Design & Technology

Project Management Strategies

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- For the multiple choice questions, circle your answer

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don’t spend too much time on one question

Good luck!

Q1. Outline the process of critical path analysis **(4 marks)**

Q2. Explain two ways Six Sigma can improve manufacturing processes **(6 marks)**

1.

2.

Q3. Give **three** features of critical path analysis **(3 marks)**

Answers

Q1.

- Compile a list of all activities/work breakdown structure (1)
- Work out the length of time/duration required for each activity (1)
- Determine the relationships/links between the activities (1)
- Determine specific points of time in the process/milestones/deliverable items (1).

Q2.

- Six Sigma improves quality of products by focusing on quality control (1) aimed at reducing the number of defects (1) from the 1st Sigma at 30% defects to the 6th Sigma at less than 0.001% defects (1)
- Six Sigma reduces the process cycle time (1) by removing errors / unnecessary stages in production (1) for example reducing the number of products that need to be reworked or replaced / inefficient layout of production lines / paperwork being completed that is not needed (1)
- Six Sigma reduces pollution resulting from the process (1) by reducing transportation and travel (1) and reducing production of waste due to product faults / utilising more energy efficient processes (1)
- Six Sigma reduces costs (1) by simplifying processes and steps needed / by using common manufacturing processes for different products (1) therefore reducing setting up time / reducing the amount of capital investment needed (1)
- Six Sigma makes processes as consistent as possible (1) by streamlining processes (1) which reduces the possibilities for defects (1)
- Six sigma improves efficiency / productivity (1) by using DMAIC (Define, Measure, Analyse, Improve, Control) (1) resulting in improved / streamlined use of resources (1)
- Six Sigma is a management tool / methodology (1) where employees become involved in the implementation of quality improvement (1) helps with defect reduction as employees understand the processes involved in the manufacturing of the product (1)

Q3.

- Projects broken down into small ‘step by step’ stages (1)
- Stage timings/duration shown (1)
- Route of stage completion to subsequent stage starts (1)
- Shows dependencies between activities (1)
- Indication of routes to completion (from shortest to longest) /optimum route to completion (1)
- Concurrent less critical activities (1)
- Identification of activities with most impact on overall completion (1)
- Identification of ‘float’ (1)
- Key dates or timings (1)
- Links to JIT (1)
- Reduces downtime (1)