1. Define Analysis of variance.
ANS: Analysis of variance is a technique that will enable us to test for the significance of the difference among more than two sample means.

2. Write any two difference between RBD and CBD.
ANS: One way classification:
(i) One factor is involved
(ii) One set of hypothesis
Two way classification:
(i) Two factor is involved
(ii) Two set of hypothesis

3. State the assumption involved in ANOVA.
ANS:
(i) Each of the samples is drawn from a normal population.
(ii) The variances for the population from which samples have been drawn are equal.
(iii) The variation of each value around its own grand mean should be independent for each value.

4.. What are the basic steps in ANOVA?
ANS:
    i) One estimates of the population variance from the variance among the sample means.
    ii) Determine a second estimate of the population variance from the variance within the sample.
    iii) Compare these two estimates if they are approximately equal in value, accept the null hypothesis.
5. State the uses of ANOVA.
ANS: Analysis of variance is useful, for determining i) which of various training methods produces the fastest learning record. ii) Whether the effects of some fertilizers on the yields are significantly different.

6. Write down the ANOVA table for one way classification.
ANS:

Source of variation	Sum of squares	Degree of freedom	Mean square	F-ratio
Between samples	SSC	K-1	$MSC = \frac{SSC}{K-1}$	$F_c = \frac{MSC}{MSE}$
Within samples	SSE	N-K	$MSC = \frac{SSE}{N-K}$	

7. Define replication.

ANS: To estimate the magnitude of an effect in an experiment the principle of randomization and replication are applied randomization by itself is not necessarily sufficient to yields a valid experiment.

8. Why a 2x2 Latin square is not possible? Explain

ANS: In Latin square, the formula for degrees of freedom for residual is

   d.f $= (n-1)(n-2)$

    Substituting $n=2$, d.f $= 0$, MSE $= \infty$

    2x2 Latin square is not possible.

9. What do you mean by "Design of experiments"?

ANS: The Design of experiments implies one time problem after selecting the factor combination to be employed in an experiment. One must decide how the treatments should be assigned to the experimental units.

10. What are the advantages of a Latin Square design?

ANS:

(i) Latin square controls more of the variation than the completely randomized block design with a two way stratification.

(ii) The analysis is simple

(iii) Even with missing data the analysis remains relatively simple.

11. Write the difference between RBD and LSD.

ANS:

RBD	LSD
(i) Available for a wide range of treatments	(i) More efficient when there is diagonal trend of fertility
(ii)Flexible and easier to manage	(ii)Suitable mainly for 5 or 10 treatments

12. What are the Basic principles of experimental design?

ANS: 1. Randomisation

     2.Replication

     3.Local Controls.