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5 SEM TDC BOT M 3

2018

(November)

BOTANY

(Major)

Course : 503

(Genetics, Plant Breeding and Biostatistics)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

1. (a) Express the following in 1 word : $1 \times 3 = 3$

(i) An alternative form of gene

(ii) Replacement of purine base by another purine base

(iii) The superiority of an F_1 hybrid over both the parents

(b) Choose the correct answers of the following : $1 \times 2 = 2$

(i) Phenotypic ratio of blending inheritance is $2 : 1/3 : 1/1 : 2 : 1$.

(2)

(ii) The point on the scale above and below which lies one-half of the scores is called median/mode/mean.

(c) Write short notes on the following : $3 \times 3 = 9$

(i) Multiple alleles

(ii) In vitro culture

(iii) Tests of significance

2. (a) What are monohybrid and dihybrid experiments? Define 'Law of Independent Assortment'. Explain with an example that Mendel's law of independent assortment is not universally applicable. $2+2+4=8$

Or

Distinguish between transition and transversion. Describe briefly the types of transition mutation found in living organisms. $2+6=8$

(b) Write short notes on any two of the following : $3 \times 2 = 6$

(i) Gene cloning

(ii) Crossing-over with an example

(iii) Inheritance of kappa particles

(iv) Concept of gene mapping

(3)

3. Define 'hybridization' and state its objectives. Discuss briefly the different steps of hybridization procedure. Also define back-cross breeding. $2+2+5+2=11$

Or

Write explanatory notes on the following :

$6+5=11$

(a) Apomixis and its types

(b) Mass selection and its importance

4. Calculate mean, median and mode from the data given in the following table : $3 \times 3 = 9$

Class interval	Frequency
10-14	4
15-19	5
20-24	8
25-29	7
30-34	15
35-39	13
40-44	7
45-49	6
50-54	2
55-59	3

(Continued)

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(Turn Over)

(4)

Or

Describe the following :

4+5=9

(a) Standard deviation

(b) Role of statistics in biological science

Class Interval	Frequency
10-14	1
15-19	2
20-24	3
25-29	4
30-34	5
35-39	6
40-44	7
45-49	8
50-54	9
55-59	10
60-64	11
65-69	12
70-74	13
75-79	14
80-84	15
85-89	16
90-94	17
95-99	18
100-104	19
105-109	20
110-114	21
115-119	22
120-124	23
125-129	24
130-134	25
135-139	26
140-144	27
145-149	28
150-154	29
155-159	30
160-164	31
165-169	32
170-174	33
175-179	34
180-184	35
185-189	36
190-194	37
195-199	38
200-204	39
205-209	40
210-214	41
215-219	42
220-224	43
225-229	44
230-234	45
235-239	46
240-244	47
245-249	48
250-254	49
255-259	50
260-264	51
265-269	52
270-274	53
275-279	54
280-284	55
285-289	56
290-294	57
295-299	58
300-304	59
305-309	60
310-314	61
315-319	62
320-324	63
325-329	64
330-334	65
335-339	66
340-344	67
345-349	68
350-354	69
355-359	70
360-364	71
365-369	72
370-374	73
375-379	74
380-384	75
385-389	76
390-394	77
395-399	78
400-404	79
405-409	80
410-414	81
415-419	82
420-424	83
425-429	84
430-434	85
435-439	86
440-444	87
445-449	88
450-454	89
455-459	90
460-464	91
465-469	92
470-474	93
475-479	94
480-484	95
485-489	96
490-494	97
495-499	98
500-504	99
505-509	100