UNIVERSITY OF BALOCHISTAN , QUETTA

M.A/M.Sc (Annual) Examination 2015

Attention 1. Possession and use of mobiles and other electronic accessories are strictly prohibited. If candidate possess/uses, his/her case will be sent to unfair means committee. 2. If any candidate shows/marks his/her identity in the Answer Book, he/she will be disqualified for the said paper.

SUBJECT: **MICROBIOLOGY** Paper :- I (Prev:)

General Microbiology

Time allowed: Three 3 hours. **Maximum marks 75**

Note: Attempt any five (5) questions. Question number ONE is compulsory. After 40 minutes the paper entailed answers of Q: No. 1 should be handed over to the supervisory staff. All questions carry equal marks.

Section – I (objective portion) Time :- 40 Minutes

Q No.1. Attempt any fifteen. All Question carry equal Marks. (15)

1. Define vaccine.
2. What are Main difference B/w antiseptics and antibiotics.
3. What are main difference B/w cyanobacteria and eubacteria.
4. What is culture media.
5. Draw different growth curves.
6. What is bacteriophage
7. What are main difference B/w Gram Positive and Gram Negative bacteria.
8. Define the steps of Gram staining's.
9. Define some nutritional requirements for Bacteria
10. What is plasmid.
11. Why we use BCG vaccine.
12. What is the mode of action of penicillin
13. What is role of E coli in water born disease.
14. What are main difference B/w incubator and autoclave.
15. Define Bacterial Growth curve.
16. What is recombination.
17. Define thermophile bacteria.
18. Define chemical sterilization
19. Define role of bacteria in Bio technology.
20. Define endotoxin .

Section II **Time Allowed for this section 2 : 20 Marks.** **(60)**

Attempt any Four Question ,All Questions carry equal Marks.

Q. No. 1. what is sterilization, enlist different methods of sterilization, explain any one in detail.

Q .No. 2 . what are the main difference Between Bacteria, virus and fungi ,explain the morphological Structure of bacteria in detail and also draw the diagram of bacterium.

Q. No. 3. What is transduction ? Explain different steps of Conjugation in detail.

Q No 4. what are the main difference between prokaryote and eukaryotes. Explain the structure of Eukaryotic cell in detail.

Q No 5. Enlist different antibiotics, explain the mode of action of antibiotics.

Q No. 6. Defines Vaccine, explain the role of vaccine in disease control.

Q.No.7. Define thermophile .draw the diagram of a mesophyll bacteria.

Q No8 .how microorganism is beneficial for society.

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SUBJECT: **MICROBIOLOGY** Paper :- II (Prev:)

Microbial Genetics

Time allowed: Three 3 hours. **Maximum marks 75**

Note: Attempt any five (5) questions. Question number ONE is compulsory. After 40 minutes the paper entailed answers of Q: No. 1 should be handed over to the supervisory staff. All questions carry equal marks.

Section – I (objective portion) Time :- 40 Minutes

Differentiate the following terms (any five) (10)

I. Transfer RNA and messenger RNA
II. Transcription and Translation
III. Spontaneous and induced mutations
IV. Conjugation and transduction
V. Sense and antisense RNA
VI. Code and anti-codon
VII. Conservative and semi-conservative replication

Write short answers of the following (05)

I. What is primer?
II. Define transformation.
III. By which mechanism, DNA molecule would be doubled
IV. What is operon?
V. What is the function of DNA polymerase?
VI. Enlist the names of Scientists who proposed the Double Helix Structure of DNA
VII. What is Plasmid?

Section II Marks - (60)

Attempt any four Questions

Q No. 2. What is mutation? Enlist the different mutagen and explain the process of induced mutations.

Q No. 3. What are the difference between DNA and RNA. Explain the structure of DNA with the help of labeled diagram.

Q No. 4 Write down the function of different enzymes involved in DNA Replication.

Q No. 5 What is translation? Explain the process of translation in prokaryotes.

Q No. 6 Explain the process of mRNA synthesis from DNA.

Q No. 7 Discuss and prove with the help of work of different scientists, whether DNA or protein is genetic material.

Q No. 8 Write short notes on any two

a. Transduction
b. Conjugation
c. Ribosomes

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Subject:- **MICRO BIOLOGY.** Paper:- III (Prev:)

Time Allowed :- 3 Hours **GENERAL IMMUNOLOGY** Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 15 MARKS)

Q.No.1 Short Questions :- (Attempt 15)

1. What are memory cells
2. Antisera
3. Secondary lymphoid organs
4. Primary lymphoid organs
5. Peripheral T lymphocytes
6. Central T lymphocytes
7. Bone marrow
8. Bursa of Fabricious
9. Physical barriers
10. Inflammation
11. Secretary IgA
12. Importance of IgE
13. Lymphod organs
14. B cells
15. T cells
16. Define term vaccine
17. What is precipitation?
18. What is humoral immunity?
19. What is complement?
20. What is AGPT?

