Advanced Database Concepts
Assignment 1

Ans.1 $\{ S.sid, S.rating \mid sailor(s) \}$

Ans.2. $\{ (S.sid, S.sname, S.rating) \mid sailor(s) \wedge$
$((S.rating >= 2 \wedge S.rating < 8) \vee$
$(S.rating > 10 \wedge S.rating <= 11)) \}$

Ans.3 $\{ b.bid, b.bname, b.color \mid boat(b) \wedge$
$\exists r \exists s (reserves(r) \wedge sailor(s) \wedge$
$r.sid = s.sid \wedge$
$r.bid = b.bid \wedge$
$s.rating > 7 \wedge$
$b.color \neq 'red') \}$

Ans.4 $\{ b.bid, b.bname, \mid boat(b) \wedge$
$\exists r_1.bid (reserves(r_1) \wedge$
$r_1.bid = b.bid \wedge$
$r_1.day = 'Saturday' \vee r_1.day = 'Sunday') \wedge$
$\neg (\exists r_2.bid (reserves(r_2) \wedge$
$r_2.bid = b.bid \wedge$
$r_2.day = 'Tuesday')) \}$

Ans.5 $\{ \exists r_1.sid\ \exists b_1 (reserves(r_1) \wedge boat(b_1) \wedge r_1.bid = b_1.bid \wedge b_1.color = 'red') \wedge \exists r_2.sid\ \exists b_2 (reserves(r_2) \wedge boat(b_2) \wedge r_2.bid = b_2.bid \wedge b_2.color = 'green') \}$

Ans.6 $\{ S.sid, S.sname \mid sailor(S) \wedge \exists r_1 \exists r_2 (reserves(r_1) \wedge reserves(r_2) \wedge r_1.sid = S.sid \wedge r_2.sid = S.sid \wedge r_1.bid \neq r_2.bid) \}$

Ans.7 $\{ r_1.sid, r_2.sid \mid reserves(r_1) \wedge reserves(r_2) \wedge r_1.sid \neq r_2.sid \wedge r_1.bid = r_2.bid \}$

Ans.8) $\{ S.sid \mid Sailor(S) \wedge \neg(\exists r (reserves(r) \wedge (r.day = 'Monday' \vee r.day = 'Tuesday')) \}$

Ans.9) $\{ S.sid, b.bid \mid Sailor(S) \wedge boat(b) \wedge \exists r (reserves(r) \wedge r.bid = b.bid \wedge S.sid = r.sid \wedge S.rating > 6 \wedge b.color \neq 'red' \}$

Ans.10) $\{ b.bid \mid boat(b) \wedge \neg(\exists r_1 \exists r_2 (reserves(r_1) \wedge reserves(r_2) \wedge r_1.bid = b.bid \wedge r_2.bid = b.bid \wedge r_1.sid \neq r_2.sid)) \}$

Ans.11) $\{ S.sid \mid Sailor(S) \wedge \neg(\exists r_1 \exists r_2 \exists r_3 (reserves(r_1) \wedge reserves(r_2) \wedge reserves(r_3) \wedge (r_1.sid = S.sid) \wedge (r_2.sid = S.sid) \wedge (r_3.sid = S.sid) \wedge r_1.bid \neq r_2.bid \wedge r_2.bid \neq r_3.bid \wedge r_3.bid \neq r_1.bid)) \}$