

Roll No.

Total No. of Pages : 04

Total No. of Questions : 11

B.Voc. (Child Caregiver)/B.A. (JAMC)/BBA/BBA (SIM)/B.Com (Honours)/
BCA/BHMCT (UGC)/B.Sc. - Honours (Nutrition and Dietetics)/B.Sc.
(AI&ML)/B.Sc. (Bio Technology)/B.Sc. (Fashion Design)/B.Sc. (Graphics
& Web Designing)/B.Sc. (IT)/B.Sc. (Medical Lab Sciences)/B.Sc.
(Operation Theatre Technology)/B.Sc. (Radiotherapy Technology)/
BTMM (Sem-1)

HUMAN VALUES, DE-ADDICTION AND TRAFFIC RULES

Subject Code : HVPE-101-18

M.Code : 93322

Date of Examination : 24-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Section-A is compulsory.
3. Section-B contains five questions of four marks each. Attempt all.
4. Section-C contains five questions of six marks each. Attempt all.

SECTION-A

(10 × 1 = 10)

1. Write briefly :

i) What is Utility-Value?

उपयोगिता-मूल्य क्या हैं?

उपयोगिता-मूल्य की है?

ii) Explain Natural Acceptance.

सहज स्वीकृति समझाओ।

कुदरती मंजुरी समझाओ।

iii) How the value "care" is related with body?

मूल्य "ध्यान" शरीर के साथ कैसे संबंधित है?

मूल्य ध्यान शरीर के साथ कैसे संबंधित है?

iv) What do you mean by Respect?

आपका सम्मान से क्या मतलब है?

इतरों का सम्मान से क्या मतलब है?

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(S-17) 2499



v) What is Perseverance?

अटलता क्या है?

धीरज की है?

vi) What is the difference between prosperity and wealth?

समृद्धि और धन के बीच क्या अंतर है?

समृद्धि और धन के बीच क्या अंतर है?

vii) What is Holistic System?

समग्र प्रणाली क्या है?

समग्र प्रणाली क्या है?

viii) What is Cyclic Production?

चक्रीय उत्पादन क्या है?

चक्रीय उत्पादन क्या है?

ix) What is Existence?

अस्तित्व क्या है?

अस्तित्व क्या है?

x) What is value of any Unit in the larger order?

बड़े आदेश में किसी भी इकाई का क्या मूल्य है?

बड़े आदेश में किसी भी इकाई का क्या मूल्य है?

SECTION-B

(5 × 4 = 20)

2. What is the need for value education in technical and other professional Institutions?

तकनीकी एवं अन्य व्यावसायिक संस्थानों में मूल्यपरक शिक्षा की क्या आवश्यकता है?

तकनीकी एवं अन्य व्यावसायिक संस्थानों में मूल्यपरक शिक्षा की क्या आवश्यकता है?

3. Self-exploration is a process of dialogue between 'What you are' and 'What you really want to be'. Explain and illustrate.

आत्म-अन्वेषण 'आप क्या हैं' आप वास्तव में क्या बनना चाहते हैं' में आपस संवाद की एक प्रक्रिया है। समझाओ और व्याख्या करो।

सह-अन्वेषण 'आप क्या हैं' आप वास्तव में क्या बनना चाहते हैं' में आपस संवाद की एक प्रक्रिया है। समझाओ और व्याख्या करो।

[M-93322]

(S-17) 2499

4. What are the problems we are facing today because of operating on the basis of pre-conditioned desires?

ਪ੍ਰਵ-ਮਾਨਤਾ ਇੱਛਾओं के आधार पर परिचालन करने से हम आज क्या-क्या समस्याओं का सामना कर रहे हैं?

ਪੂਰਵ-ਮਾਨਤਾ ਇੱਛਾਵਾਂ ਦੇ ਆਧਾਰ ਉੱਤੇ ਚੱਲਣ ਕਰਕੇ ਅੱਜ ਅਸੀਂ ਕਿਹੜੀਆਂ ਸਮੱਸਿਆਵਾਂ ਦਾ ਸਾਮਣਾ ਕਰ ਰਹੇ ਹਾਂ?

