradiction.

Complete → All valid statements can be proved.

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Application of Inference :

→ Check validity of an argument.

→ direct proof

→ set of given specification is consistent or not

Write in brief, what went wrong in the examination.	

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Test Details : .... Date : ....

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Question No :	Mistake Code :	Status :	Concept Involved :

Inconsistent Specification :

→ A set of specification $S_1, S_2 \dots S_n$ is said to be inconsistent if their conjunction implies ~~false~~ contradiction

Write in brief, what went wrong in the examination.

Question No :	Mistake Code :	Status :	Concept Involved :

Proof by contradiction ⟶ Reductio ad Absurdum

FOL :

- First order logic
- Expressive enough to represent this kind of information using relations, variables and quantifiers.

Write in brief, what went wrong in the examination.

Question No :	Mistake Code :	Status :	Concept Involved :

PL is a weak KR language

Hard to Identify individuals.

→ Generalisation, patterns, regularities cant easily be represented

Write in brief, what went wrong in the examination.

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Chat(x,y)   (person(x) → chat(x,y))   ∀x∀y(∃x∀y (~~person~~ chat(x,y)

y = V;
x = Person

Test Details : .... Date : ....

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Question No :	Mistake Code :	Status :	Concept Involved :

valid Sentence → True in all worlds under all Interpretations.

Quantifiers:

Allows us to quantify how many objects in the UOD satisfy a given predicate

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

like(x,y)

x → y   → is

∀x∃y (pes

Instantiation → $\forall x P(x) \therefore P(c)$
$\exists x P(x)$ –

Generalisation → ~~$\forall x P(x)$~~
$\therefore P(c)$
$\forall x P(x)$

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Formula → Prenex Normal Form

- Eliminate →, ↔
- ~~Invo~~ Involution (push Negation), Demorgans.
- If there are name conflicts across scope, solve renaming.
- Equivalence laws.

Write in brief, what went wrong in the examination.	

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Test Details : .... Date : ....

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examina...

Question No :	Mistake Code :	Status :	Concept Involved :

~~$\forall x \exists y P$~~

$\forall x \exists y$

Skolem Constant

$\exists x \forall y \forall z\,[A(x,y,z) \wedge Q(x)]$

$x = c \quad \forall y \forall z\,[A(x,y,c) \wedge Q(c)]$

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Skolem Function:

$\forall x \forall y \exists z\,[A(x,y,z) \wedge Q(y,z)]$

$z = f(x,y) \quad \forall x \forall y\,[A(x,y,f(x,y)) \wedge Q(y,f(x,y))]$

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Skolemization -

Technique to convert a FOL sentence F into F' in prenex normal form with universal quantifier such that F is satisfiable iff F' is satifiable.

Write in brief, what went wrong in the examination.	

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~~P~~ $p \to q, \neg q$ ~~p~~ ~~P~~ $\neg p$ ~~Modus~~

Test Details : .... Date : ....

Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Question No :	Mistake Code :	Status :	Concept Involved :

Unification:

The process of finding all legal substitutions that make logical expressions look identical.

king (x) and king(John) x/John.

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Disjunctive Syllogism:

$((p \vee q) \wedge \sim p) \to q$.

Trivial Proofs:

If q is true, $p \to q$ is true.

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Vacuous:

If p is false, $p \to q \to$ true

Direct:

hypothesis $\to$ conclusion.

Write in brief, what went wrong in the examination.	

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Please solve the Questions which you couldn't solve / Solved Wrongly / Guessed in the Examination

Question No :	Mistake Code :	Status :	Concept Involved :

Contrapositive

$p \to q \equiv \sim q \to \sim p$.

Conclusion is false, then assumption implies = is false

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Contradiction :

assume the statement is false.

Proof by cases

Prove n^2+3n+7 is even

(i) n = even,

(ii) n = odd

Write in brief, what went wrong in the examination.	

Question No :	Mistake Code :	Status :	Concept Involved :

Write in brief, what went wrong in the examination.	

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