Week 12: Assignment 12

The due date for submitting this assignment has passed.

Due on 2021-10-20, 23:59 IST.

As per our records you have not submitted this assignment.

1) Thermal energy storage finds application in *1 point*

- Solar thermal power plants
- Refrigeration and air-conditioning
- Building energy storage
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

2) Assume no pumping or any other losses, how much energy can be stored by 1000 kg of water raised by 100-m in a pumped hydro installation? Take density of water to be 1000 kg/m^3 and g = 9.81 m/s^2. *Total Energy = mgh* *1 point*

- 1.96 MJ
- 1.47 MJ
- 0.98 MJ
- 0.5 MJ

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.98 MJ

3) If pumped hydro system which is not a source of loss *1 point*

- Leakage of fluid from pipes and equipment
- Evaporation during storage
- Water addition due to rain
- Turbine losses

No, the answer is incorrect.
Score: 0
Accepted Answers:
Water addition due to rain

4) In a Superconducting Magnetic Energy Storage (SMES): *1 point*

- Magnetic energy is converted to electrical energy
- Magnetic Energy can be stored indefinitely
- Electrical resistance of the coil drops to zero
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

5) A flywheel of uniform density of 2000kg/m^3 is shaped in the form of a disc. Diameter of the disc being 5-m and thickness being 2-m, flywheel is rotated at w = 300 rad/sec. It is made of a material with a uniform density of 2000 kg/m^3. Calculate the energy stored in the flywheel. *1 point*

$E = \frac{1}{2} I w^2$; where $I = 1/2 M R^2 (in Kg.m^2)$, and W = angular velocity of the flywheel (in Rad/sec).

- 11 MJ
- 11 GJ
- 22 GJ
- 22 MJ

No, the answer is incorrect.
Score: 0
Accepted Answers:
11 GJ

6) If the flywheel in previous is slowed down to 100rad/sec, how much energy is recovered from flywheel? *1 point*

- 13.2 MJ
- 3.1 GJ
- 6.3 MJ
- 9.8 GJ

No, the answer is incorrect.
Score: 0
Accepted Answers:
9.8 GJ

7) A flywheel's energy storage can be increased by *1 point*

- Locating more mass at the circumference
- Reducing frictional losses
- Choosing material with high tensile strength
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

8) What is the main objective of energy storage? *1 point*

- Offset adverse effect of fluctuating demand
- Assure steady output from existing plants
- Meet peak demand on short notice
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

9) Why is the compressed air in a storage system cooled before storage? *1 point*

- Prevent heat loss during storage
- Improve turn around efficiency
- Reduces storage volume
- Help in a hybrid system

No, the answer is incorrect.
Score: 0
Accepted Answers:
Reduces storage volume