SECTION –II(SUBJECTIVE PORTION 60- MARKS) TIME ALLOWED 2:20

Attempt any Four (04) questions.

Q. No. 2 The uncontrolled activation of complement is deleterious. How is complement activity regulated normally

Q. No. 3 Define hybridoma and explain monoclonal antibody production

Q. No. 4 What is meant by cell mediated immunity and explain about the different components involved in it

Q. No. 5 Discuss various factors involved in immunogenicity in detail with particular emphasis on foreigners, chemical complexity, molecular size and processiability of a molecule.

Q. No. 6 Explain flow cytometery and discuss its role in antigen-antibody interaction

Q. No. 7 What are monoclonal antibodies? Explain its importance

Q. No. 8 In the normal healthy person, how is tolerance against self antigens and cross reacting antigens maintained?

Q. No. 9 How is IgA secreted across mucosal surfaces?

Q. No. 10 Write short notes on the following:

a) Agglutination inhibition

b) Double immunodiffusion

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Subject:- **MICROBIOLOGY .** Paper:- IV(Prev:)

Time Allowed :- 3 Hours General Mycology Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 15 MARKS)

Q.No.1 Short Questions :- (Attempt All)

i. What is Conidia .
ii. Define Chitin
iii. What is Mycelium .
iv. What are Slim Molds .
v. What are Prokaryotes .
vi. Explain NAG .
vii. Define Zygospore .
viii. What are yeast .
ix. What is spore .
x. What are True Fungi.
xi. Define Eukaryote .
xii. Define Hyphae .
xiii. What is main difference between bacteria & Fungi
xiv. What is Mycology .
xv. What is mushroom.

SECTION –II(SUBJECTIVE PORTION 60- MARKS) TIME ALLOWED 2:20

Attempt any Four (04) questions.

Q.2. Write the classification of fungi in Detail .

Q.3. Explain Asexual fungi in detail .

Q.4. What is sterilization explain different type's of Sterilization .

Q.5. Explain the morphology of fungi in details.

Q.6. Explain different diseases caused by fungi.

Q.7. Write a detail note on fungal Toxin .

Q.8. Write short note on any two of the following :-

a) Lichens
b) Fragmentation .
c) Furmentation .
d) Usage of fungi in daily life .

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Subject:- **Microbiology.** Paper:- V(Prev:)

Time Allowed :- 3 Hours ENVIRONMENTAL BIOLOGY & BIOSTATISTICS . Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION)

PART-A.

ENVIRONMENTAL MICROBIOLOGY

Q.No.1 1 Write short notes on any TEN of the following: 10 x 1= 10

(a) Bacterial growth curve
(b) General characters of viruses
(c) Conjunctivitis
(d) AIDS
(e) Koch's Postulates
(f) Chemotherapy
(g) Diarrhoea
(h) Viroid
(i) Mineralization
(j) Coliform
(k) Biological Oxygen Demand (BOD)
(l) Photic Zone
(m) Potable Water
(n) Eutrophic and Oligotrophic

PART-B.
BIOSTATISTICS.

Q.No.1

Briefly answer any five (05). (Compulsory) 5x3=15

a) Standard Deviation
b) t-Test Analysis
c) PAM Matrix
d) Edit Distance
e) Fragment Assembly
f) Comparative Genomics
g) Threading
h) Energy minimization
i) Mode and Median
j) Range and quartile deviation

SECTION –II(SUBJECTIVE PORTION) TIME ALLOWED 2:20

PART-A.

ENVIRONMENTAL MICROBIOLOGY

Attempt any FOUR questions. All questions carry equal marks.

2	Describe the role of microorganisms in food chain and food web both in aquatic and terrestrial environment.	10
3	Water purification plays pivotal role in municipal water supplies, support or rejects the assumption on the basis of solid evidences.	10
4	Role of pollutants plays some detrimental attributes toward pollution, how is it so?	10
5	Justify the existence of microorganisms in aquatic environment affected by the physical and chemical factors.	10
6	Define diurnal periodicity pattern. Explain the dispersal of airborne microorganisms.	10
7	What are Bio-fertilizers?	10

PART-B.
BIOSTATISTICS.

Attempt and TWO (02) questions from this section.

