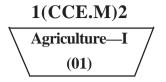
Total No. of Printed Pages: 7 Roll No.



Time: Three Hours]

[Maximum Marks: 300

INSTRUCTIONS

- (i) Answers must be written in English.
- (ii) The number of marks carried by each question is indicated at the end of the question.
- (iii) The answer to each question or part thereof should begin on a fresh page.
- (iv) Your answer should be precise and coherent.
- (v) The part/parts of the same question must be answered together and should not be interposed between answers to other questions.
- (vi) Candidates should attempt question no.1 which is compulsory and any four more out of the remaining questions.
- (vii) If you encounter any typographical error, please read it as it appears in the text-book.
- (viii) Candidates are in their own interest advised to go through the General Instructions on the back side of the title page of the Answer Script for strict adherence.

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(b)	Technologies available for enhancing the productivity of		(a)	Differentiate between any five sets:
(a)	rain-fed crops and how to mitigate the drought effects. 55 Answer any five of the following:			(i) Acidic soils and alkaline soils(ii) Symbiotic and asymbiotic N fixation
	(i) Essentiality of plant nutrients			(iii) Inter cropping and mixed cropping
	(ii) Cultural programs as the tools of extension communication			(iv) Drip irrigation and sprinkler irrigation
	(iii) Efficient techniques of farm management			(v) PRA and PTD
	(iv) Super-markets: How they are useful in farming with any			(vi) Macronutrients and micronutrients
	example.			(vii) Marginal cost and opportunity cost.
	(v) Bio-fertilizer use in India		(b)	Explain in detail the principles and practices of Integrated Nutrient Management. 55
	(vi) Green manuring crops	3.	(a)	Explain any five of the following:
	(vii) Micro-nutrients and their role in plant nutrition.			(i) Deficiency and role of N in plants
(b)	Government interventions in Agricultural produce marketing-			(ii) Govt. interventions in agricultural marketing
recent advances and legal frameworks evolved over years.				(iii) ICT tools in agricultural extension
	55			(iv) Farmers field schools in technology transfer
(a)	Write short notes on any five of the following:			(v) SRI method of rice cultivation
	(i) Soil and plant analysis			(vi) Contract farming
	(ii) Rock phosphate			(vii) Customized fertilizers.
	(iii) Acid, neutral and basic fertilizers		(b)	What are the non-cash inputs and LEISA tools that can help in enhancing the farm profitability under various cropping systems
	v) Soil amendments			in India ? 55

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- 4. (a) Give scientific reasons for any five:
 - (i) Legume seeds are treated with Rhizobium before sowing.
 - (ii) Broad spectrum herbicides can be used before crop sowing.
 - (iii) Regular pruning of lower branches in tree crops is desirable.
 - (iv) Saline soils can be treated with only good quality water.
 - (v) Farmers are interested in total income than total yield.
 - (vi) Split application of N and K is desirable.
 - (vii) Some chemicals are allowed under organic farming.
 - (b) Farm mechanization is only partially successful in India. Why and how it can be made more user friendly under Indian conditions?
- 5. (a) Following terms may be explained (any ten):
 - (i) Front-line demonstrations
 - (ii) Poster presentation
 - (iii) Fertilizer use efficiency
 - (iv) Harvest index
 - (v) pH
 - (vi) Liming
 - (vii) Nitrification
 - (viii) Sugarcane planter machines
 - (ix) Arrowing in sugarcane
 - (x) Glyphosate
 - (xi) Micro irrigation
 - (xii) ITK.

- (b) Explain in detail the principles and practices of Integrated
 Watershed Management and various programs in vogue in India
 now.
- 6. (a) Give the package of practice for following crops:

Package	SRI	Irrigated	Bengal	Ground	Sunflower	Wheat
	Rice	sugarcane	gram	-nut		
Seed rate						
(kg/ha)						
Spacing (cm)						
Recommend						
NPK						
Herbicide						
& dose (kg/ha)						
Major pest						
& diseases						
Yield (kg/ha)						
Cost of						
cultivation						
(Rs.)						
Profit						
(Rs./ha)						

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- (ix) No continuation sheets shall be provided to any candidate under any circumstances.
- (x) Candidates shall put a cross (×) on blank pages of Answer Script.
- (xi) No blank page be left in between answer to various questions.
- (xii) No programmable Calculator is allowed.
- (xiii) No stencil (with different markings) is allowed.
- (a) What do you understand about climate change and its effects on farm productivity, environment, live stock and related resources and its implication on Indian agriculture?
 - (b) Any **five** of the following to be described:
 - (i) Mulching, its merits and demerits
 - (ii) Good characteristics of inter crops
 - (iii) Multistorey cropping system
 - (iv) LEISA
 - (v) Calculate the fertilizer requirement for rice for 1 ha in terms of Urea, DAP and MOP (Recommended dose for rice is $60:40:60~{\rm Kg}~{\rm N_1}~{\rm P_2O_5}$ and ${\rm K_2O/ha})$
 - (vi) Participatory Technology development.
 - (vii) Role of KVK in technology transfer. 40

- (v) Zn status of Indian soils
- (vi) Diversified agriculture
- (vii) Forage and fodder crops.
- (b) Describe the recent advances in agricultural technology communication and their utility under different situations in India with case studies if any.

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