Test # 4 - Section XBG - Grade = 6

Design a ship.

For the above mentioned design problem**,** construct **the functions/means tree**. List 8 functions. For each function (0.3 point), write two means (0.2 point) for each one. Make sure that there is no repetition in any of your answers. Then, draw the chart without details (0.4 point).
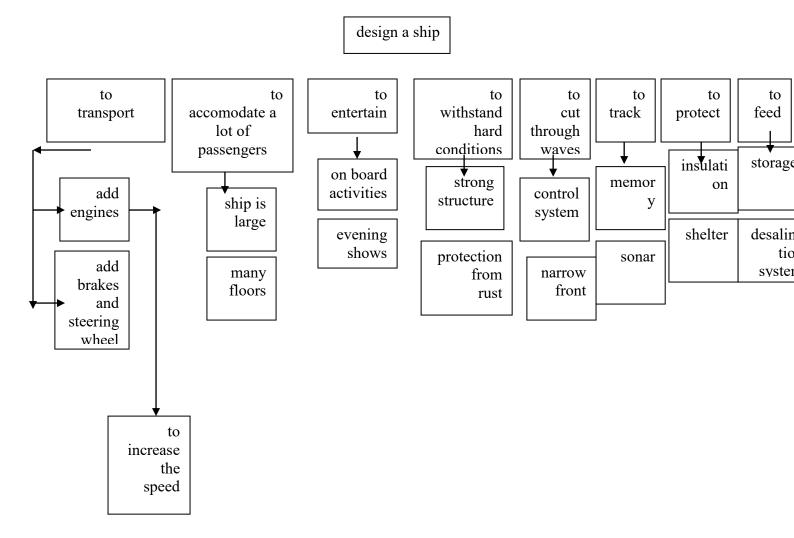
Congratulations.

#		Answers	Marks
Functions 2.4	1	To transport passengers from one location to the other within reasonable time	0.3
	2	To accommodate a lot of passengers.	0.3
	3	To entertain passengers on the ship.	0.3
	4	To withstand long drives and hard weather conditions.	0.3
	5	To swiftly cut through big waves and avoid bumps.	0.3
	6	To track location of underwater creatures and objects.	0.3
	7	To protect passengers from rain and cold weather.	0.3
	8	To feed the people on board.	0.3
Means 3.2	1a	Add strong engines to the ship.	0.2
	1b	Add brakes, steering wheel, and turning devices to the engine to be able to turn and maneuver the ship.	0.2
	2a	Make the ship very large.	0.2
	2b	Add multiple floors to the ship with many rooms in each floor	0.2
	3a	Provide a wide range of activities on the ship such as board games, restaurants, shops.	0.2
	3b	Provide evening shows by the ship crew	0.2
	4a	The structure of the ship is of high highly and in accordance to international safety standards.	0.2
	4b	The final layer of paint on the ship is a material that prevents it from rusting.	0.2
	5a	Make the front part of the ship very narrow to cut through big waves instead of elevating with the wave.	0.2
	5b	Add a control system that allows the engines to increase and decrease power as desired.	0.2

	6a	Add sonar that detects fish and objects underneath the ship.	0.2
	6b	Add a large computer memory to save previously detected locations.	0.2
	7a	Add indoor sheltered compartments and rooms.	0.2
	7b	Provide good insulation to the ships' windows and doors to prevent heat loss.	0.2
	8a	Add food storages and kitchens that are equipped with food that is sufficient for all travel days.	0.2
	8b	Add a water desalination system on board in case of the lack of drinking water, and provide fishing nets and fishing hooks in case the ship runs out of food.	0.2

The tree 0.4

design a ship

- to transport
  - add engines
  - add brakes and steering wheel
  - to increase the speed
- to accomodate a lot of passengers
  - ship is large
  - many floors
- to entertain
  - on board activities
  - evening shows
- to withstand hard conditions
  - strong structure
  - protection from rust
- to cut through waves
  - control system
  - narrow front
- to track
  - memory
  - sonar
- to protect
  - insulation
  - shelter
- to feed
  - storage
  - desalination system

١