These questions and answers should help you to think about, revise and consolidate the material covered in Lecture 3.

1. Explain the Hierarchical Production Planning (HPP) process.

2. What does Aggregate Planning seek to achieve? What decisions are typically made in aggregate planning?

3. What is Sales & Operations Planning (S&OP) and how does it differ from Aggregate Planning?

4. Describe briefly the main inputs to an MRP system and the main outputs that are generated by a basic MRP system.

5. Explain generally how an MRP system does its calculations.

6. What is the Master Production Schedule (MPS) in an MRP system?

7. MRPII requires capacity checking – why is this necessary and at what levels are capacities checked?

8. What is a capacity requirements plan (CRP) and when is it generated?

9. Why are accurate data and appropriate parameter settings necessary for effective MRP/MRPII systems?

10. What is an ERP system and what parts of the planning hierarchy does ERP support?

11. Why have cloud-based ERP systems become important in supply chain and operations planning and management?

Sample answer

Q4. Describe briefly the main inputs to an MRP system and the main outputs that are generated by a basic MRP system.

Basic MRP systems require three main inputs:

1. **The Master Production Schedule (MPS)** is a primary input to an MRP system. It is a statement of what the organisation intends to produce at independent demand level over future time periods, e.g. how many final products of each type will need to be

ready every week over a 6-month period. The MRP system needs this information to begin its calculations. (Q7 which asks for more details on MPS).

2. **Bills of Materials (BOMs)** contains all the information on how each product is made. The MRP system needs this information to perform its calculations. BOMs require an extensive database, typically called a parts master file in traditional MRP.

3. **Inventory information**, which includes the inventory the firm has in stock (known as on-hand inventory) and the inventory it has currently on order from suppliers and when it will arrive. The MRP system needs this information to perform its calculations. As with BOM's, inventory information requires an extensive database.

Basic MRP systems generates two main outputs:

1. **The purchasing plan** – shows what items have to be purchased from suppliers in what quantities and when the purchase order needs to be launched.
2. **The production plan** – these are the work orders that specify the parts, components and sub-assemblies that have to be produced by the firm in a specific time period.

Note that basic MRP systems may also generate a **materials coordination plan** to ensure that bought-in material and in-house production are coordinated.

MRPII systems generate an additional output a capacity plan (see Q8 and Q9)

A diagram may be useful to help illustrate your answer to this question e.g.