

JULY '01

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Q.1. To CONSUME 240 TONNES, VESSEL WILL HAVE TO TRAVEL :

$$\frac{\text{TOTAL EX}}{\text{DAILY CONS}} = \frac{240}{25} = 9.6 \text{ DAYS}$$

$$\text{STEAMING TIME} = 9.6 \times 24 = 230.4 \text{ HOURS}$$

$$\text{DISTANCE TO TRAVEL} = 230.4 \times 16 = 3686.4$$

VIL CAN STAY ON 33°S, BUT NOT CROSS IT.

FIRST LEG WILL BE COMPOSITE G/C FROM BRISBANE TO 33°S.

$$\text{DISTANCE ON FIRST LEG} = 2044.4 \checkmark$$

$$\text{D. LONG OF FIRST LEG} = 38^\circ 53.1' \text{ E}$$

TO CONSUME ALL OF 240 T, REMAINING DISTANCE WILL HAVE TO BE TRAVELLED ALONG 33°S

$$\text{DIST ALONG } 33^\circ \text{S} = 3686.4 - 2044.4 = 1642$$

$$\begin{aligned} \text{D. LONG FOR } 1642' \text{ AT } 33^\circ \text{S} &= \frac{\text{DEP}}{\cos \text{LAT}} = \frac{1642}{\cos 33^\circ} \\ &= \frac{1642}{0.83867} = 1957.86 = 32^\circ 37.86' \text{ E} \end{aligned}$$

POINT FROM WHERE VIL CAN ENTER WINTER ZONE ON A GREAT CIRCLE TRACK :

$$\begin{aligned} \text{BRISBANE LONG} &\sim (\text{FIRST LEG D. LONG} + \text{PARALLEL OF } 33^\circ \text{S D. LONG}) \\ &= 153^\circ 10' \text{ E} \sim (38^\circ 53.1' \text{ E} + 32^\circ 37.86' \text{ E}) \\ &= 153^\circ 10' \text{ E} \sim 71^\circ 30.96' \text{ E} \end{aligned}$$

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$\approx 135^{\circ} 19'04'' \text{ W.}$

GREAT CIRCLE DISTANCE BETWEEN

$33^{\circ} 00' \text{ S}, 135^{\circ} 19' \text{ W}$

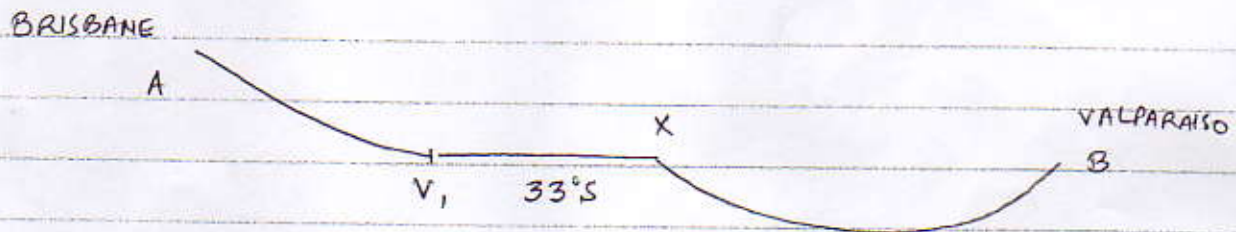
$\text{or } 33^{\circ} 00' \text{ S}, 071^{\circ} 37' \text{ W}$

DISTANCE ≈ 3152.1

TOTAL DISTANCE $\approx AV_1 + V_1X + XB$

$\approx 2044.4 + 1642 + 3152.1$

≈ 6838.5



Nadeem

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Q. 2. a) LMT = AUG 14 1540 ✓
 $38^{\circ}47'W$ L.I.T (W) = + 02 35 08 ✓
 GMT = AUG 14. 18 15 ~~08~~

GHA	SUN.	$88^{\circ} 59' \ddagger$	DEC = $14^{\circ} 09.6$	$28'2$ N. d=0
INC		$3^{\circ} 47'0$ ✓		- $0'2$
GHA		$92^{\circ} 39' \ddagger$		$14^{\circ} 08' N.$
LONG		<u>$- 38^{\circ} 47'$</u> W		1.4
LHA		$53^{\circ} 59' \ddagger$		LAT = $27^{\circ} 18' S$

A = 0.38 N ✓
 B = 0.32 N
 C = 0.69 N.
 Az = $58^{\circ}.1$
 = N $58^{\circ}.2$ W
 = $301^{\circ}.8$ T.

GYRO ERROR : $301^{\circ}.8$ (T) ~ $303^{\circ}(G)$ = $1^{\circ}.2$ H

M. COMPASS ERROR : $301^{\circ}.8$ (T) ~ $321^{\circ}.5$ (C) = $19^{\circ}.7$ W

DEVIATION ; C. ERR ~ VAR = $19^{\circ}.7$ W ~ $23^{\circ}W$ = $3^{\circ}.3$ E

Nadeem Am