THE OPENUNIVERSITY OF SRI LANKA
B. Sc. DEGREE PROGRAMME – LEVEL 05 – 2016/2017
Botany – BOU3106/BOE5106 – PLANT BREEDING

ASSESSMENT TEST 1 – OPEN BOOK TEST (OBT)

Reg. No. -----------------------------

DURATION : ONE HOUR (9.00 – 10.00 am)   DATE : 07. 10. 2017

ANSWER ALL QUESTIONS.
(This paper contains three (03) questions and five (05) pages)

1.

   a) What are Hybrid varieties?

   b) Give five (5) examples of hybrid crops widely used in Sri Lanka.

   c) What is Hybrid Vigour ?

d) What is Combining Ability?

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e) What are the two categories of combining ability and their importance in plant breeding?

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f) A diallel cross of rice (*Oryza sativa*) produced the following data for yield. The inbred lines A, B, C, D, and E were crossed in all possible combinations. The mean yield (Kg) for each family is as follows.

	A	B	C	D	E
A	32	40	32	29	22
B	38	41	35	32	24
C	39	40	35	33	25
D	38	38	34	28	18
E	32	27	25	20	17

Which rice line has the best General Combining ability (GCA) ?

2.

a) What are the strategic perspectives to be considered when planning a breeding programme ?

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b) In plant breeding programmes selection plays an important role. What are the major factors affecting the selecting methods?

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c) What is Heterosis ?

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d) What is/are the advantage/s of the phenomenon Heterosis in a breeding programme ?

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e) What was the first example "Heterosis" used successfully in a breeding programme ?

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f) Exploitation of polyploidy provides the plant breeder to produce better varieties.
What is/are the advantage/s of polyploidy plants?

3.

a) What is Heritability?

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b) What is the importance of Heritability?

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c) Explain the heritability in terms of qualitative and quantitative characters.

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d) The total genetic variance of the height of 70-day old *Oryza sativa* var. BG 350 is 55 cm. The environmental variance is 24 cm. Calculate the heritability estimate of this trait. Based on your calculation, comment on the suitability of using this trait in a breeding programme.

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e) Explain briefly the role of International Rice Research Institute (IRRI) and the Rice Research Development Institute (RRDI) in Sri Lanka

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