Roll No.

Toi lo. of Pages: 04

Total No. of Questions : 1

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

BTTM (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

 $(10 \times 1 = 10)$

- 1. Write briefly:
 - i) What is Utility-Value? उपयोगिता-मूल्य क्या हैं? ਉਪਯੋਗਿਤਾ-ਮੱਲ ਕੀ ਹੈ?
- ii) Explain Natural Acceptance. सहज स्वीकृति समझाओ। ਕੁਦਰਤੀ ਮੌਜੂਰੀ ਸਮਝਾਓ।
- iii) How the value "care" is related with body? मृल्य ''ध्यान'' शरीर के साथ कैसे संबंधित है? ਮੁੱਲ ਧਿਆਨ ਸਰੀਰ ਦੇ ਨਾਲ ਕਿਵੇਂ ਸਬੰਧਤ ਹੈ?
- iv) What do you mean by Respect? आपका सम्मान से क्या मतलब हैं? ਤੁਹਾਡਾ ਆਦਰ ਤੋਂ ਕੀ ਮਤਲਬ ਹੈ? [M-93322]

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v) What is Perseverance? अटलता क्या है? ਧੀਰਜ ਕੀ ਹੈ?

- vi) What is the difference between prosperity and wealth? समृद्धि और घन के बीच क्या अंतर है? 🚾 🖟 कि कार्यों कार्या 🥦 ਖੁਸ਼ਹਾਲੀ ਅਤੇ ਅਮੀਰੀ ਦੇ ਵਿੱਚ ਕੀ ਅੰਤਰ ਹੈ?
- vii) What is Holistic System? समग्र प्रणाली क्या है? ਸਰਵਭੌਮਿਕ ਪ੍ਣਾਲੀ ਕੀ ਹੈ?
- viii) What is Cyclic Production? चक्रीय उत्पादन क्या है? ਚਕਰੀ ਉਤਪਾਦਨ ਕੀ ਹੈ?
- ix) What is Existence? अस्तित्व क्या हैं? ਅਸਤੀਤਵ ਕੀ ਹੈ?
- x) What is value of any Unit in the larger order? बड़े आदेश में किसी भी इकाई का क्या मूल्य है? ਵੱਡੇ ਆਦੇਸ਼ ਵਿੱਚ ਕਿਸੇ ਵੀ ਇਕਾਈ ਦਾ ਕੀ ਮੁੱਲ ਹੈ?

SECTION-B

 $(5 \times 4 = 20)$

- 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? ਤਕਨੀਕੀ ਅਤੇ ਹੋਰ ਪੇਸ਼ੇਵਰ ਸੰਸਥਾਵਾਂ ਵਿੱਚ ਮੁੱਲ ਦੀ ਸਿੱਖਿਆ ਦੀ ਕੀ ਲੋੜ ਹੈ?
- 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।

ਸਵੈ-ਖੋਜ 'ਤੁਸੀਂ ਕੀ ਹੋ' ਅਤੇ 'ਤੁਸੀਂ ਅਸਲ ਵਿੱਚ ਕੀ ਬਣਨਾ ਚਾਹੁੰਦੇ ਹੋ' ਵਿੱਚ ਆਪਸ ਸੰਵਾਦ ਦੀ ਇੱਕ ਪ੍ਰਕਿਰਾ ਹੈ'। ਸਮਝਾਓ ਅਤੇ ਵਿਆਖਿਆ ਕਰੇ।

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

पूर्व-मानता इच्छाओं के आधार पर परिचालन करने से हम आज क्या-क्या समस्याओं का सामना कर रहे हैं?

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

5. Explain competence in Professional-Ethics.

पेशेवर नैतिकता में क्षमता समझाओ।

ਪੇਸ਼ੇਵਰ ਨੈਤਿਕਤਾ ਵਿੱਚ ਸਮਰੱਥਾ ਸਮਝਾਓ।

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

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

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

SECTION-C

 $(5 \times 6 = 30)$

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.

