Superpave Plant Technologist Requalification Study Material (2014)

The following information is an overview of the materials that you should reference and examples of mathematical computations with which you should be familiar in regards to the 2014 Superpave Plant Technologist Requalification Exam. It should be noted that the following is not an "all-inclusive" list, participants are required to be familiar with all specifications, methods, guidelines, special notes, and practices required by the Department, not just the ones pertaining to this exam.

For individuals reviewing the SPT study guide, it is a must that the most current copy of the Supplemental Specifications is utilized in answering the questions. The Supplemental Specifications are located on the Division of Construction's web-site.

Referenced documents:

KY Specifications

- Division 300
- Division 400
- Division 800
- Supplemental Specifications (applicable edition)

AASHTO Standards

- AASHTO M 323
- AASHTO R 35
- AASHTO T166
- AASHTO T209
- AASHTO T312

Kentucky Methods (KM)

- KM 64-426
- KM 64-434
- KM 64-435
- KM 64-442
- Other KM 64-400 Series pertaining to asphalt mixtures

Items of interest:

- Production temperature range for HMA with specific PG binders
- Gradation requirements (control points) for Superpave mixtures and Specialty mixtures
- Test data submittal to the Department
- Joint density requirements
- Lot Pay Adjustment Schedules
- Calculations of volumetric properties

SUPERPAVE PLANT TECHNOLOGIST STUDY GUIDE (2014)

1. For a CL 2 ASPH SURF mixture, calculate the air void content and determine the pay value based on the following information.

Weight in air	4802.7 g
Weight in water	2808.4 g
SSD weight	4809.4 g
G_{mm}	2.484

   a. 1.02
   b. 1.03
   c. 1.04
   d. 1.05

2. Calculate the percent VMA based on the following information.

AC	5.6%
G_{sb}	2.66
G_{mb}	2.398

   a. 14.9
   b. 14.5
   c. 15.3
   d. 15.1

3. According to Standard Specifications a core taken from the mainline surface course is determined to be 90.2 percent of solid density.
   What is the pay value for this individual core?

   a. 0.95
   b. 1.00
   c. 1.05
   d. 0.90

4. According to KM 64-435, what is the allowable difference (tolerance) for the unit weight when averaging the two specimens compacted on plant-produced mixtures, before a specimen is considered invalid?

   a. 115 mm, ± 5 mm
   b. ± 0.015
   c. ± 1.5 pcf
   d. no applicable tolerance, average the two values

5. According to Standard Specifications, the following statement only applies to base pavement mixtures being produced for Department projects: “load all haul trucks with a minimum of three drops, utilizing the three drop method to prevent segregation of the asphalt mixture.”

True_____ False_____

6. When determining G_{mm} values from a field sample, what is the allowable difference between the two results?

a. 0.015
b. 0.005
c. 0.024
d. 0.010

7. For a 0.38D mixture being placed as a scratch course, the SPT is allowed to adjust the PG binder content during the setup period by ± 0.3% with the Engineer’s approval.

True_____ False_____

8. According to the Department’s Quality Assurance Program for Materials Testing and Acceptance, the contractor’s SPT is required to verify the tolerances/ calibrations of the gyratory compactor once per twenty four month period. This can be by the equipment manufacturer, Contractor or Department personnel.

True_____ False_____

9. What is the upper control point on the No. 8 sieve for a scratch course placed with a 0.38 nominal maximum size mixture?

a. 67
b. 58
c. 19
d. 28

10. What are the N-design gyrations for a CL3 ASPH SURF 0.50A PG64-22?

a. 125
b. 75
c. 100
d. 50

11. According to AASHTO T 209, when determining the maximum specific gravity of a 1.5” nominal maximum aggregate size mix, what is the minimum sample size requirement?

a. 2500 g
b. 1500 g
c. 2000 g
d. 4000 g

12. Once the combined G_{sb} has been established from the approved mix design it will never change throughout the production of the various sublots on a project.

True_____ False_____

13. For mixtures with total project quantities of more than 500 but less than 1000 tons, no testing is required because the tonnage does not exceed the setup period tonnage allowed for adjustments.

True_____ False_____

14. When calculating the percent of solid density of a mainline core the AMAW will use the maximum specific gravity determined by the hand-mixed gravity samples provided by the contractor at the end of setup period.

True_____ False_____

15. Given the following, calculate the PG binder content.

G_b	1.030
G_{se}	2.743
G_{mm}	2.492

a. 5.3
b. 4.9
c. 5.4
d. 6.1

Answer Guide to Superpave Plant Technologist Study Guide (2014)

1. c.
2. a.
3. d.
4. c.
5. false
6. a.
7. true
8. false
9. a.
10. b.
11. d.
12. false
13. false
14. false
15. d.