**Module 1 Quiz (Proposition definition):**

**Q1: Choose all valid proposition in the following?**

1. **Is it hot outside?**
2. **Close the door**
3. **x is greater than 2**
4. **x = x**
5. **3 = 3**
6. **The train is delay**

**Q2: Which of the following sentences are propositions?**

1. **When will class be over?**
2. **Stop at the stop sign**
3. **3 + x = 7.**
4. **If x = 1 then x + 1 = 5.**

**Q3: Give the “true” or “false” of following sentence, if it not a statement then write “neither”**

1. **x + 2 = 2x when x = −2**
2. **All cows are brown.**
3. **There is life on Mars.**
4. **2 × 2 = 5**
5. **Do you want to go to the movies?**

**(at most 5)**

1. **Clean up your room.**
2. **2x = 2 + x**
3. **This sentence is false.**
4. **How far is it to the next town?**

**Module 2 Quiz (Propositional connectives):**

**Q1: Use Propositional letters and connectives to express the following statement:**

**p: This book is interesting.**

**q: I am staying at home.**

1. **This book is interesting, and I am staying at home.**
2. **This book is interesting, or I am staying at home.**
3. **Either this book is interesting, or I am staying at home, but not both.**
4. **If this book is not interesting, then I am staying at home.**
5. **If this book is not interesting, then I am not staying at home.**

**Q2: Evaluate the result of following propositions, the result is either be true of false**

**p: The earth is square.**

**q: I won the first prize in lottery.**

**r: I am not a rich man.**

1. **p ∧ q ∨ r**
2. **p ∨ q ∧ r**
3. **¬p ∨ q ∧ r**
4. **q → r**
5. **¬ q → r**
6. **¬p ∨ q ∧ R → S**
7. **¬p ∨ q ∧ (R → S)**
8. **(¬p ∨ q) ∧ R → S**

**Q3: Write the following statement symbolically:**

**“If I go to the mall or go to the movies, then I will not go to the gym.”**

**p = I go to the mall**

**q = I go to the movies**

**r = I will go to the gym**

**Q4: Which of the following statements are equivalent to “If x is even, then y is odd”? There may be more than one or none.**

**(1) y is odd only if x is even.**

**(2) x is even is sufficient for y to be odd.**

**(3) x is even is necessary for y to be odd.**

**(4) If x is odd, then y is even.**

**(5) x is even and y is even.**

**(6) x is odd or y is odd.**

**Module 3 Quiz (Truth table):**

**Q1: draw a truth table of the following propositions:**

**1. p ∧(q ∧ r)**

**2. p ∨(q ∨ r)**

**3. p ∧(q ∨ r)**

**4. (¬p ∨ q)**

**5. ¬(p ∨ q)**

**6. (p ∧ q) ∧ r**

**7. (¬p ∧¬q)**

**8. (p ∨ q) ∨ r**

**9. (p → q)**

**10. (p ∧ q) ∨ ( p ∧ r)**

**To conclusion, can you distinguish there exists 5 equivalent propostions? Find them and fill in the number in the following:**

**1 - \_**

**2 - \_**

**3 - \_**

**4 - \_**

**5 - \_**

**Q2: Draw a truth table of the following propositions, use 1 denotes true and 0 denotes false:**

**1. ¬p ∨ q ∧ R → S**

**2. (¬p ∨ q) ∧ R → S**

**3. (¬R ∨ ¬Q) → P**

**Q3: How many rows should a truth table have for a statement involving n different propositions?**

**Q4: Express the proposition “If you work hard and do not get distracted, then you can finish the job” symbolically as a compound proposition in terms of simple propositions and logical operators, and draw a truth table of it.**

**• p = you work hard**

**• q = you get distracted**

**• r = you can finish the job**

**Module 4 Quiz (Key definitions):**

**Q1: Check that if each of the following implications is a tautology or not by drawing a truth table**

**1. p -> (p V q)**

**2. (p ∧ q) -> (p -> q)**

**3. ¬(p->q) -> ¬q**

**4. (p ∨ q) ∧(q -> p)**

**Q2: Show the each of the following is equivalent by drawing truth table**

**1. p ∧q and q**

**2. p ∨ q and q**

**3. p ∨p and p**

**Q3: Is p ∧ ¬p satisfiable or unsatisfiable? by drawing truth table**

**Q4: Is p ∨ ¬p a tautology or not? by drawing truth table**

**Q5: Prove using truth tables that p → (q ∧ r) |= (¬q ∨ ¬r) → ¬p**