''मैं तभी सीखुंगा और सुधार करूंगा जब मैं नाखुश हूं। अगर मैं खुश हो जाऊं तो मेरी सिखलाई बंद हो जाएगी।" इस दुष्टिकोण की वैधता का अन्वेषण करें।

"ਮੈਂ ਤਾਂ ਹੀ ਸਿੱਖਾਂਗਾ ਅਤੇ ਸੁਧਾਰਾਂਗਾ ਜੇ ਮੈਂ ਨਾਖੁਸ਼ ਹਾਂ। ਜੇਕਰ ਮੈਂ ਖੁਸ਼ ਹੋ ਗਿਆ ਤਾਂ ਮੇਰੀ ਸਿਖਲਾਈ ਬੰਦ ਹੋ ਜਾਵੇਗੀ।" ਇਸ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਦੀ ਵੈਧਤਾ ਦੀ ਪੜਚੋਲ ਕਰੋ।

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

भौतिक सुविधाओं की आवश्यकता क्यों है? शरीर के सही उपयोग से आप क्या समझते

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? अंतिरक्ष में इकाइयाँ सह-अस्तित्व में कैसे हैं? ਸਹਿਰੋਂਦ ਤੋਂ ਤੁਹਾਡਾ ਕੀ ਮਤਲਬ ਹੈ? ਪੁਲਾੜ ਵਿੱਚ ਇਕਾਈਆਂ ਸਹਿ-ਹੋਂਦ ਕਿਵੇਂ ਹੁੰਦੀਆਂ ਹਨ?

10. Critically exmine 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.

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Total No. of Questions: 09

B.Sc. Honours (Microbiology) (Sem.-1)
INTRODUCTION TO MICROBIOLOGY

Subject Code: BSMB101/19 M.Code: 78979

Date of Examination: 12-06-2024

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

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

SECTION-A

1. Write briefly:

- a) Discuss the contributions of Louis Pasteur to the field of microbiology.
- b) Define sterilization.
- c) Describe the principle of dark field microscopy.
- d) Define microbial spores.
- e) Mention the diseases caused by microbial pathogens.
- f) What is antibiosis in microbial interactions? Provide an example.
- g) Define aerobic fermentation.
- h) Describe the importance of microbial classification.
- i) Define generation time in microbial growth kinetics.
- j) Define microbes.



SECTION-B

- Discuss the role of Robert Koch in establishing the germ theory of disease.
- 3. Explain the phases of bacterial growth and their characteristics.
- 4. Compare and contrast the principles of phase contrast and fluorescent microscopy.
- 5. Discuss the importance of microbial interactions in the soil ecosystem.
- 6. Mention the discovery of antibiotics.

SECTION-C

- Explain the methods used for microbial sterilization and their applications in various industries.
- Describe the structure and function of bacterial cell wall with reference to Gram-positive and Gram-negative bacteria.
- 9. Discuss the applications of electron microscopy in the field of microbiology.



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Total No. of Pages: 02

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B.Se./Heneurs (Microbiology) (Sem.-1)

CHEMISTRY/I

Bubject Code :BSMB-103-19 M.Code : 78981

Date of Examination: 14-06-2024

Time | 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

- 1. BECTION A IN COMPULSORY consisting of TEN questions carrying TWO marks
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 1. 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 achirotopic 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?
- Explain the significance of wave function.

SECTION-C

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



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Total No. of Questions: 07

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

ENVIRONMENTAL STUDIES

Subject Code: EVS/102/18

M.Code: 75831 Date of Examination: 21-05-2024

Time: 3 Hrs.

Max. Marks: 60

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

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.



SECTION-B

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



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H. So. (Haneurs) (Microbiology) (Sem-2) BAGTERIOLOGY

Subject Code : BBMB201-19 M.Code : 79872

Bala of Examination : 88-95-2024

Time : 3 Hrs.

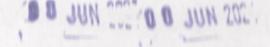
Max. Marka: 60

- 1. SECTION A Is COMPULEORY consisting of TEN questions carrying TWO marks INSTRUCTIONS TO CANDIDATES :
 - Fig.1 8 montains FIVS questions carrying FIVE marks each and students secula stiempt any FOUR questions.
 - THE RESEARCH THREE questions parrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Answer briefly :

- a) What are the 5 levels of cell organization?
- b) Define Transmission Electron Microscope.
- c) Define growth phase in bacteria.
- d) Define the term genera.
- e) Give name of media component for bacterial growth.
- f) Enlist the general characteristics of bacteria.
- g) What is lipopolysaccharide?
- h) How streaking is differ from plating method?
- i) Give formula for calculation of generation time in bacteria.
- j) Define inclusion bodies.



