Qn3a.

F = {ABC → E, BD → A, CG → B}

Since CG → B

By Axiom of Augmentation,
CDG → BD ---------- (1)

By Axiom of Transitivity,
Since (1) and BD→A,
CDG → A ---------- (2)

By Axiom of Reflexivity and Transitivity,
From (1),
CDG → BD → B ---------- (3)

By Axiom of Reflexivity,
CDG → C ---------- (4)

CDGB → AB

From (2), (3), applying union property (proven in lecture notes),
CDG → AB ---------- (5)

Applying the union property on (4) and (5),
CDG → ABC ---------- (6)

By Axiom of Transitivity,
From (6) and ABC → E,
CDG → E (proven)

Qn3b.
$\{CDG\}^+ = \{ABCDGE\}$

Qn3c
Keys(R) = {CDG}