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B.A. RNLKWC-/CC9/22

2022

PHILOSOPHY

(B.A. Fourth Semester End Examination -2022)

PAPER - CC9

Full Marks : 60

Time : 3 hours

*The figures in the right-hand margin indicate marks.
Candidates are required to give their answers in their own
words as far as practicable.
Illustrate the answers wherever necessary.*

Group-A

Answer any ten of the following.

2×10=20

1. Using the dot, the Wedge, the curl determine which of the following statements are true :
 - (i) Rome is the capital of Italy \vee Rome is the capital of Spain.
 - (ii) \sim (London is capital of England. Stockholm is the capital of Norway)

(Turn Over)

(2)

2. If A, B, C are true and x,y,z are false, which of the following are true
(i) $\sim A \vee B$ (ii) $(A \cdot X) \vee (B \cdot Y)$
3. Construct of formal proof of validity, just using two steps.
(i) $A \supset \sim A / \therefore \sim A$ (ii) $B.(C \cdot D) / \therefore C.(D \cdot B)$
4. What is Argument? Give an example.
5. What is Argument form? Give an example.
6. If " $\sim \sim P$ " is False then what is the Truth value of 'P'?
7. If "P is true then what is the truth value of ' $\sim \sim P$ '.
8. Explain truth table of conjunctive Truth-function.
9. Explain truth table of Disjunctive Truth-function.
10. Explain truth table of Implicative Truth-function.
11. Use truth tables to decide which of the following statment forms are Tautologous, self-contradictory, or contingent.
(i) $(p \cdot q).(p \vee q)$ (ii) $\sim (p \cdot q) \vee \sim (q \cdot p)$
12. Use truth tables do decide which of the following biconditionals are tautologies.
(i) $(p \supset q) \equiv (\sim p \supset \sim q)$ (ii) $(p \cdot q) \equiv (p \vee q)$
13. What is compound Argument? Give an example.

(3)

14. Translate into logical notation and use quantifiers
(i) Sparrows are not mammals
(ii) Reporters are present.
15. Explain Four Propositions A,E,I,O with quantifiers.

Group - B

Answer any four of the following : 5×4=20

16. Show the "Justification" of the following formal proof of validity
(i)
 1. A.B
 2. $(A \vee C) \supset D / \therefore A.D$
 3. A
 4. $A \vee C$
 5. D
 6. A.D(ii)
 1. $(E \vee F).(G \vee H)$
 2. $(E \supset G).(F \supset H)$
 3. $\sim G / \therefore H$
 4. $E \vee F$
 5. $G \vee H$
 6. H
17. Construct a formal proof of validity using three steps.
(i) $A \vee (B \supset A)$ (ii) $(D \vee E) \supset (F \cdot G)$
 $\sim A.C / \therefore \sim B$ $D / \therefore F$
18. (i) Construct a formal proof of validity using the abbreviations suggested. If either Jiban or Hari wins,

(4)

then both Jane and Kenneth lose. Jiban wins.
Therefore, Jane loses (G=Jiban wins; H=Hari wins,
J=Jane loses; K=Kenneth loses)

(ii) Either the manager didn't notice the change or else he approves of it. He noticed it all right. So he must approve of it (N.A)

19. Use truth tables to determine the validity or invalidity of each of the following arguments :

(i) $(A.B) \supset (A \vee B)$ (ii) $(C \vee D) \supset (C.D)$

A.B

C.D

$\therefore A \vee B$

$\therefore C \vee D$

20. If A, B, C are True, x, y, z are False, which one is true:

(i) $[x \vee (y.z)] \vee \sim [(x \vee y).(x \vee z)]$

(ii) $[A \vee (B \vee C)] \cdot \sim [(A.B) \vee C]$

21. Construct a formal proof of validity of the following argument :

All dancers are exuberant some fencers are not exuberant,

(5)

therefore, some fencers are not dancers (Dx, Ex, Fx)

22. Which are the valid arguments ?

(i) If $p \supset q$

p

$\therefore q$

(ii) If $p \supset q$

q

$\therefore p$

(iii) If $p \supset q$

$\sim q$

$\therefore \sim p$

(iv) If $p \supset q$

$\sim p$

$\therefore \sim q$

Group - C

Answer any two of the following :

10×2=20

23. Construct a formal proof of validity of the following arguments :

(i) $A \supset B$

$A \vee (C.D)$

$\sim B. \sim E$

$\therefore C$

(iii) $A \supset B$

$C \supset D$

$A \vee C$

(ii) $(F \supset G).(H \supset I)$

$J \supset K$

$(F \vee J).(H \vee L)$

$\therefore G \vee K$

(iv) $(Q \supset R).(S \supset T)$

$(U \supset V).(W \supset X)$

$Q \vee U$

(6)

$\therefore (A.B) \vee (C.D)$

$\therefore R \vee V$

24. Prove the invalidity of the following

(i) $A \supset B$

(ii) $\sim (E.F)$

$C \supset D$

$(\sim E, \sim F) \supset (G.H)$

$A \vee D$

$H \supset G$

$\therefore B \vee C$

$\therefore G$

(iii) $M \supset (N \vee O)$

(iv) $A \equiv (B \vee C)$

$N \supset (P \vee Q)$

$B \equiv (C \vee A)$

$Q \supset R$

$C \equiv (A \vee B)$

$\sim (R \vee P)$

$\sim A$

$\therefore \sim M$

$\therefore B \vee C$

25. Construct a formal proof of validity of each of the following arguments :

(i) $(x) (Ax \supset \sim Bx)$

$(\exists x)(Cx.Ax) / \therefore (\exists x)(Cx.\sim Bx)$

(ii) $(x) (Dx \supset \sim Ex)$

$(x) (Fx \supset Ex)$

$\therefore (x) (Fx \supset \sim Dx)$

(iii) $(x) (Gx \supset Hx)$

$(x) (Ix \supset \sim Hx)$

(7)

$\therefore (x) (Ix \supset \sim Gx)$

(iv) $(x) (Fx \supset Gx)$

$(\exists x) (Fx.\sim Gx)$

$\therefore (\exists x) (Gx.\sim Fx)$

26. Prove invalidity of the following:

(i) $(x) (Dx \supset \sim Ex)$

$(x) (Ex \supset \sim Fx)$

$\therefore (x) Fx \supset \sim Dx$

(ii) $(\exists x) (Ax.Bx)$

$(\exists x) (Cx.Bx)$

$\therefore (x)(Cx \supset \sim Ax)$

(iii) $(x) (Gx \supset Hx)$

$(x) (Gx \supset Ix)$

$\therefore (x) (Ix \supset Hx)$

(iv) $(\exists x) (Mx.Nx)$

$(\exists x)(Mx.Ox)$

$\therefore (x)(Ox \supset Nx)$