SB

SCOTT BALES CONSULTING ACADEMY

LEAN SIX SIGMA

GREEN BELT

Professional Study Guide

STUDY GUIDE

Recommended Green Belt Project Qualification Standard: $25,000 Annualized ROI

Operational Excellence - Lean Manufacturing - Continuous Improvement

Version 1.0

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1. Green Belt Certification Standards

Purpose

Green Belts lead practical improvement projects using DMAIC discipline, facts, and business-impact thinking.

Green Belt Application

At the Green Belt level, the student is expected to lead structured project work, validate decisions with evidence, and communicate results clearly to stakeholders.

Practical Examples

Environment	Example
Manufacturing	A Green Belt reduces scrap, downtime, changeover loss, or rework using validated causes and controls.
Office	A Green Belt reduces cycle time, approval delays, duplicate data entry, or administrative errors.
Service	A Green Belt improves response time, complaint resolution, service quality, or customer handoffs.

Key Takeaway: Green Belts are expected to lead measurable improvement work and connect process performance to business results.

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2. Green Belt Leadership Responsibilities

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3. Project Selection and Opportunity Identification

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4. Voice of the Customer (VOC)

Purpose

Voice of the Customer captures what customers need, expect, and value. Green Belts translate customer needs into measurable requirements.

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5. Critical to Quality (CTQ) Thinking

Purpose

Critical to Quality measures translate customer needs into specific requirements that can be measured and improved.

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6. Project Charter Development

Purpose

A project charter defines the problem, business case, goal, scope, team, timeline, risk, and expected impact.

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7. Advanced SIPOC and Process Boundaries

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8. Current State Process Mapping

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9. Data Collection Planning

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10. Basic Statistics for Green Belts

Purpose

Green Belts use practical statistics to understand baseline performance, variation, stability, and improvement results.

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11. Measurement System Thinking

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12. Pareto Analysis and Stratification

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13. Root Cause Validation

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14. Cause and Effect Matrix

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15. Failure Modes and Effects Analysis (FMEA)

Purpose

FMEA helps teams identify potential failures, evaluate risk, and prioritize preventive action.

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16. Improvement Design and Pilot Testing

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17. Change Management and Stakeholder Buy-In

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18. Control Plans and Reaction Plans

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19. Financial Validation

Purpose

Financial validation connects project results to credible annualized impact and prevents overstating benefits.

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Practical Examples

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20. ROI Calculation

Purpose

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22. Server 13 Project Validation

Purpose

Server 13 reviews project logic, DMAIC completeness, ROI assumptions, documentation quality, and project readiness.

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23. Green Belt Exam Preparation

Review every module and use the workbook exercises to practice the tools before taking the final exam.

Focus on practical judgement. Students should understand when and why to use each tool, not simply memorize definitions.

Read each question carefully. Eliminate answers that promote blame, skipping data, ignoring customer requirements, or jumping to solutions.

Use the AI Instructor to review concepts, request examples, and reinforce learning. The AI Instructor is designed to teach concepts, not provide exam answers.

Key Takeaway: Exam preparation should focus on application, professional judgement, and structured problem solving.

24. Practice Exam

1. What is the primary purpose of DMAIC?

A. _____ B. _____

C. _____ D. _____

2. Why is a clear problem statement important?

A. _____ B. _____

C. _____ D. _____

3. What does SIPOC help a team define?

A. _____ B. _____

C. _____ D. _____

4. Why are operational definitions important?

A. _____ B. _____

C. _____ D. _____

5. What is Pareto Analysis used for?

A. _____ B. _____

C. _____ D. _____

6. What is the difference between a symptom and a root cause?

A. _____ B. _____

C. _____ D. _____

7. Why should teams validate root causes?

A. _____ B. _____

C. _____ D. _____

8. What is the purpose of a control plan?

A. _____ B. _____

C. _____ D. _____

9. Why should improvements be sustained?

A. _____ B. _____

C. _____ D. _____

10. What behavior should an effective belt avoid?

A. _____ B. _____

C. _____ D. _____

24. Practice Exam - Continued

11. What is the primary purpose of DMAIC?

A. _____ B. _____

C. _____ D. _____

12. Why is a clear problem statement important?

A. _____ B. _____

C. _____ D. _____

13. What does SIPOC help a team define?

A. _____ B. _____

C. _____ D. _____

14. Why are operational definitions important?

A. _____ B. _____

C. _____ D. _____

15. What is Pareto Analysis used for?

A. _____ B. _____

C. _____ D. _____

16. What is the difference between a symptom and a root cause?

A. _____ B. _____

C. _____ D. _____

17. Why should teams validate root causes?

A. _____ B. _____

C. _____ D. _____

18. What is the purpose of a control plan?

A. _____ B. _____

C. _____ D. _____

19. Why should improvements be sustained?

A. _____ B. _____

C. _____ D. _____

20. What behavior should an effective belt avoid?

A. _____ B. _____

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24. Practice Exam - Continued

