

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

M.A./M.Sc. FOURTH SEMESTER EXAMINATION, JUNE 2022

SECOND YEAR (BATCH 2020-22)

Date : 14/06/2022

PHILOSOPHY

Time : 11.00 am – 1.00 pm

Paper : XVI [CC16] [Logic]

Full Marks : 50

Unit - I

1. symbolize using variables, quantifies etc. **any four** of the following: [4×1.5]
 - a) There are no mermaids.
 - b) Everyone loves.
 - c) Nothing attracts anything.
 - d) God helps those who help themselves.
 - e) There are exactly two artists.
 - f) Allen loves only musicians.
 - g) No one learns anything unless he teaches it to himself.
 - h) Sudip is the brightest student in the class.
2. Construct formal proof of validity for the following arguments: [**any three**] [3×3]
 - a) Each person resembles himself. Therefore, each person resembles some person or other.
 - b) Only a fool, would lie about one of Bill's fraternity brothers to him. A Classmate of Bill's lied about Al to him. So, if none of Bill's classmates are fools, Al is not a fraternity brother of Bill.
 - c) $(x)[Mx \supset (y)(Ny \supset Oxy)]$
 $(x)[Px \supset (y)(Oxy \supset Qy)]$
 $\therefore (\exists x)(Mx.Px) \supset (y)(Ny \supset Qy)$
 - d) Everything on my desk is a masterpiece. Anyone who writes a masterpiece is a genius. Someone very obscure wrote some of the movels on my desk. Therefore, some very obscure person is a genius.
 - e) There is a teacher who is liked by every student who likes at least one teacher. Every student like some teacher or other. Therefore, there is a teacher who is liked by all students.
 - f) No one respects a person who does not respect himself. No one will hire a person he does not respect. Therefore, a person who respects no one will never be hired by anybody.
3. Prove the validity of the following enthymemes adding obviously true premises where necessary. [**any two**] [2×4]
 - a) Ramesh is older than Mahesh. Mahesh is older than Suresh. Therefore, Ramesh is older than Suresh.
 - b) Every boy at the party danced with every girl who was there. Therefore, every girl at the party danced with every boy who was there.
 - c) All Olympic champions have gold medals. Therefore, some sportsmen have metal medals.
 - d) Bill cannot be the father of John, since John is the grandfather of Bill
4. Prove the validity of the following arguments using the identity symbol (**any two**) [2×3.5]
 - a) Any fish can swim faster than any smaller one. Therefore, if there is a largest fish, then there is a fastest fish.

- b) Marco Polo was the only Spaniard who visited China. The discoverer of Peru was a Spaniard and he visited China. Therefore, Marco Polo was the discoverer of Peru.
- c) John has exactly one child. Therefore, if Bill and Don are children of John then Bill and Don are the same person.
- d) The architect who designed Tappan Hall designs only office buildings. Therefore Tappan Hall is an office building.
5. Construct demonstrations for the following (**any two**) [2×2.5]
- a) All totally reflexive relations are reflexive.
- b) All asymmetrical relations are irreflexive.
- c) $(\exists y)(Fy \supset (\forall x)Fx)$
- d) $(\forall x)[Fx \supset (\exists y)(x = y \cdot Fy)]$

Unit - II

6. Test the following inferences for validity by the tree method. [**any three**] : [3×4]
- a) Everyone loves every lover. Therefore, every lover loves everyone.
- b) $a \neq b \neq c$
 $\therefore \neg(a = b = c)$
- c) $(\exists x)(y)(Py \leftrightarrow y = x)$
 $\therefore (\exists x)[Px \& (\forall y)(Py \rightarrow y = x)]$
- d) Jupiter is the largest planet. Earth is a planet other than Jupiter. So, some planet is larger than earth.
- e) Everyone loves exactly one other person. Therefore, everyone loves exactly one person.
- f) Bert is the man who made a foul. Jones is the man who got a red card. Anyone who made a foul got a red card. Therefore, Bert and Jones are the same person.
7. Determine by the tree method whether the following statements are logical truth (**any one**) : [1×3]
- a) $(\exists x)[Px \& (\forall y)(Py \rightarrow y = x)] \rightarrow (\exists x)(y)(Py \leftrightarrow y = x)$
- b) If everything exists then something exists.

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