



**MASTER OF YACHTS 200T OFFSHORE  
PRE COURSE ASSESSMENT  
ANSWERS KEY**

**DEFINE THE FOLLOWING TERMS OR ANSWER THE QUESTION.**

- 1. True North (1 mark): Any of:  
000° T; N. Pole; North excluding Variation/Geographic effects; Where meridians of Longitude meet.**
- 2. Magnetic North (1 mark):  
Angular difference between True North and Magnetic North (this is variation);  
The direction in which the needle of a magnetic compass points.**
- 3. Tides (1 mark):  
Vertical rise and fall of water level caused by the gravitational pull of the sun and moon, and the rotation of the earth.**
- 4. Currents (1 mark):  
Horizontal movement of water.**
- 5. How is wind direction stated? (1 mark):  
From where it comes, stated in degrees or compass direction names, ie South East.**
- 6. How are maritime wind speeds stated? (1 mark):  
In Knots, (never knots per hour).**
- 7. How is rate or speed of currents stated? (1 mark):  
In Knots.**
- 8. How is direction of current stated? (1 mark):  
In degrees True, towards which it is flowing.**
- 9. Compass Error (1 mark):  
The sum of the total difference of Variation and deviation.**
- 10. Ebb Stream (1 mark):  
Current or horizontal flow of water associated with a falling tide, usually away from land.**
- 11. Flood Stream (1 mark):  
Current or horizontal flow of water associated with a rising tide, usually towards the land.**

12. **Solar Day (1 mark):**  
**24 hours – the time taken for the sun to move from its local noon position on one day to the local noon position on the next day; or one full rotation of the earth.**
13. **Mercator Projection Chart (1 mark):**  
**The representation of the earth’s surface on a flat chart, meridians and parallels intersect at right angles.**
14. **Horizontal Datum (1 mark):**  
**Reference point for the chart projection; most common is WGS 84.**
15. **Chart Datum (1 mark):**  
**Fixed reference point from which depths and drying heights are measured. Ie MLLW; LAT.**
16. **Charted Depth (1 mark):**  
**Measurement from chart datum to seabed; number referred on chart indicating water depth.**
17. **Nautical Mile (1 mark) any of:**  
**1852 metres; one minute of Latitude; or 6076 feet at 44° latitude; (usually taken as 2000 yards).**

**CALCULATE THE FOLLOWING:**

Show calculations:

18.	HW: 0207	9.1 Ft	<b>07.43</b>	<b>(3 marks)</b>
	LW: 0743	-0.6 Ft	<b><u>-02.07</u></b>	
			<b>5.36</b>	

**Duration = 5 hr 36 mins    Range = 9.7ft**

19.	LW: 0925	0.2 Ft	<b>15.25</b>	<b>(3 marks)</b>
	HW: 1525	18.4 Ft	<b><u>-09.25</u></b>	
			<b>06.00</b>	

**Duration= 6 hr 00 mins    Range= 18.2ft**

20.	HW: 2310	12.8 Ft	<b>29.06</b>	<b>(4 marks)</b>
	LW: 0506	- 0.9 Ft	<b><u>-23.10</u></b>	
			<b>05.56</b>	

**Duration= 5 hr 56 mins    Range= 13.7ft**

21. Describe or sketch what initially occurs when a sail vessel with a right-hand screw (propeller) is engaged in reverse? (4 marks)  
**Vessel's stern moves astern and to port.**
22. Describe or sketch what initially happens on a twin screw power driven vessel in gear forward, when the port engine stops running? (4 marks)  
**Vessel's bow turns or veers to port.**
23. Describe or sketch what initially happens when from a dead stop, a twin screw with rudder amidships, engages the port engine in reverse? (4 marks)  
**Vessels bow moves to port and stern moves astern and to starboard.**
24. Describe or sketch what happens when from a dead stop, a twin screw power vessel with helm (wheel) hard over to port engages its starboard engine in forward and its port engine in reverse? (4 marks)  
**Vessel rotates to port**
25. Describe or sketch what happens initially from a dead stop on a power vessel with the helm (wheel) hard to starboard engages its starboard engine into forward and its port engine into reverse? (4 marks)  
**Vessel "walks" to port**

