

Answers to MCQs.

(1) 5 (2) 1 (3) 4 (4) 1 (5) 5 (6) 4 (7) 2 (8) 3 (9) 2 (10) 2 (11) 1 (12) 3
 (13) 1 (14) 4 (15) 3

ANSWER SHEET

Question 1	Results	Marks
(a)	$\omega_E = 7.0 \times 10^{-5} \text{ rad s}^{-1}$	05
(b)	$I_E = 6.0 \times 10^{37} \text{ kg m}^2$	02
(c)	$L_E = 4.2 \times 10^{33} \text{ kg m}^2 \text{ s}^{-1}$	03
(d)(i)	$L_{ast} = 1.0 \times 10^{26} \text{ kg m}^2 \text{ s}^{-1}$	05
(d)(ii)	Underline the correct statement. L_{ast} is parallel to L_E <u>L_{ast} is perpendicular to L_E</u>	02
(d)(iii)	$\Delta\theta = 2.4 \times 10^{-8} \text{ rad}$	10
(d)(iv)	$\Delta l = 0.12 \text{ m}$	03
(e)	$\Delta\tau_{rad} = 3.6 \times 10^{-5} \text{ s}$	10

ANSWER SHEET

Question 2	Results	Marks
(a)	$P_i = P_a + \frac{4\gamma}{R_0}$	02
(b)(i)	$\frac{\rho_i T_i}{\rho_a T_a} = 1 + \frac{4\gamma}{R_0 P_a}$	05
(b)(ii)	$\frac{\rho_i T_i}{\rho_a T_a} - 1 = \mathbf{1.0} \times 10^{-4}$	03
(c)	$T_i = \frac{R_0 \rho_a T_a}{R_0 \rho_a - 3 \rho_s t} \left[1 + \frac{4\gamma}{R_0 P_a} \right]$	10
(d)	$u = \frac{4R_0 \rho_s t g + \frac{4}{3} R_0^2 \rho_a g \left(\frac{4\gamma}{R_0 P_a} \right)}{6\eta}$	10