5. Explain competence in Professional-Ethics.

ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ में क्षमता समझाओ।

ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ ਵਿੱਚ ਸਮਰੱਥਾ ਸਮਝਾਓ।

6. What do you understand by the terms Sweta, Swatantrate and Swarajya?

स्वतंत्रता, स्वतंत्रता और स्वराज्य शब्दों से आप क्या समझते हैं? क्या आपको लगता है कि आपके पास कुछ पूर्ण मानता है? आप उनका मूल्यांकन कैसे करते हैं?

ਤੁਸੀਂ ਸਵੇਤਾ, ਸਵਤੰਤਰਤਾ ਅਤੇ ਸਵਰਾਜ ਸ਼ਬਦਾਂ ਤੋਂ ਕੀ ਸਮਝਦੇ ਹੋ? ਕੀ ਤੁਹਾਨੂੰ ਲੱਗਦਾ ਹੈ ਕਿ ਤੁਹਾਡੇ ਕੋਲ ਕੁੱਝ ਪੂਰਵ ਮਾਨਤਾ ਹੈ? ਤੁਸੀਂ ਉਸਦਾ ਮੁਲਾਂਕਨ ਕਿਵੇਂ ਕਰਦੇ ਹੋ?

SECTION-C

(5 × 6 = 30)

7. "I will learn and improve only if I am unhappy. If I become happy, my learning will stop". Explore the validity of this viewpoint.

"ਮੈਂ ਸਿੱਖਾਂਗਾ ਅਤੇ ਸੁਧਰ ਕਰਾਂਗਾ ਜਦੋਂ ਮੈਂ ਨਾਖੁਸ਼ ਹੁੰ। ਜੇਕਰ ਮੈਂ ਖੁਸ਼ ਹੋ ਜਾਵਾਂਗਾ ਤਾਂ ਮੇਰੀ ਸਿੱਖਿਆ ਬੰਦ ਹੋ ਜਾਵੇਗੀ।" ਇਸ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਦੀ ਵੈਧਿਕਤਾ ਦਾ ਅਨੁਸ਼ਯੋਗ ਕਰੋ।

"ਮੈਂ ਤਾਂ ਹੀ ਸਿੱਖਾਂਗਾ ਅਤੇ ਸੁਧਰਾਂਗਾ ਜੇ ਮੈਂ ਨਾਖੁਸ਼ ਹਾਂ। ਜੇਕਰ ਮੈਂ ਖੁਸ਼ ਹੋ ਗਿਆ ਤਾਂ ਮੇਰੀ ਸਿੱਖਿਆ ਬੰਦ ਹੋ ਜਾਵੇਗੀ।" ਇਸ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਦੀ ਵੈਧਿਕਤਾ ਦੀ ਪੜਚੋਲ ਕਰੋ।

8. Why are physical facilities required? What do you mean by the right utilization of the Body?

ਭੌਤਿਕ ਸੁਵਿਧਾओं की आवश्यकता क्यों है? शरीर के सही उपयोग से आप क्या समझते हैं?

ਭੌਤਿਕ ਸਹੂਲਤਾਂ ਦੀ ਲੋੜ ਕਿਉਂ ਹੈ? ਸਰੀਰ ਦੀ ਸਹੀ ਵਰਤੋਂ ਤੋਂ ਤੁਹਾਡਾ ਕੀ ਮਤਲਬ ਹੈ?

9. What do you mean by coexistence? How are units in coexistence being in space?

सह-अस्तित्व से आप क्या समझते हैं? अंतरिक्ष में इकाइयाँ सह-अस्तित्व में कैसे हैं?

ਸਹਿ-ਹੋਂਦ ਤੋਂ ਤੁਹਾਡਾ ਕੀ ਮਤਲਬ ਹੈ? ਪੁਲਾੜ ਵਿੱਚ ਇਕਾਈਆਂ ਸਹਿ-ਹੋਂਦ ਕਿਵੇਂ ਹੋਂਦੀਆਂ ਹਨ?

