

Agnihotri Engineering & GATE Classes

Scripting success stories

UNIT-5TH - ASSIGNMENT ON BOOLEAN ALGEBRA

Q.1) State whether following are Tautologies or contradiction?

a) $\sim \{(\sim p) \wedge (\sim q)\} \Leftrightarrow (p \vee q)$;

b) $\{p \wedge (p \Rightarrow q)\} \Rightarrow q$;

c) $(p \vee q) \wedge \{p \vee (\sim q)\} \wedge \{(\sim p) \vee q\} \wedge \{(\sim p) \vee (\sim q)\}$

d) $[(p \wedge q) \vee \{q \wedge (\sim r)\}] \Leftrightarrow [\{(\sim p) \wedge r\} \vee \{(\sim q) \wedge (\sim r)\}]$

e) $\sim \{p \wedge (\sim q)\}$;

f) $[(p \Rightarrow q) \wedge (q \Rightarrow r)] \Rightarrow (p \Rightarrow r)$

Q.2) Prove the following

a) $(a+b).(a'+c) = (a.c)+(a'.b)$, $\forall a,b,c \in B$

b) $a.b+a.b'+a'.b+a'.b'=1$, $\forall a,b,c \in B$

c) $p.q.r+p.q.r'+p.q'.r+p'.q.r=p.q+q.r+r.p$, $\forall p,q,r \in B$

Q.3) State & Prove DeMorgan's Theorem ?

Q.4) Express the following functions into disjunctive normal form:

a) $x.y$ b) $x+x'.y$ c) $f(x,y,z)=x.y'+x.z+x.y$ d) $f(x,y,z)=(x+y+z).(xy+x'z)'$

e) $(x.y'+x.z)'+x'$ f) $(x+y)(x+y')(x'+z)$ g) $(x'+y)'.(x+z)'+(y.z)'$

Q.5) Express the following functions into conjunctive normal form:

a) $f(x,y)=x+x'y$ b) $f(x,y,z)=xy'+xz+xy$ c) $(x+y+z)(xy+x'z)'$

d) $(x+y)(x+y')(x'+z)$

Classes on (ED,BEEE,M1,M2,M3,NA,CONTROL,DSP & other GATE oriented Engineering Subjects)

By :- Agnihotri sir (7415712500) Infront C.M. House, Sherpura , Vidisha

Download GATE syllabus & Ebooks at AEGC site www.aegc.yolasite.com & follow us at www.facebook.com/aegcsumit

ANSWERS

Ans.1 a) T b) T c) F d) F e) T f) T

Ans.3 a) $xyz+xyz'$ b) $xy+xy'+x'y$ c) $xyz+xy'z+xyz'+xy'z'$
d) $xy'z+xy'z'+x'yz'$ e) $x'yz+x'yz'+x'y'z+x'y'z'+xyz'$ f) $xyz+xy'z$
g) $xy'z+xy'z'+x'y'z+xyz'+x'yz'+x'y'z'$

Ans.4 a) $(x+y)$ b) $(x+y+z)(x+y'+z)(x+y+z')(x+y'+z')$
c) $(x+y+z)(x'+y'+z)(x'+y'+z')(x+y+z')(x+y'+z')$
d) $(x+y+z)(x+y+z')(x+y'+z)(x+y'+z')(x'+y+z)(x'+y'+z)$

Classes on (ED,BEEE,M1,M2,M3,NA,CONTROL,DSP & other GATE oriented Engineering Subjects)

By :- Agnihotri sir (7415712500) Infront C.M. House, Sherpura , Vidisha

Download GATE syllabus & Ebooks at AEGC site www.aegc.yolasite.com & follow us at www.facebook.com/aegcsumit