

Department of Electrical Engineering
Assignment

Date: 14/04/2020

Course Details

Course Title: Applied Chemistry Module: 2nd
Instructor: Engr. Khalil Muhammad Khan Total Marks: 30

Student Details

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Part A (Objective Type)

10 Marks

1. The bio methane is produced by the ___(b)_____ of biomass.
 - a) Aerobic oxidation
 - b) Anaerobic oxidation
 - c) Fermentation
 - d) Rectification
2. Bio gas is compressed and used as ___(b)_____.
 - a) Motor fuel
 - b) Fuels in vehicles
 - c) Dog feed
 - d) Cow feed
3. The ___(c)_____ is used as the agricultural fertilizer.
 - a) Bio ethanol
 - b) Bio ethane
 - c) Bio methanol
 - d) Digestrate
4. Bio diesel is produced by the ___(c)_____ of the vegetable oil.
 - a) Fermentation
 - b) Distillation
 - c) Trans esterification
 - d) Rectification

5. Fuels cell is an electrochemical device that converts the chemical energy into the _____(a)_____
- Electrical energy
 - Mechanical energy
 - Static energy
 - Frictional energy
6. From cathode ____(a)_____ gas is bubbled in hydrogen-oxygen cell.
- Hydrogen
 - Oxygen
 - Nitrogen
 - Chlorine
7. A module in a solar panel refers to(c).....
- Series arrangement of solar cells.
 - Parallel arrangement of solar cells.
 - Series and parallel arrangement of solar cells.
 - None of the above.
8. The efficiency of the solar cell is about.....(b).....
- 25 %
 - 15 %
 - 40 %
 - 60 %
9. The current density of a photo voltaic cell ranges from.....(b)....
- $10 - 20 \text{ mA/cm}^2$
 - $40 - 50 \text{ mA/cm}^2$
 - $20 - 40 \text{ mA/cm}^2$
 - $60 - 100 \text{ mA/cm}^2$
10. Solar energy is radiated by clouds and earth as.....(a)....
- long wave energy
 - short wave energy
 - medial wave energy
 - extreme wave energy

Part B (Subjective Type) 20 marks

Q. 2 a. Driving Force in converting Solar Energy into Electrical Energy is considered important Discuss. (5)

Answer:

- **Driving force:**

This change of the non- electric chemical voltage is recognized as the driving force that triggers the selective charge carrier separation across the p-n junction and thus induces the open circuit voltage to appear at the terminals of the illuminated solar cell.

Q 2 b. Differentiate between N-type and P-type. (5)

Answer:

P-type:

- Donor impurities are used.
- Trivalent impurities used.
- Holes are generated.
- Holes are majority carriers.

N-type:

- Acceptor impurities used.
- Pentavalent impurities used.
- Electrons are generated.
- Electrons are majority carriers.

Q.3 a. Role of depletion region in semi-conductor material. (5)

Answer:

The depletion region also called depletion layer, depletion zone, junction region, space charge region or space charge layer is an insulating region within a conductive, doped semiconductor material where the mobile charge carriers have been diffused away. Filling a hole makes a negative ion and leaves behind a positive ion on the n-side. A space charge builds up, creating a depletion region which inhibits any further electron transfer unless it is helped by putting a forward bias on the junction.

b. Solar panel you will suggest to use in Peshawar Area Mono or poly? Provide your answer with example and proof.

Answer :

I suggest mono crystalline solar panels for Peshawar area. Because they are cut from a single source of silicon. Silicon is form into bars and cut into wafers. Mono crystalline cells have rounded shape. mono solar panel are made of maxeon cell technology optimize with built in protection if their have dust on panel only the dust area will not produce current and less power loss compare to poly solar panel. I suggest it because Peshawar area have a lot of dust. Mono solar have dark color and dark color is attractive. Its produce much better ampere current than poly.