

PART – B

- 5 a. Define Estimation variance and extension variance. (02 Marks)
 b. Derive an expression for estimation variance of a block by a sample. (08 Marks)
 c. Consider a point semi variogram $\gamma(h)$ linear for $h < 2$ and searching a sill $c = 1.0$ at $h = 2$. There is no nugget effect. A square block – V of size 3×3 is estimated by a point sample. S located at a corner of the square as shown in Fig.Q.5(c). Calculate estimation variance of the block. (10 Marks)

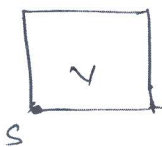


Fig.Q.5(c) Square block v and sample s at corner

- 6 a. Derive an expression for kriged estimate and error for a block with two samples. (15 Marks)
 b. Following are the values for the configuration (Fig.Q.6(b)).



Fig.Q.6(b)

$$\bar{\gamma}(v, v) = 0.60 (\%)^2$$

$$\bar{\gamma}(s_1, v) = 0.60 (\%)^2$$

$$\bar{\gamma}(s_2, v) = 0.80 (\%)^2$$

$$\bar{\gamma}(s_1, s_2) = \bar{\gamma}(s_2, s_1) = 0.90 (\%)^2$$

$$g_1 = 3\%, g_2 = 2\%.$$

Notations used are having usual meaning. Calculate Kriged estimate of block V and the associated kriging variance. (05 Marks)

- 7 Describe in brief the following :
 a. Point kriging cross validation method. (06 Marks)
 b. Block kriging. (07 Marks)
 c. Grade – tonnage relation. (07 Marks)
- 8 Illustrate the following :
 a. Mis classified tonnages. (07 Marks)
 b. Grade control. (07 Marks)
 c. Geo statistical optimization of drilling. (06 Marks)

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