**Q1. Discuss in detail the importance of Product/Technological life cycles in Operations Management. How do organizations face the challenges of quick technological changes in product specifications as well as from customers’ requirements? Explain the same with reference to the Mobile industry, focusing in quick changes in product specifications as well as the changes in the technology used.**

**Ans.**

Product/Technology life cycle is the roadmap of development where product undergo changes at various milestones. Mathematically, the curve is known as S-curve which represent different phases of product life cycle.

Following are the phases of product life-cycle:

1. Product Introduction Phase
2. Growth Stage
3. Maturity Stage
4. Decline Stage

The milestones represent the product behaviour from its inception to completion, according to which various amendments are done for the successful completion of the project. Organisations manage changing requirements through various frameworks such as Agile Development, Plan driven development etc. Every organisation has its own workflow model according to which they handle the product development.

Example: As a product manager of a company I have to develop a mobile app through which a person can track his daily fitness measures, like: calories burned in a day, kilometers traveled etc. Now, at initial phase the mobile app built was using hybrid technology which was cheaper for the client, but as the traffic increased over subsequent period various issues occurred on the user side regarding the performance to the application. So, client asked to resolve the problem and with mutual consent, technology shifted to the native development side which is more robust in nature but incurs high development cost and time. Moreover, the client added new features such as dietary plan, water per day calculation etc, which made the app more beneficial for users.

In the above example we can see that the product entered in its development phase followed by product launch, as the application went on growth scale the technology got matured and was substituted with native development.

**Q2. Explain in detail the various types of plant layout concepts that are available in operations management. Give examples on where each of these types can be employed respectively. Briefly explain a layout for a Retail store format, highlighting the good points and bottlenecks, if any.**

**Ans.**

Broadly, there are four types of plant layout:

1. Process Layout: The process layout is known as a functional layout, it's a categorised approach of production where all the similar machines are put together according to the process or function they perform. This approach is flexible in nature but inefficient.  
     
   Example: This type of layout is seen in technology firm where a subject is moved to various departments for testing, developing, designing. Every department holds its inputs until the subject is arrived, which is then implied and sent back and forth for changes and verification respectively.

1. Product or Line layout: This is a unique sequential arrangement of machines which process the products, one on one basis in a sequence.  
     
   Example: This type of layout is opted by soda/liquid manufacturing companies where the bottles keep on rolling on a roller and adulterants are mixed as they move ahead, step by step.
2. Fixed Layout: This type of orientation is used in production of big bulky products such as ships, aircraft etc. In this type of orientation the work product is stable and other tools are moved around when required. Leaving the tools at the place of manufacturing is not expensive in this orientation as they are used for several days to carry out the work.  
     
   Example: This type of orientation is seen in aircraft manufacturing workshop where the product lies stable and the equipments are moved around the station according to requirements.
3. Cellular or Group layout: This type of layout is suitable when large variety of products are needed in small volumes(or batches). It accommodates similar design or manufacturing operations into one family called part-family.  
     
   Example: This type of layout is often seen in an agricultural firm where different variety of seeds are produced according to the requirements. Every group/cell delivers a predefined product.

**Q3. Education is one of the top sectors of our country. It is also started to being identified as one of the business functions with many corporates starting their own educational institutes. However imparting quality education is a challenge for organizations from non - educational expertise. To understand and suggest roadmaps for the same, answer the following concepts.**

1. **What are the 8 building blocks of Total Quality Management? Discuss how these 8 building blocks can be incorporated in a typical College set up for the objective of providing quality education.**

**Ans**

Eight building blocks of TQM are:

* Foundation

1. Ethics: Ethics are the fundamental root of a system. The college require strict ethical code of conduct to carry out the academic activities under which all the employees are to adhere to in the performance of their work.
2. Integrity: This implies honesty, morals, values, fairness and adherence to facts and sincerity. In an academic institution it's of high importance that students are treated equally and are guided towards right path.
3. Trust: It is also called as bi-product of ethics and integration. It helps in fostering the improvements in the academic institution, with the increase of ethics and integrity code of conduct various research and development operations can be started.

* Building Blocks

1. Training: It is is the foremost paradigm which is required to be followed strictly in order to maintain the quality of education in a university. Employees should be trained periodically to face challenges and address adaptability with changing working environment.
2. Teamwork: It is the root cause for efficient management in an organisation. An academic institute must be segregated into teams to address several problems occurred in academics.
3. Leadership: It is the most important element in TQM. The Principal/Director incorporates vision into working environment and take strategic decisions for welfare of the students which helps in career progress.

* Roof

1. Recognition: It is a factor that boosts productivity in an organisation. A student/teachers should be awarded for their achievements to help increase their influence and self esteem.

* Binding Mortar

1. Communication: This is a system which holds the work flow. A solid communication platform should be there to foster communication and efficient management.
2. **Briefly explain the 5 - s methodology of quality and discuss how the same can be applied to an educational institute.**

**Ans.**

5-S is a methodology for organising, cleaning, developing and sustaining a productive work environment. It reduces waste and non-value activity while improving quality, efficiency and safety. 5-S stands for Seiri, Seiton, Seiso, Seiketsu, Shitsuke.

Seiri: It is to sort the elements which are not required in the system. Most, good educational institutes in India conduct an interview after prelims which is an example of seiri implementation. Students are judged by the authority to ensure weather they are required or not, this is a implementation of seiri.

Seiton: Is signifies straighten. Which implies making this visible of what is kept. An educational institutes displays results on board to acknowledge the candidates is a practice of seiton.

Seiso: This implies scrubbing everything that remains. An educational institute conduct various activities to nurture students routine and behaviour. It is a practical implementation of seiso.

Seiketsu: It is a monitoring process under which authority of educational institutes check for quality and area of improvements, as a point of improvement is identified, training and time to improve is provided.

Shitsuke: Educational institute set a standard/routine to maintain a self discipline among students. They keep on increasing the standards gradually to maintain continuous improvements.