

Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)

First Year B. Tech. (All Branches)

Winter – 2016

Course Code: SHU104

Course Name: Life systems

Time: 2 Hrs.

Max. Marks: 30

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Figures to the right indicate full marks.
- 5) Illustrate your answer with well labeled diagrams and examples wherever necessary.

- 1 a) What are the characteristic features of prokaryotic cell? Draw a well labeled diagram of prokaryotic cell.

OR

3 ✓

- a) Write a short note on artificial teeth.

3 ✓

- b) Write a comment on active transport

3 ✓

- c) Discuss in detail Watson and Crick model of DNA.

4 ✓

- 2 a) Principal and working of Electrophoresis.

4

- b) Explain in detail structure of spider silk.

3

3

Contd..

OR

- b) Give structure and function of chloroplast 3
- c) What is mutation? Discuss in detail types of mutation 4
- 3 a) Write a short note on application of tissue culture 3
- b) Explain the structure of human eye. Add a note on artificial eye. 3
- c) What is vector? Explain properties of good vector. 4

Sudden change in
organism either phenotypically
or genotypically.

1.5.

Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)

First Year B. Tech.

Winter - 2015

Course Code :SHU 104

Course Name - LIVING SYSTEMS

Time : 2 hr..

Max. Marks : 30

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 5) Figures to the right indicate full marks.
- 6) (Other special instruction, if any)

- Q.1. (a) What is prokaryotic cell? Explain Bacterial Cell Structure. 4
- (b) Explain proteins with it's discovery and functions. 3
- (c) What are carbohydrates ? Explain it's types and discovery. 3

OR

State the differences between Prokaryotic and Eukaryotic cell.

- Q.2. (a) Explain the Double Helix model of DNA with nitrogen bases. 4
- (b) Explain Teeth in detail with it's types. 3

① 2015

- (c) Explain the structure of Ear with hearing test and hearing mechanism. 3
- Q.3. (a) Explain the structure of Eye with it's well labeled diagram. 4
- (b) What is mutation ? Explain it's types. 3
- OR
- Explain laboratory setting for tissue culture & state it's applications.
- (c) Explain the concept of micro and macro nutrients. 3

② 2015

Government College of Engineering, Amravati
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First Year B. Tech.

Winter – 2014

Course Code: SHU104

Course Name: Living Systems

Time: 2 hr.

Max. Marks: 30

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Figures to the right indicate full marks.

1 (a) What is the cell? Explain the both structures of Prokaryotic & Eukaryotic cell with its diagram. 4

(b) Explain the fluid mosaic model of Plasma membrane with its functions. 3

(c) Explain nucleic acid with its types. 3

OR

(c) What are the carbohydrates? State its functions. 3

2 (a) Give the basic molecular structural principles of biological materials 3

(b) Explain the structure of eye with the optics of eye retina 4

① 2014

(c) Write about the Physiology of internal ear with mechanism of hearing. 3

OR

(c) Explain the structure of teeth with its types. 3

3 (a) Explain the structure of DNA with the role of nucleic acids. 4

(b) Explain the mutation with its types. 3

(c) Explain concept of tissue culture & state its applications. 3

OR

(c) What is the Genetic code? Explain its properties. 3

② 2014

Government College of Engineering, Amravati
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First Semester B. Tech.

Winter – 2013

Course Code: SHU104

Course Name: Living Science

Time: 2 hr.

Max. Marks: 30

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 5) Figures to the right indicate full marks.

1. (a) What is prokaryotic cell .Draw well labeled diagram of prokaryotic cell. 3
(b) Explain central dogma of DNA replication with labeled diagram. 4
(c) Explain the electrophoresis. 3
OR
(c) Explain the transport system in biology. 3
2. a) What is Plasmid? Explain in detail with labeled diagram. 4
b) Explain the structure of collagen. 3
c) Explain the Buffer. 3

① 2013

OR

c) What is the concept of tissue culture.

3

3. a) Describe the various parts of Human eye with labeled diagram.