10. Critically examine the issues in professional ethics in the current scenario. List any five unethical practices in profession today and the methods being tried to curb them. Comment on the long-term effectiveness of these methods.

वर्तमान परिदृश्य में व्यावसायिक नैतिकता के मुद्दों का आलोचनात्मक परीक्षण करें। आज पेशे में किन्हीं पांच अनैतिक प्रथाओं और उन पर अंकुश लगाने के लिए अपनाए जा रहे तरीकों की सूची बनाएं। इन विधियों की दीर्घकालिक प्रभावशीलता पर टिप्पणी करें।

ਮੌਜੂਦਾ ਸਥਿਤੀ ਵਿੱਚ ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ ਦੇ ਮੁੱਦਿਆਂ ਦੀ ਗੰਭੀਰਤਾ ਨਾਲ ਜਾਂਚ ਕਰੋ। ਅੱਜ ਪੇਸ਼ੇ ਵਿੱਚ ਕਿਸੇ ਵੀ ਪੰਜ ਅਨੈਤਿਕ ਅਭਿਆਸਾਂ ਅਤੇ ਉਹਨਾਂ ਨੂੰ ਰੋਕਣ ਦੇ ਤਰੀਕਿਆਂ ਦੀ ਸੂਚੀ ਬਣਾਓ। ਇਹਨਾਂ ਤਰੀਕਿਆਂ ਦੀ ਲੰਬੇ ਸਮੇਂ ਦੀ ਪ੍ਰਭਾਵਸ਼ੀਲਤਾ 'ਤੇ ਟਿੱਪਣੀ ਕਰੋ।

11. What do you the abbreviations given as SVDD, SSDD and SSSS signify? Explain the reason for the state SSDD.

SVDD, SSDD और SSSS के रूप में दिए गए संक्षिप्ताक्षर क्या दर्शाते हैं? SSDD की स्थिति का कारण बताएं।

ਤੁਹਾਨੂੰ SVDD, SSDD ਅਤੇ SSSS ਦੇ ਰੂਪ ਵਿੱਚ ਦਿੱਤੇ ਗਏ ਸੰਖੇਪ ਰੂਪ ਕੀ ਦਰਸਾਉਂਦੇ ਹਨ। SSDD ਸਥਿਤੀ ਦਾ ਕਾਰਨ ਦੱਸੋ।

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Any student found making any change/addition/modification in contents of scanned copy of answer sheet and original answer sheet, shall be covered under UMC provisions.

00 JUN 2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc./Honours (Microbiology) (Sem.-1)

CHEMISTRY/I

Subject Code : BSMB-103-19

M.Code : 78981

Date of Examination : 14-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What do you mean by hemolytic and heterolytic fission?
- b) What do you mean by Pauli's exclusion principal?
- c) Explain enantiomers.
- d) Define the achiral centre.
- e) What do you mean by meso compounds?
- f) Define erythro compounds.
- g) Define the achiral centres
- h) Define the polarity of bond.
- i) Explain the Heisenberg's uncertainty principle.
- j) Define the hybridization.

SECTION-B

2. Explain the Flying Wedge projection.
3. Explain the Schrodinger wave equation.
4. Explain Optical activity along with examples.
5. What Stereogenic centre?
6. Explain the significance of wave function.

SECTION-C

7. Explain Concept of Topicity of Ligands.
8. Explain the E/Z system.
9. Explain the chirality of organic molecule.



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00 JUN 2024

Roll No.

Total No. of Questions : 07

Total No. of Pages : 02

B. Com (Hons/ BA(JAMC)/ BHMCT/B.Sc.BT/FD/MLS /BBA(SIM)/BTMM
(Sem.-2)

ENVIRONMENTAL STUDIES

Subject Code : EVS/102/18

M.Code : 75831

Date of Examination : 21-05-2024

Time : 3 Hrs.