SECTION-B

- Give desaited difference between gram positive and grant negative bacteria.
- Describe in brief the processor of reproduction in bacteria.
- Write a note on Fluorescenes Microscope.
- Explain the structure, function and chemical composition of bacterial cell wall.
- How bacterial populations can evolve through natural selection? Explain.

SECTION-C

- Enlighten the important cubacterial group.
- What are the various methods of microbial control? Explain in brief.
- Discuss the effect of antibiotics and enzyme on microbial cell wall.

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Total No. of Pages: 02

Total No. of Questions: 09

B.Sc. Honours (Microbiology) (Sem-2) FUNDAMENTALS OF BIOCHEMISTRY

Subject Code: BSMB-203-19 M.Code: 79874

Date of Examination: 11-05-2024

Time : 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- 1. BECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks
- 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

- 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 Questions: 09

Bachelor of Science / Honours (Microbiology) (Sem.-4)

FOOD AND DAIRY MICROBIOLOGY Subject Code: BSMB405/20

M.Code: 92103

Date of Examination: 14-05-2024

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

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

SECTION-A

1. Write briefly:

- a) Mention the intrinsic factors affecting microorganisms present in food.
- b) What are the intrinsic factors for microbial growth?
- c) Cite the action of lipases in cheese formation.
- d) Microbial spoilage of food.
- e) WPC
- f) Enzyme.
- g) Lactase
- h) Composition of milk
- i) Protease
- i) Food additives.



SECTION-B

- Give .significance of fermented foods.
- Discuss the historical background and introduction to food microbiology.
- Explain the production technique of balanced diet.
- Discuss the role of enzymes in fruit juice and brewing industries.
- Describe the microbiology and flavor changes in pickling.

SECTION-C

- Describe the production process and nutritional evaluation of single cell proteins.
- Explain the microbiology and production techniques of different types of cheese.
- Discuss the environmental and biological factors affecting the composition of milk.



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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:

- 1. BECTION A Is COMPULSORY consisting of TEN questions carrying TWO marks
- BECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 1. BECTION-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.

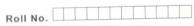


SECTION-B

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

SECTION-C

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



Total No. of Questions: 09

Bachelor of Science / Honours (Microbiology) (Sem.-2) MICROBIAL PHYSIOLOGY AND METABOLISM

Subject Code: BSMB207/19 M.Code: 79878

Date of Examination: 18-05-2024

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks
- 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) Write a note on Methanogeris.
- b) Differentiate between aerobic and anaerobic respiration.
- c) What do you mean by Proton Motive Force?
- d) What is the effect of pH on microbial growth?
- e) Enlist steps of yeast fermentation.
- f) What is primary transport?
- g) Define hydrogen oxidation.
- h) Define uncoupler. Give examples.
- i) How is the TCA Cycle linked with the urea cycle?
- j) Write down the irreversible steps of glycolysis.



SECTION-B

- Write a note on glyoxalate cycle.
- Discuss the concept of uniport, symport and antiport.
- Write a note on generation time and diauxic grotvth curve.
- What is the concept of branched and linear fermentation pathway?
- Differentiate oxygenic and anoxygenic photosynthesis.

SECTION-C

- Discuss dissimilatory and assimilatory nitrate reduction in bacteria.
- Describe heterolactate fermentation pathway. What is the advantage that an organism derives from the branched fermentation pathway?
- 9. Describe the mechanism for the transport of glucose in E.coli with the help of a diagram.



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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:

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 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 valve.
- 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.
- Give an account of normal distribution.
- Give an account of the errors in research.
- Explain one non-parametric tests. Write its significance and assumptions.
- Give an account of the procedure for testing of hypothesis. Differentiate hypothesis from null hypothesis.

SECTION-C

- Define Pearson and Spearman rank correlation. Write their assumptions and significance in research.
- 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		
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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

Roll No.

