

ASL 350 – Introduction to Oceanography
Major (Sem. II, 2018-19)

MM. 35

Instructions: Question 1 is compulsory. Answer any 4 from Questions 2-6.
If additional question answered, then marks of low scored questions will be considered.

Q 1. Answer all parts of this question

- (1a) What factors can affect Sea Surface Temperature (SST) at any location? Why there are non-zonal patterns (not exactly following latitudinal variation) in SST over world oceans? [3]
- (1b) What is role of Restoring force in any ocean wave? Give typical plots (time vs. water level) of 'Diurnal Tide' and 'Mixed semidurnal Tide'. [3]
- (1c) Hypothetically, if half of the Earth's surface covered by ocean and other half by land (longitudinally 0-180o Land and 180-360o Ocean, both for full 90S to 90N latitudes). Then which processes in ocean will get affected and how? [3]
- (1d) The Bay of Bengal received large amount of freshwater as the rainfall and river runoff. What kind of oceanic, atmospheric, and weather effects this freshwater makes? [3]
- (1e) How you see the oceans as a renewable energy source, which process/oceanic condition can be a potential source of renewable energy? [3]

[P.T.O]

Q 2. What are 'Buoyancy oscillations' and its application in Oceans? How and when the ocean surface waves break? What effect the ocean depth makes on the motion of water particles under the propagating wave? For prediction of Tsunami to save life and property at any given coastal city, which data or information is needed and how these are used to give Tsunami warning? [5]

Q 3. How Internal waves are different (wave property wise) from surface waves? How internal waves can be detected at the sea surface? At any given coastal location what all factors determine the tidal amplitude -- within a day, within a month, and in a year round record? What is Tidal Form number? [5]

Q 4. What is El-Nino and its effect on convection and cloud formation? What are Southern Oscillations in ENSO? How the thermocline varies in eastern Pacific during El-Nino and La-Nina? In what ways the rainfall pattern over different countries affected by El Nino and positive Indian Ocean Dipole (plOD) conditions? [5]

Q 5. In view of the Climate change, how the oceans are getting involved and what oceanic processes might change (think as many as you can and list them) and which of these are more alarming? What is the role of sea-salt and sulfate particles emitted by oceans in the climate? [5]

Q 6. Explain working principle of Argo float and XBT. From application point of view, how ocean Buoy data is different from Argo data? What are working principle of ship-bottom mounted Echo-Sounder? What different methods/ instruments used to measure currents in ocean (no description)? [5]