

**PART 2 Exam Questions and Tasks:****A) Short essay (5 points)**

Select either a or b

- a) Describe how coating layer and its structure is formed, starting from wet state in application and ending to a dried layer.
- b) Describe, introduce and compare the pigments used in pigment coatings. How are they classified? What are the central properties to characterize coating pigments.

**B) Coating formulation design task (10 points)**

Your task is to design and calculate suitable coating formulation batches for

- a) Offset printing
- b) Rotogravure printing

**I) Explain first what are the requirements coming from these printing methods to the coated surface.**

**II) Design and calculate suitable coating formulation batches for the above mentioned printing methods**

The dry pigment amount in both of the batches is 3000 kg.

The components available for the coating formulation preparation are listed in the table below.

Component	Dry solids (%)
Kaolin	71
CaCO	74
Talc	70
SB-latex	51
Acrylate-latex	52
Starch	35
CMC	20
Hardener	15
Lubricant	18
Optical brightener (OBA)	18

Prepare suitable coating colour formulations for the above mentioned printing end uses (a and b) and justify your choices. Make the coating colour calculation in a similar way you have done in the coating lab exercise. Try to maximize the solids content of the coating formulation, still keeping it on a reasonable and justified level, and while maintaining reasonable amount of binder and enough binding power in the formulation.

You can upload the coating recipe calculation as a separate Excel worksheet into MyCo exam folder. Name it according to your last name and date, e.g. "StudentZ 17122021"