2	Discuss in detail about basic principles of theory of probability.	05
3	Write about Correlation and linear regression.	05
4	What is Phylogenetic tree? Discuss the construction of a Phyto-genetic tree using Parsimony method and branch & bound method.	05
5	Define sampling mean distribution.	05

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Subject:- **MICRO BIOLOGY .** Paper:- VI(Prev:)

Time Allowed :- 3 Hours General Virology & Cell Culture . Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 15 MARKS)

Q.No.1 Short Questions :- (Attempt any 15)

i. Define bacteriophage .
ii. Differentiate in between virus and version.
iii. Define cell lines .
iv. Draw a diagram of a typical virus .
v. Classify virus according to Nuclear acid .
vi. Define stem cell technology .
vii. Differentiate in between DNA a- RNA .
viii. Write down the significance of animal cell culture .
ix. Define virus as a genetic parasites
x. Define Osmosis .
xi. Differentiate in between hypotonic and hypertonic solutions .
xii. What is facilitated diffusion .
xiii. Differentiate in between antiporter and symportor .
xiv. What is the importance of phagocytosis in the living system
xv. Define cell .
xvi. What is the importance of hytopathic effects in the cell culture .
xvii. Is virus pro kanytroc cell can you justify .
xviii. Define interferon .
xix. Why viruses are generally not affected by anti biotics
xx. Define AIDS and HIV .

SECTION –II(SUBJECTIVE PORTION (60 Marks) TIME ALLOWED 2:20

Attempt any four questions

Q.2. Classify virus according to its structures .

Q.3. Define latent infections write a detail note on lysogenic viruses .

Q.4. Write a note on how virus infection in the living system can be stopped with special emphasis on Neutralization .

Q.5. Write a note on the pathogenesis of virus infection in Humans .

Q.6. Define tissue tropism for the virus infection write in detail .

Q.7. Write a descriptive note on cell culture technology .

Q.8. Enlist various stages for the goat kidney primary cell culture technique .

Q.9. Define established cell lines write a note on different Human cell lines .

Q.10. Write in detail on the applications of stem cell .

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Subject:- **MICROBIOLOGY .** Paper:- (Final) ////

Time Allowed :- 3 Hours **Diagnostic Microbiology** Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 15 MARKS)

Q. No.1. Attempt any 10 short questions out of 14. Each one carries equal marks.(15)

1. Define spleenomegaly and hepatomegaly.
2. Define thalassemia.
3. Define Haemostasis.
4. Define Haemopoiesis.
5. Define Neutropenia.
6. Define blood antigens.
7. What is coagulation of blood?
8. Write down Normal Values of Platelets.
9. Give Life span of RBC and Platelets.
10. Name the sites of Blood cells production.
11. What is Lymphocytosis?
12. Name the plasma proteins of blood.
13. What is ESR and MCH stands for?
14. What is the percentage of plasma and cells in blood?

Section 2 Marks 60, Time allowed 2.20.
Attempt any 4 Questions each question carries 15 marks.

Q. No.2. Write in detail functions of blood.
Q.No.3. What is Anemia classify it on the basis of cell size?
Q.No.4. Write down ABO blood group and fitness criteria for a blood donor.
Q.No.5. What is Haemoglobin, its types, abnormalities and normal values?
Q.No.6. Describe granulocytes, their functions and relative concentration in blood.
Q.No.7. Define hemophilia. Narrate its types and symptoms.
Q.No.8 Discuss Thalassemia, its types and treatment.

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Paper – IX

Subject:- Microbiology
Paper: Soil microbiology Total Marks:75

Note: Attempt five Questions in all, including question No.1 which is compulsory. The time allowed for Section-1 is 40 minutes, after 40 minutes papers should be handed over the supervisory staff. The time for Section 2 is 02:20 minutes.

Section-1

Q. No.01. Define the following. (Any 15)

1. Fertile soil.
2. Soil weathering.
3. Humus.
4. Degradation.
5. Compost.
6. Morians.
7. Soil conservation.
8. Organic part of soil.
9. Antagonism.
10. Inorganic part of soil.
11. Transported soil.
12. Describe physical characteristics of soil.
13. Mycorrhizae
14. Mutualism.
15. Nitrifying bacteria.
16. Carbon cycle.
17. What is soil microbe interaction?
18. Plant microbe interaction
19. Pedogenesis
20. Soil erosion

Section-2

MARKS 60 TIME ALLOWED 2:20

Note:- Attempt any four Questions. All questions carry equal marks.

2. What is soil formation? Describe various soil horizons and soil factors.
3. What are physical and chemical effects on soil weathering?
4. What is difference between humus and compost? How is compost formed? Explain
5. What do you mean by the term soil conservation? Discuss in detail various soil conservation methods.
6. Discuss advantages and disadvantages of soil bacteria.
7. Write a detailed note on Carbon cycle. Explain with examples.
8. What do you know about plant microbe interaction? Give examples.
9. What do you know about water logging? Also discuss salinity.