

INDIAN MARITIME UNIVERSITY
(A Central University, Government of India)
END SEMESTER EXAMINATIONS – DECEMBER 2019
B.Sc (Nautical Science)
Semester : II
UG21T2207-NAVIGATION -II

Date:12-12-2019
Time:3 Hrs.

Max Marks: 70
Pass Marks: 35

Note:- Use of non programmable scientific calculator and Nories table is allowed.
BA Chart 2675 or equivalent Chart to be provided by exam centre.

PART A-(Terrestrial Navigation)
(Answer any Three questions from this part.
All questions carry equal marks.)

1. Explain following with diagram: **(5X2= 10 Marks)**
- Position circle
 - Set and drift
 - Observed Position
 - Position by Vertical Sextant angle
 - DR position

2. On 27th Dec a ship in position 22°12'N; 076° 18'W , set courses as follows: -

TIME	G. Co	G. Error	LOG
1200 on 27 th	134°G	2° H	000
1800	144°G	2° H	087
2200	126°G	1° H	176
0600	157°G	1° H	266
1200 on 28 th	207°G	2° H	351

Find the following: -

- DR position at noon 28th Dec.
 - Course and Distance made good between 27th and 28th Dec noon. **(10 Marks)**
3. Discuss various errors on Sextant that can be corrected on board ship. **(10 Marks)**
4. Explain following with diagram:
- Refraction correction
 - Semi diameter correction
 - Parallax correction
 - Dip correction **(2.5X4 Marks)**

PART B-(Voyage Planning)
(Answer any four questions from this part.
All questions carry equal marks.)

5. Explain following: **(4X2.5 Marks)**
a) Chart datum
b) Sector Light
c) Leading Lights
d) Nominal range
6. How will you correct Charts after receiving Notice to Mariners? **(10 Marks)**
7. a) At 1800hrs Beachy Head Lt. bore $320^{\circ}T$ and Royal Sovereign Lt. bore $020^{\circ}T$. Find the position of the ship. **(5 Marks)**
b) From the above position, find true course to steer to pass Casquets Lt. 9' off, counteracting a current setting $300^{\circ}T$ at 3 knots and Southerly wind causing leeway of 3° . (Ship's Engine speed 13 knots) **(5 Marks)**
8. a) At 0900hrs vertical sextant angle of Bill of Portland Lt. Ho. (43 m) was $00^{\circ}11'$ and that of Hardy Monument (240 m) was $1^{\circ}03'$. Find the position of the ship. **(5 Marks)**
b) From the above position course was set to pass Les Hanois Lt 5' off on port beam. If she experienced a current setting $285^{\circ}T$ at 3 knots, find course made good and speed made good. (Ship's Engine speed 13 knots) **(5 Marks)**
9. a) While steering a course $270^{\circ}T$ at 16 knots, at 0840hrs Nab Tower Lt. dipped bearing $320^{\circ}T$ and at 1130 hrs Bill of Portland Lt. was raised bearing $292^{\circ}T$. Find the position of the ship at 0840hrs and 1130 hrs. (Height of Eye = 11 mtrs) **(5 Marks)**
b) Find the set and drift experienced by the ship between 0840hrs and 1130 hrs and course and speed made good. **(5 Marks)**
