THE HONG KONG POLYTECHNIC UNIVERSITY

HONG KONG COMMUNITY COLLEGE

Subject Title : Aircraft Electricity and Electronics **Subject Code** : CCN2288

Session : Semester Two, 2017/18

Numerical Answers

Question A1

V_1 = 3.2 V

Question A2

(a) $I_s = 2.39\angle 1.47$ or $2.39\angle 84.3^o\ A$

(b) $I_1 = 2.39\angle -1.67$ or $2.39\angle -95.7^o\ A$, $I_2 = 4.78\angle 1.47$ or $4.78\angle 84.3^o\ A$

Question A3

(a) 4

(b) $I_p(t) = 0.5\cos(2\pi \times 50t)$ A

Question A4

(a) 1000 1001_2

Question A5

(b)(ii) $\tilde{I}_a = 30 - j30\ or\ 42.4\angle -0.785$ or $42.4\angle -45^o$ A

$\tilde{I}_b = -41.0 - j11.0\ or\ 42.4\angle -2.88$ or $42.4\angle -165^o$ A

$\tilde{I}_c = 11.0 - j41.0\ or\ 42.4\angle 1.31$ or $42.4\angle 75^o$ A

Question B1

(b)(i) 0.847

(b)(ii) S =$94.8 + j59.6$ or $112\angle 0.561\ or\ 112\angle 32.1^o$ VA

(b)(iii) P = 94.8 W, Q = 59.6 VAR

(b)(iv) C = 14.3 µF

Question B2

(c)(ii) Vamp = 8.53 V

(d)(iii) R = 406 Ω

Question B3

(a)(i) $R_{z,\,max} = 365\ \Omega$
(a)(ii) $P = 54$ mW
(a)(iv) $R = 23.5\ k\Omega$
(b)(ii) $I_C = 176$ mA , $V_{CE} = 18.0$ V, $P = 0.310$ W
(b)(iii) $I_C = 0.488$ A, $R_{B1} = 88.2\ \Omega$