4

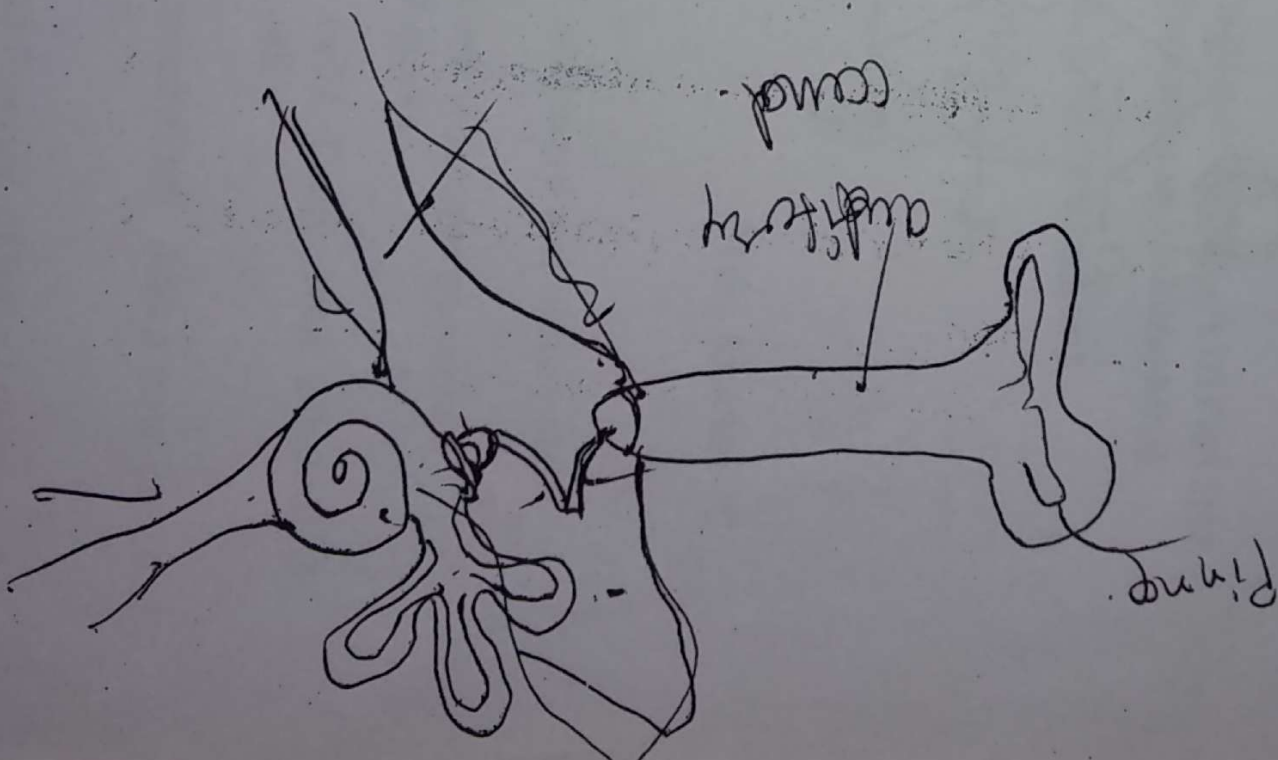
b) Describe in detail the structure of protein.

3

c) Explain the mechanism of hearing and hearing test.

3

② 2013



Government College of Engineering, Amravati
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First Semester B. Tech. (All branches)

Winter – 2012

Course Code: SHU104

Course Name: Living Systems

Time: 2 Hrs.

Max. Marks: 30

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Figures to the right indicate full marks.

1. a) What is Eukaryotic cell? Draw well labeled diagram of Eukaryotic cell. 3

b) What is carbohydrate metabolism. Add a note on mechanism of glycolysis. 4

c) Explain the structure and function of mitochondria with labeled diagram. 3

OR

d) What is blood pressure? Mention the types of blood pressure. 3

2. a) Describe the various parts of human eye with labeled diagram. 4

b) What is reflex action? Explain the mechanism of reflex action. 3

c) Write a note on function of Endoplasmic 3

① 2012

reticulum.

3. a) What is Gibbs free energy? Add a note on enthalpy and entropy. 4

OR

- b) What is protein? Explain different structure of protein. 4

- c) Explain the structure of DNA. 4

- d) Explain Fluidmosaic model of plasma membrane. 2

OR

- e) Draw well labeled diagram of excretory system of man. 2

(2) 2012

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Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)

First Semester B. Tech. (All Branches)

Summer Term – 2017

Course Code: SHU104

Course Name: Life systems.

Max. Marks: 30

Time: 2 Hrs.

Instructions to Candidate

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary and clearly state the assumptions made.
- 3) Diagrams/sketches should be given wherever necessary.
- 4) Figures to the right indicate full marks.
- 5) Illustrate your answer with well labeled diagrams and examples wherever necessary.

1. a) Write on principle and working of electrophoresis. 3
- b) Describe the biomolecular transport in tissue. 3
- c) What is Eukaryotic cell? Describe structure of any one cell organelle. 4

OR

- c) Give in detail structure of protein with special comment on Φ and Ψ bonds involved in it. 4
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2. a) Explain molecular structure of collagen. 3
 - b) What is stem cell? Comment on embryonic and 3

adult stem cell.

- c) Discuss in detail structure of eye and comment on artificial eye. 4

OR

- c) Explain in detail Watson and Crick model of DNA. 4

3. a) Write a short note on central dogma of protein synthesis and add a note on transcription. 4
- b) Explain *Agrobacterium* mediated gene transfer in plants. 3
- c) Write applications of tissue culture. 3