

Answer key

[ELEC3310] Electrical Energy Conversion and Utilisation (St Lucia). Semester 2, 2025

Online Quiz-1

Question 1

0.12 points

What is the unit of electrical energy?

☐ (A) kW

☒ (B) kWh

Correct answer

☐ (C) kVA

☐ (D) kVAR

Question 2

0.12 points

Which of the following is not a renewable energy source?

☐ (A) Wind

☐ (B) Solar PV

☒ (C) Nuclear

Correct answer

☐ (D) Biomass

Question 3

0.12 points

Which power generation plant is the most efficient one?

☒ (A) Hydro Power Plant

Correct answer

☐ (B) Coal Fired Power Plant

☐ (C) Diesel Power Plant

☐ (D) Combined Cycle Power Plant

Question 4

0.12 points

What is not true about combined cycle power plants?

☐ (A) Utilize synchronous machine for energy conversion

☐ (B) Efficiency is in the range of 40-60 %

☐ (C) Can be used as peaking plants

☒ (D) Typically used as base load power plants

Correct answer

Question 5

0.12 points

What is not a concern of nuclear power plants?

☐ (A) cost

☐ (B) safety

☐ (C) waste

☒ (D) intermittency

Correct answer

Question 6

0.12 points

What is the correct order of energy conversion in hydro power plants?

☐ (A) Potential -> mechanical -> Kinetic -> electrical

☐ (B) Mechanical -> Potential -> Kinetic -> electrical

☒ (C) Potential -> Kinetic -> mechanical -> electrical

Correct answer

☐ (D) Kinetic -> Potential -> mechanical -> electrical

Question 7

0.12 points

What type of rotating machine is used to pump water to upper reservoir in Pumped-Storage Hydro Power Plants?

☐ (A) Induction

☒ (B) Synchronous

Correct answer

☐ (C) Direct Current

☐ (D) Universal

Question 8

0.12 points

Which of the factor can influence the output power in large-scale solar plants?

☐ (A) Solar Irradiance

☐ (B) Air quality

☐ (C) Temperature

☒ (D) All the above

Correct answer

Question 9

0.12 points

What is not a typical characteristics of large-scale solar power plants?

☐ (A) Lack of Rotating Inertia

☐ (B) Uncertain Output

☒ (C) Lack of Fast Control

Correct answer

☐ (D) Low Efficiency

Question 10

0.12 points

What is the function of Prime mover in power plants with Synchronous Generator?

☐ (A) Controlling reactive power

☒ (B) Controlling real power

Correct answer

☐ (C) controlling terminal voltage

☐ (D) controlling real and reactive power

Question 11

0.12 points

What is the most common electrical machine used in wind farms for energy conversion?

☐ (A) Synchronous Machine

☒ (B) Induction Machine

Correct answer

☐ (C) DC Generators

☐ (D) Inverters

Question 12

0.12 points

Which of the following statement is not correct for Biomass power plants?

☐ (A) They use Synchronous generator for producing electricity.

☒ (B) They are not environmentally friendly.

Correct answer

☐ (C) Residues like Rice husk and Bagasse can be used as fuel.

☐ (D) They are suitable for co-generation option as well.

Question 13

0.12 points

Why is coal pulverised in coal fired power plants?

☐ (A) To increase its heating value

☐ (B) To reduce carbon content

☐ (C) For easy transport

☒ (D) To make the combustion more efficient

Correct answer

Question 14

0.12 points

What are the typical characteristics of a peaking power plant?

☒ (A) Fast startup and shut down

Correct answer

☐ (B) minimum cost and maintenance

☐ (C) Steady output and minimum cost

☐ (D) All the above

Question 15

0.12 points

What is the largest scale energy storage option currently available?

- ☐ (A) Battery
- ☐ (B) Hydrogen

☒ (C) Pumped-Hydro

Correct answer

☐ (D) Flywheel

Question 16

0.12 points

What technology is used in geothermal power plants?

☒ (A) Steam turbine and synchronous generator

Correct answer

☐ (B) Gas turbine and synchronous generator

☐ (C) Hydro turbine and synchronous generator

☐ (D) Only synchronous generator

Question 17

0.12 points

What is a drawback of large-scale hydro power plants?

☐ (A) Very low efficiency

☒ (B) very high capital cost

Correct answer

☐ (C) variations in power output

☐ (D) lack of rotating inertia

Question 18

0.12 points

Which of the methodologies could be considered environmentally friendly option for producing hydrogen?

- ☐ (A) Reforming
- ☐ (B) Fermentation
- ☒ (C) Electrolysis
- ☐ (D) All the above

Correct answer

Question 19

0.12 points

What are the biproducts of electricity generation using hydrogen fuel cells?

- ☐ (A) CO and heat
- ☐ (B) CO₂ and heat
- ☐ (C) Water and CO₂

☒ (D) Water and Heat

Correct answer

Question 20

0.12 points

What is the function of an inverter in renewable energy power plants?

☒ (A) Converting DC to AC

Correct answer

☐ (B) Converting DC to DC

☐ (C) Converting AC to DC

☐ (D) Converting DC to AC and then DC