21. What is the primary purpose of DMAIC?

A. _____ B. _____

C. _____ D. _____

22. Why is a clear problem statement important?

A. _____ B. _____

C. _____ D. _____

23. What does SIPOC help a team define?

A. _____ B. _____

C. _____ D. _____

24. Why are operational definitions important?

A. _____ B. _____

C. _____ D. _____

25. What is Pareto Analysis used for?

A. _____ B. _____

C. _____ D. _____

26. What is the difference between a symptom and a root cause?

A. _____ B. _____

C. _____ D. _____

27. Why should teams validate root causes?

A. _____ B. _____

C. _____ D. _____

28. What is the purpose of a control plan?

A. _____ B. _____

C. _____ D. _____

29. Why should improvements be sustained?

A. _____ B. _____

C. _____ D. _____

30. What behavior should an effective belt avoid?

A. _____ B. _____

C. _____ D. _____

24. Practice Exam - Continued

31. What is the primary purpose of DMAIC?

A. _____ B. _____

C. _____ D. _____

32. Why is a clear problem statement important?

A. _____ B. _____

C. _____ D. _____

33. What does SIPOC help a team define?

A. _____ B. _____

C. _____ D. _____

34. Why are operational definitions important?

A. _____ B. _____

C. _____ D. _____

35. What is Pareto Analysis used for?

A. _____ B. _____

C. _____ D. _____

36. What is the difference between a symptom and a root cause?

A. _____ B. _____

C. _____ D. _____

37. Why should teams validate root causes?

A. _____ B. _____

C. _____ D. _____

38. What is the purpose of a control plan?

A. _____ B. _____

C. _____ D. _____

39. Why should improvements be sustained?

A. _____ B. _____

C. _____ D. _____

40. What behavior should an effective belt avoid?

A. _____ B. _____

C. _____ D. _____

24. Practice Exam - Continued

41. What is the primary purpose of DMAIC?

A. _____ B. _____

C. _____ D. _____

42. Why is a clear problem statement important?

A. _____ B. _____

C. _____ D. _____

43. What does SIPOC help a team define?

A. _____ B. _____

C. _____ D. _____

44. Why are operational definitions important?

A. _____ B. _____

C. _____ D. _____

45. What is Pareto Analysis used for?

A. _____ B. _____

C. _____ D. _____

46. What is the difference between a symptom and a root cause?

A. _____ B. _____

C. _____ D. _____

47. Why should teams validate root causes?

A. _____ B. _____

C. _____ D. _____

48. What is the purpose of a control plan?

A. _____ B. _____

C. _____ D. _____

49. Why should improvements be sustained?

A. _____ B. _____

C. _____ D. _____

50. What behavior should an effective belt avoid?

A. _____ B. _____

C. _____ D. _____

24. Practice Exam - Continued

51. What is the primary purpose of DMAIC?

A. _____ B. _____

C. _____ D. _____

52. Why is a clear problem statement important?

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58. What is the purpose of a control plan?

A. _____ B. _____

C. _____ D. _____

59. Why should improvements be sustained?

A. _____ B. _____

C. _____ D. _____

60. What behavior should an effective belt avoid?

A. _____ B. _____

C. _____ D. _____

25. Acronym Reference Guide

Acronym	Definition
AI	Artificial Intelligence
CAPA	Corrective and Preventive Action
CI	Continuous Improvement
COPQ	Cost of Poor Quality
CTQ	Critical to Quality
DMAIC	Define, Measure, Analyze, Improve, Control
FMEA	Failure Modes and Effects Analysis
FPY	First Pass Yield
KPI	Key Performance Indicator
MSA	Measurement System Analysis
NCR	Non-Conformance Report
OTD	On-Time Delivery
PPM	Parts Per Million
RCA	Root Cause Analysis
ROI	Return on Investment
SIPOC	Suppliers, Inputs, Process, Outputs, Customers
SPC	Statistical Process Control
TPS	Toyota Production System
VOC	Voice of the Customer
VSM	Value Stream Mapping
WIP	Work In Process
ANOVA	Analysis of Variance
Cpk	Process capability index adjusted for centering
DPU	Defects Per Unit
DPO	Defects Per Opportunity
Gage R&R;	Measurement system repeatability and reproducibility
RPN	Risk Priority Number
X-bar Chart	Control chart for subgroup averages

26. Glossary of Key Terms

Term	Definition
Countermeasure	An action designed to address a validated root cause.
Critical to Quality	A measurable requirement important to the customer.
DMAIC	The five-step improvement framework used in Lean Six Sigma.
Fishbone Diagram	A visual root cause analysis tool.
KPI	A Key Performance Indicator used to measure performance.
Operational Definition	A precise description of how a metric will be measured.
Pareto Analysis	A prioritization method based on the vital few principle.
Root Cause	The underlying process condition causing a problem.
SIPOC	A high-level process mapping and scoping tool.
Standard Work	The best known current method for doing work consistently.
Voice of the Customer	Customer requirements, needs, and expectations.
Waste	Activity that consumes resources without adding customer value.
Project Charter	A document that defines project problem, scope, goal, team, and business case.
FMEA	A structured risk analysis method for identifying failure modes.
Financial Validation	Review of whether savings or benefits are credible and supported.
ROI	Return on Investment, comparing benefit against cost.
Storyboard	A project summary showing problem, analysis, improvement, control, and results.
Server 13	Scott Bales Consulting Academy project validation and coaching system.