Max. Marks : 60

SECTION-B

2. Discuss the type's causes and effects of Air pollution.
3. Explain the various types of Bio-diversity.
4. Discuss the inter-disciplinary nature of Environmental studies.
5. Explain the link between Environment and Human.
6. Discuss in detail "*India as a Mega Diversity Nation*".
7. Write a short note on Forest Conservation Act.

INSTRUCTIONS TO CANDIDATES :

1. Attempt ALL questions in SECTION-A, Each question carries 2 marks
2. Attempt any FOUR questions from SECTION-B out of SIX, Each question carries TEN marks.

SECTION-A

1. Write briefly :
- a) Public Awareness
 - b) Cyclones
 - c) Ecological Pyramids
 - d) Forest Ecosystem
 - e) Reason of deforestation
 - f) Air pollution
 - g) Global warming
 - h) Causes of Natural disaster
 - i) Causes of floods
 - j) Sources of Noise pollution.



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[illegible]

Total No. of Questions : 09

Subject Code : BSMB-203-19

M.Code : 79874

Date of Examination: 11-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write Briefly :

- a) Define epimers with suitable examples.
- b) Draw Haworth projection formula for glucose.
- c) What are sphingolipids?
- d) What are zwitter ions?
- e) Define glycoproteins with suitable examples.
- f) What are coenzymes?
- g) Enlist any four properties of peptide bond.
- h) Give any two examples of heteropolysaccharides.
- i) Differentiate between reducing and non-reducing sugars.
- j) What are uncommon amino acids?



SECTION-B

2. Explain in detail stereoisomerism of monosaccharides.
3. Write a detailed note on plant steroids.
4. Define proteins and give classification of amino acids.
5. Write a brief note on UV absorption by nucleic acids.
6. Give sources, properties and functions of water-soluble vitamins.

SECTION-C

7. Classify carbohydrates and give suitable examples from each class including their chemical structures.
8. Classify lipids. Write a detailed note on glycolipids.
9. Explain structure of DNA with respect to Watson-Crick Model.

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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. (Hons.) (Microbiology) (Sem.-2)

MOLECULAR BIOLOGY

Subject Code : BSMB-205-19

M.Code : 79876

Date of Examination : 15-05-2024

Time | 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
 2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
 3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Write briefly :
 - a. Give the name of protein synthesis inhibitors.
 - b. Write properties of genetic materials.
 - c. RNA polymerase.
 - d. Distinguish between sense and antisense RNA.
 - e. What is genetic code?
 - f. Define θ (theta) mode of replication.
 - g. What is semi conservative replication?
 - h. Why translation is called so?
 - i. What are translational inhibitors?
 - j. Define transcription.



SECTION-B

2. What are the functional difference between DNA polymerase and RNA polymerase?
3. Explain the primary structure of DNA.
4. What is siRNA and miRNA? Give a detail note on their significance.
5. What are the enzymes involved in DNA replication?
6. Describe in brief the histone acetylation mechanisms.

SECTION-C

7. Write an essay on the types of RNA's with diagrams.
8. Highlight the various translation processes in eukaryotes.
9. Explain the technique of DNA replication in eukaryotes.

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00 JUN 2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

Bachelor of Science / Honours (Microbiology) (Sem.-3)

BIOSTATISTICS

Subject Code : BSMB308/19

M.Code : 90374

Date of Examination : 11-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) Differentiate primary from secondary data.
- b) What is standard deviation?
- c) What do you mean by probability distribution?
- d) Define skewness and kurtosis.
- e) What is Wilcoxon signed rank test.
- f) Explain confidence limit.
- g) What is meant by degree of freedom?
- h) Define p - value.
- i) What is correlation?
- j) Explain interquartile range.



SECTION-B

2. What do you mean by chi-square test – goodness of fit? Write its significance.
3. Give an account of normal distribution.
4. Give an account of the errors in research.
5. Explain one non-parametric tests. Write its significance and assumptions.
6. Give an account of the procedure for testing of hypothesis. Differentiate hypothesis from null hypothesis.

