Register Number:……..

KUMARAGURU
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B.TECH DEGREE EXAMINATIONS: MAY 2017

(Regulation 2014)

Sixth Semester

BIOTECHNOLOGY

U14BTE103 : Biofertilizer and Biopesticide Development and Control

COURSE OUTCOMES

CO1: Students able to understand nitrogen fixing bacteria and soil fertility

CO2: Students should learn various production process and formulation of biofertilizer

CO3: Students should learn various agricultural applications of biopesticides.

CO4: Students can able to learn biocontrol agents and their applications.

CO5: Students able to understand various environmental applications.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match the soil horizon (List I) with soil character (List II) CO1 [K_1]

List I	List II
A. O Horizon	i. Humus- Organic layer
B. A Horizon	ii. Eluviated
C. E Horizon	iii. Top soil – Mineral rich
D. B Horizon	iv. Sub soil

	A	B	C	D
a)	i	iii	ii	iv
b)	ii	i	iii	iv
c)	iv	i	ii	iii
d)	ii	iii	i	iv

2. Biopesticides represent only …… (%) of the overall pesticide market in India CO1 [K_1]

a) 5 b) 10

c) 15 d) 20

3. Seed inoculation of biofertilizer was first reported by..... CO2 [K_1]

a) Somasegaran b) Sparrow and Han

c) Singaravadivel and Anthoniraj d) Holland

4. The maximum growth rate for fast growing rhizobium CO2 [K_2]

a) 1-2 days b) 2-3 days

c) 3-5 days d) 5-7 days

5. Find out proper order of methods used to control weeds in arable crops biologically CO3 [K_4]

1. Inoculative biological control using exotic control agents
2. Inundative biological control using microbial herbicides
3. Managing established weed: antagonist systems to stimulate epiphytotics
4. Purpose-specific approaches
5. Ecological integration

a) 2,3,1,4,5 b) 2,1,4,3,5

c) 2,4,1,3,5 d) 2,1,3,4,5

6. Rhizobacteria have also been studied for the biological control of plant-parasitic nematodes. The complete study was proposed by…… CO3 [K_1]

a) Sikora b) Kangaru

c) Khan d) Kumaru

7. **Assertion (A):** Plant incorporated protectants are produced by introducing a gene offering resistance to target pest into a crop plant. CO_4 [K_4]

Reason (R): The gene for Bt pesticidal protein was introduced into the genetic material of cotton plant.

a) Both A and R true and R is the correct explanation of A b) Both A and R are true but R is not the correct explanation of A

c) A true but R is false d) A is false but R is true

8. Environmental modifications may be made to increase natural enemy effectiveness. These modifications include except: CO_4 [K_3]

A. Construction of artificial structures;
B. Provision of supplementary food;
C. Provision of alternative hosts;
D. Improvement of pest-natural enemy synchronization;
E. Control of honeydew-feeding parasites ; and
F. Modification of adverse agricultural practices.?

a) A, B, D b) E only

c) F only d) B,C,F

9. Which one of the following is biocontrol agent for coffee bean borer? CO5 [K_2]

a) *B. penetrans* b) *B. bassiana*

c) *B. cepacla* d) *B. cleophila*

10. *Plant fungal pathogens like Pythium, Fusarium, Phytophthora, Rhizoctonia, Botrytis* are effectively controlled by…… CO5 [K_3]

a) *Agrobacterium radiobacter* b) *Ampelomyces quisqualis*

c) *Trichoderma harzianum* and *Trichoderma virens* d) *Candida oleophila*

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11.	Mention any two bacterial genera that fix nitrogen asymbiotically.	CO1	[K_2]
12.	Draw a simple soil web emphasizing tropic relationship and functional roles of soil biota.	CO1	[K_3]
13.	List any four commercially available biofertilizers for phosphorous supplement.	CO2	[K_2]
14.	Compare any two IPDMS with advantage and disadvantage.	CO3	[K_4]
15.	Analyze any four parameters essential for granular based biofetetilzer production.	CO3	[K_2]
16.	What are the four main tests recommended for quality checking of biopesticide?	CO2	[K_3]
17.	Analyse the need for organic farming in modern agriculture.	CO4	[K_2]
18.	How do nematodes act as biological control agents?	CO4	[K_2]
19.	What are cry toxins?	CO5	[K_3]
20.	What are the four main advantages of biofetilizer over inorganic fertilizers.	CO5	[K_1]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q. No. 21 is Compulsory

21.	Give your opinion about commercial application of BT biopesticides for agricultural application.		CO3	[K_4]
22.	Draw production process flow chart for BGA based biofertilizer.	(7+7)	CO2	[K_2]

23.	Discuss role of viral insecticides for organic farming and write production process for Nuclear Polyhedrosis Virus (NPV) as biocontrol agent.	(7+7)	CO3	[K_3]
24.	i) Analyse the effect of excessive use of chemicals on flora and fauna. ii) How does IPDMS help to improve the soil quality?	(7) (7)	CO4	[K_4]
25.	Explain about various biofertilizer application procedures and mention its specific advantages and disadvantages?	(10+4)	CO5	[K_4]
26.	Explain any FIVE biological control agents for plant diseases (i) Soil borne diseases and foliar diseases. (ii) Foliar diseases.	 (10) (4)	CO4	[K_3]
27.	Describe various methods of application of liquid bio fertilizers and mention its advantages.		CO1	[K_2]

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