|  |  |
| --- | --- |
| **Sl. No.** | **Topic of Assignment** |
| 1 | Historical aspect of heterosis  |
| 2 | Evolutionary aspects – Genetic consequences of selfing, sibbing and crossing in self-and cross-pollinated and asexually propagated crops |
| 3 | Genetic theories of heterosis |
| 4 | Physiological, Biochemical and molecular factors underlining heterosis; theories and their estimation |
| 5 | Prediction of heterosis from various crosses  |
| 6 | Inbreeding depression, coefficient of inbreeding and its estimation, residual heterosis in F2 and segregating populations |
| 7 | Importance of inbreeding in exploitation of heterosis – case studies |
| 8 | Relationship between genetic distance and expression of heterosis – case studies |
| 9 | Divergence and Genetic Distance analyses morphological and molecular genetic distance in predicting heterosis |
| 10 | Development of heterotic pools in germplasm/ genetic stocks and inbreds, their improvement for increasing heterosis |
| 11 | Male sterility, Types of MS and use in heterosis breeding |
| 12 | Male sterile line creation and diversification in self-pollinated, cross pollinated and asexually propagated crops |
| 13 | Creation of male sterility through genetic engineering and its exploitation in heterosis |
| 14 | Maintenance, transfer and restoration of different types of male sterility |
| 15 | Use of self-incompatibility in development of hybrids |
| 16 | Hybrid seed production system: 3-line, 2-line and 1-line system |
| 17 | Development of inbreds and parental lines- A, B and R lines – functional male sterility |
| 18 | Commercial exploitation of heterosis |
| 19 | Maintenance breeding of parental lines in hybrids. |
| 20 | Fixation of heterosis in self, cross and often cross-pollinated crops, asexually/clonally propagated crops, problems and prospects |
| 21 | Apomixis in fixing heterosis-concept of single line hybrid |
| 22 | Organellar heterosis and complementation  |
| 23 | Hybrid breeding in wheat |
| 24 | Hybrid breeding in rice |
| 25 | Hybrid breeding in cotton  |
| 26 | Hybrid breeding in maize |
| 27 | Hybrid breeding in pearl millet  |
| 28 | Hybrid breeding in sorghum |
| 29 | Hybrid breeding in pigeon pea |
| 30 | Hybrid breeding in rapeseed and mustard |
| 31 | Hybrid breeding in sunflower |
| 32 | Hybrid breeding in safflower and castor oilseed crops |