SECTION-C

7. Define Pearson and Spearman rank correlation. Write their assumptions and significance in research.
8. To carry out one factor analysis of variance of the given observations of three different methods of teaching. Find out the mean difference between the groups and state the hypothesis. [alpha level: 0.05, F = 5.41]

Online Teaching	Teaching through Multimedia device	Traditional Method
4	5	5
3	3	4
4	6	6

9. a) Define correlation. Write its significance.
- b) Find out the coefficient of correlation from the following data :
 X : 65, 66, 67, 67, 72, 70, 69, 70
 Y : 67, 68, 64, 68, 68, 69, 71, 73

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00 MAY 2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem.-4)

AGRICULTURAL MICROBIOLOGY

Subject Code : BSMB403/20

M.Code : 92101

Date of Examination : 13-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. SECTION-B contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. SECTION-C contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Answer briefly :

- a) How do soil microbes influence the cycles of phosphorus and sulfur?
- b) What is mineralization in soil microbiology?
- c) What is the process of immobilization in soil?
- d) What is the role of oxidizing bacteria in soil?
- e) Which generic groups of bacteria are commonly found in soil?
- f) What are the functions of Azotobacter species in soil?
- g) What are the associations of Cyanobacteria (BGA) in nitrogen fixation?
- h) Which pathogen causes downy mildew and what host does it affect?
- i) How do receptors and elicitors play a role in plant-microbe interactions?
- j) What is the function of lectins in plant-pathogen interactions?

SECTION-B

2. How do Cyanobacteria (BGA) contribute to nitrogen fixation in soil?
3. Describe the factors that control the symbiotic relationship between legumes and Rhizobium bacteria.
4. Describe the nutrition sources of algae, protozoa, and viruses in soil.
5. Describe the cycles of phosphorus, sulphur, and nitrogen in soil.
6. Differentiate between mineralization and immobilization in soil microbiology.

SECTION-C

7. Discuss the various factors that influence the distribution and abundance of soil microbial populations. How do these factors impact the overall soil ecosystem and nutrient cycling?
8. Discuss the post-penetration stages of microorganisms with plants.
9. Explain the role of pathogen enzymes in plant pathogenesis. Discuss how the production and action of these enzymes contribute to disease development.



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00 MAY 2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Sc. Hons. (Microbiology) (Sem.-4)

ANALYTICAL TECHNIQUES IN MICROBIOLOGY

Subject Code : BSMB407/20

M.Code : 92105

Date of Examination : 17-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What is HPLC?
- b) Write about pulse gel electrophoresis.
- c) What is chromophore?
- d) Write about the Raman Effect.
- e) Describe agarose electrophoresis of nucleic acid.
- f) What is radioactive labeling?
- g) Briefly hyperfine splitting.
- h) Principle of UV-spectrophotometry.
- i) Enlist factors affecting sedimentation volume.
- j) Outline the 3D electrophoresis.



SECTION-B

2. Which technique is commonly used to visualize the distribution of radioactive substances within a sample in biological and biochemical research?
3. Which method is commonly used in biophysics for separating and analyzing mixtures based on their affinity for a stationary and mobile phase?
4. Which scientific principle explains the movement of charged molecules through gel electrophoresis?
5. How is UV-spectrophotometry utilized in determining the concentration or purity of substances?
6. How does NMR spectroscopy provide insights into the structure and dynamics?

SECTION-C

7. Explain the Quantum mechanical reason for the Raman sEffect.
8. Describe in detail the Pulse gel electrophoresis and gel electrophoresis.
9. Discuss the absorption and affinity chromatography.

