```
Clear[D2]
bin[z_, k_] := bin[z, k] = Product[z - j, {j, 0, k - 1}] / k!
FI[n_] := FI[n] = FactorInteger[n]; FI[1] := {}
dz[n_, z_] := dz[n, z] = Product[(-1)^p[[2]] Binomial[-z, p[[2]]], {p, FI[n]}]
Dz[n_, z_] := Sum[dz[j, z], {j, 1, n}]
D2[n_, 0] := UnitStep[n - 1]
D2[n_, k_] := D2[n, k] = Sum[D2[Floor[n / j], k - 1], {j, 2, n}]
Clear[Alk3]
A2[n_, 0] := UnitStep[n]
A2[n_, k_] := A2[n, k] = Sum[A2[n - j, k - 1], {j, 1, n}]
Az[n_, z_] := Expand@Sum[bin[z, k] A2[n, k], {k, 0, n}]
Al[n_] := Sum[(-1)^(k + 1) / k A2[n, k], {k, 1, n}]
pp[k_, p_] := D[Log[1 + x]^p, {x, k}] / k! /. x → 0
Alk[n_, p_] := Sum[pp[k, p] A2[n, k], {k, 1, n}]
Alk2[n_, p_] := D[Az[n, z], {z, p}] /. z → 0
Alk3[n_, 0] := UnitStep[n]
Alk3[n_, p_] := Alk3[n, p] = Sum[1 / j Alk3[n - j, p - 1], {j, 1, n}]

Clear[E2]
E2[n_, 0] := UnitStep[n]
E2[n_, k_] := E2[n, k] = Sum[1 / j! E2[n - j, k - 1], {j, 1, n}]
Ez[n_, z_] := Expand@Sum[bin[z, k] E2[n, k], {k, 0, n}]
E2a[n_, k_] := Sum[(-1)^(k - j) bin[k, j] Ez[n, j], {j, 0, n}]
El[n_, p_] := D[Ez[n, z], {z, p}] /. z → 0
El2[n_, p_] := If[n ≥ p, 1, 0]
El3[n_] := Sum[(-1)^(k + 1) / k E2[n, k], {k, 1, n}]
Eza[n_, z_] := Sum[z^k / k! El[n, k], {k, 0, n}]
E2a[n_, k_] := Sum[(StirlingS2[j, k] k!) / j! El[n, j], {j, 0, n}]

Clear[Ex2]
Ex2[n_, d_, 0] := UnitStep[n]
Ex2[n_, d_, k_] := Ex2[n, d, k] = Sum[1 / j! Ex2[n - j, d, k - 1], {j, d, n / d, d}]
Exz[n_, d_, z_] := Expand@Sum[bin[z, k] Ex2[n, d, k], {k, 0, n / d}]


D[Exz[10, .1, z], {z, 1}] /. z → 0
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$Aborted
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