Total No. of Pages: 02

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B.Sc. (Microbiology) (Sem.-4)
PHYCOLOGY AND MYCOLOGY

Subject Code: BSMB401/20 M.Code: 92099

Date of Examination: 07-05-2024

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

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

SECTION-A

1. Write briefly:

- a) Define thallus organization in algae and provide an example.
- b) Explain the occurrence of Chara in its natural habitat.
- c) Describe the life cycle of Diatoms.
- d) Discuss the somatic structure of Zygomycetes.
- e) What are the applications of algae in agriculture?
- f) Name two genera of Basidiomycetes and describe their occurrence.
- g) Briefly explain the occurrence and significance of Lichens.
- h) Define Mycotoxins and provide an example.
- i) Discuss the significance of Mycotoxins in agriculture and human health.
- Define Mycology.





- Compare and contrast the Thallus organization of Coleochaete and Vaucheria.
- Discuss the life cycle of Ectocarpus and its ecological significance.
- Explain the occurrence and significance of Neurospora among Ascomycetes.
- Describe the somatic structure and life cycle of Physarum.
- Discuss the applications of fungi in medicine with relevant examples.

SECTION-C

- 7. Describe the classification of algae with reference to Chlorophyceae and Xanthophyceae,
- Discuss the classification of fungi with reference to Ascomycetes and Deuteromycetes.
- Explain the ecological role of Cyanobacteria, focusing on the genus Nostoc.

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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
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 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

- How do Cyanobacteria (BGA) contribute to nitrogen fixation in soil?
- Describe the factors that control the symbiotic relationship between legumes and Rhizobium bacteria.
- Describe the nutrition sources of algae, protozoa, and viruses in soil.
- Describe the cycles of phosphorus, sulphur, and nitrogen in soil.
- 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?
- Discuss the post-penetration stages of microorganisms with plants.
- 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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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 :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks
 each.
- 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?
- 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

- 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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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:

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks
 each
- 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

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

SECTION-C

- Compare and contrast botanical pesticides with microbial biopesticides.
- 8. Analyze the storage, shelf life, and quality control of biofertilizers.
- 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

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks
- SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 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 the significance of biodiversity conservation?
- b) How do aeration and oxygen transfer in a bioreactor system?
- c) Enlist the various applications of biogas.
- d) Define growth stoichiometry.
- e) What is the principle of fermentor design?
- f) Define PUFA.
- g) What is gasohol?
- h) Briefly mention baker's yeast.
- i) Define growth efficiency.
- j) What are probiotics? Give examples.

SECTION-B

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

SECTION-C

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



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Total No. of Pages: 02

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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:

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

SECTION-A

1. 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

- Explain how genetic engineering of microbes can aid in the cleanup of environmental pollutants.
- 3. Describe the fermentation process commonly used for producing antibiotics.
- 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?
- Compare and contrast a multipurpose cloning vector with a mammalian expression vector in terms of their features and applications.

SECTION-C

- Describe the mechanisms by which genetically engineered microbes aid in bioremediation. Discuss at least two specific examples of pollutants targeted, by these engineered microbes.
- 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.

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Explain the general approaches used for developing viral and bacterial vaccines with examples, also describing their production methods.

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B.Sc. Honours (Microbiology) (Sem.-6)
PLANT MICROBIAL INTERACTIONS

Subject Code: BSMB605/20 M.Code: 92521

Date of Examination: 30-04-2024

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

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

SECTION-A

1. Write briefly:

- a) Parasitism
- b) Plant microbial interaction
- c) Plant pathology
- d) Microbes
- e) Parasites
- f) Commensalism
- g) Phylosphere
- h) Mycorrhizae
- i) Endotoxins
- j) Nutrients.



SECTION-B

- Give an account on Toxicology of microbes in relation to medicinal plants and vegetables.
- Discuss the various diseases caused by microbial plant parasites.
- 4. Give an account on role of bactericidal agents for plants.
- 5. Discuss important plant pathogenic organisms.
- 6. Give an account on Toxicology of microbes in relation to dairy products.

SECTION-C

- Discuss the role of antimicrobial agent in various plant extracts.
- 8. Write an account on different microbes and plant interactions.
- 9. Discuss future prospects challenges and limitations of plant microbial interactions.