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Total No. of Pages : 02

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B.Sc. Honours (Microbiology) (Sem.-6)
BIOPESTICIDES & BIOFERTILIZERS

Subject Code : BSMB607/20

M.Code : 92523

Date of Examination : 04-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What do you mean understand by ideal fertile soil?
- b) Free living N₂ fixing biofertilizer.
- c) Fermentation.
- d) Biopesticide.
- e) How do biofertilizers work?
- f) Fungal biofertilizers.
- g) Biorationales.
- h) Frankia biofertilizers.
- i) Scope of biofertilizers.
- j) Pathogen.



SECTION-B

2. Discuss the classification of biopesticides.
3. Describe the structure and characteristic features of bacterial biofertilizers with examples.
4. Explain the production technology of biofertilizers, focusing on strain selection and fermentation.
5. Discuss the factors influencing the efficacy of biofertilizers.
6. Explain the limitations in the production and use of biopesticides.

SECTION-C

7. Compare and contrast botanical pesticides with microbial biopesticides.
8. Analyze the storage, shelf life, and quality control of biofertilizers.
9. Discuss the scope and potential of fungal biofertilizers, highlighting their role in sustainable agriculture.

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Total No. of Questions : 09

B.Sc. Honours (Microbiology) (Sem.-6)
MICROBIAL BIOTECHNOLOGY
Subject Code : BSMB603/20
M.Code : 92519
Date of Examination : 29-04-2024

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

1. Write briefly :

- What is the significance of biodiversity conservation?
- How do aeration and oxygen transfer in a bioreactor system?
- Enlist the various applications of biogas.
- Define growth stoichiometry.
- What is the principle of fermentor design?
- Define PUFA.
- What is gasohol?
- Briefly mention baker's yeast.
- Define growth efficiency.
- What are probiotics? Give examples.



2. Describe the process of mushroom cultivation.
3. Explain the types of fermentation process.
4. Write a short note on the efficiency of microbial growth and product formation.
5. Discuss the applications of microbes in industrial biotechnology.
6. How do nutraceuticals contribute to overall health and wellness?

7. Explain in detail hollow fibre bioreactors and immobilized cell reactors.
8. Discuss the design, instrumentation and working of stirred tank bioreactor.
9. Write a detailed note on waste utilization to generate biofuels.

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JUN 06 2024

Roll No.

Total No. of Pages : 02

Total No. of Questions : 8

Bachelor of Science / Honours (Microbiology) (Sem.-6)

RECOMBINANT DNA TECHNOLOGY

Subject Code : BSMB601/20

M.Code : 92517

Date of Examination: 25-04-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FOUR marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

I. Answer the following:

- a) What does rDNA stand for?
- b) Which enzyme is used to cut DNA at specific sequences?
- c) What is the primary use of rDNA technology in producing insulin?
- d) Name a commonly used viral vector for vaccine production.
- e) How has rDNA technology been used to produce pest-resistant crops?
- f) Which organism is often genetically modified to produce biofuels using rDNA technology?
- g) What is the primary purpose of fermentation in food production?
- h) What is bio-plastics primarily made from?
- i) What is the purpose of introducing recombinant DNA into host cells?
- j) Which enzyme is used to join DNA fragments together during cloning?

SECTION-B

2. Explain how genetic engineering of microbes can aid in the cleanup of environmental pollutants.
3. Describe the fermentation process commonly used for producing antibiotics.
4. Differentiate between viral and bacterial vaccines in terms of their production methods and targets. Provide an example of each type of vaccine.
5. Explain the structure and function of a plasmid vector used in cloning. How does it facilitate the insertion of foreign DNA into host cells?
6. Compare and contrast a multipurpose cloning vector with a mammalian expression vector in terms of their features and applications.

SECTION-C

7. Describe the mechanisms by which genetically engineered microbes aid in bioremediation. Discuss at least two specific examples of pollutants targeted, by these engineered microbes.
8. Compare and contrast the fermentation techniques employed in the production of antibiotics and organic acids. Discuss the key differences in process parameters, microbial strains used, and end products for each fermentation process.
9. Explain the general approaches used for developing viral and bacterial vaccines with examples, also describing their production methods.



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