(1 mark each right answer)

26. Longitude is? **C**
27. 1° of latitude = **E**
28. Number of degrees in one point **H**
29. A cable = **L**
30. 1° of longitude = **F**
31. Latitude is? **G**
32. Number of points in a compass? **A**
33. A fathom = \_\_\_\_ Ft. **N**
34. "In irons" means? **M**
35. A SOLAS life raft is provisioned for \_\_days. **K**

**METEOROLOGY:**

36. Define Isobars (1 mark)  
**Isobars are lines on a synoptic chart connecting points of equal pressure.**
37. What is Atmospheric Pressure? (1 mark)  
**It is the weight exerted on the earth's surface by the atmosphere.**
38. What instrument is used to determine atmospheric pressure? (1 mark)  
**Barometer.**
39. What are the units of measurement of atmospheric pressure? (1 mark)  
**Millibars; Hectopascals; Inches (of Mercury). Any one of these.**
40. Why is knowing the trend of atmospheric pressure important? (1 mark)  
**Barometric trends indicate future weather, specifically for Storm watches.**
41. Name the 4 phases of the moon. (4 marks)  
**New; 1<sup>st</sup> Quarter; Full; Last Quarter.**
42. What effect does each of the above 4 phases have on tidal heights and ranges? (4 marks)  
**New and Full – create Spring Tides, higher high and lower low tides, greater range and speed of tidal streams.  
1st and Last Quarter – create Neap Tides, lower high and higher low tides, less range and speed of tidal streams.**
43. Veering wind. (1 mark)  
**Wind changing direction clockwise, ie, moves from North to East to South to West etc.**
44. Backing wind. (1 mark)  
**The reverse of the Veering wind, anti-clockwise change of direction.**

**NAVIGATION:**

45. Using the attached chartlet, determine the variation in degrees and minutes for the year 2008 (show calculation) (4 marks)

1985 15° 00' W

Annual increase 3'

+00° 69'

1985 to 2008 = 23 years x 3' = 69'

Var = 16° 09' W

Using variation to the nearest whole degree for 2008 and compass deviation of 4° E, complete the following:

46. From you 09.00 position North of Block Island adjacent to G “1B1” – FL G 4 sec BELL, plot a course, using a course steered of 057° (C) and speed of 10 knots. What is your DR position at 09.30. Plot this and state the Lat and Long. (5 marks)

DR Lat 41° 19.0'N

Long 071° 29.8'W

47. Assuming a Set/Direction of 100° and rate/drift of 3 kts plot your EP position at 09.30 and state the Lat and Long EP. (5 marks)

EP Lat 41° 18.7'N

Long 071° 27.8'W

48. From your 09.30 EP position, proceed on a course of 161° (C) at 10 kts. Plot your DR position at 10.30 and state the Lat and Long. (5 marks)

DR Lat 41° 10.0'N

Long 071° 21.4'W

49. At your 10.30 position your GPS indicates your position is Lat: 41° 10.0' N and Long 071° 20.0' W.

Calculate the set and drift of the current from 09.30 to 10.30. (3 marks)

Set 090° Drift 1.1 kts

50. Using the Set and Drift calculated above what would be your True Course to Steer (CTS) towards your 10.30 DR position, and what would be your estimated time of arrival (ETA)? (2 marks)

157° T at 10.27

51. What is meant by Large Scale Chart and Small Scale Chart? (1 mark)

Large scale charts show more details needed for navigation and pilotage close to land, in ports, harbours etc. Small scale charts are less detailed, cover larger areas and are used for passage making and planning.

52. What information do UK Chart 5011 and USA Chart No1 contain? (1 mark)

Chart symbols and abbreviations.