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## MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.L.T./B.Sc. N.M.T./B.Sc. R.T./B.Sc. M.R.T./B.Sc. M.I.T./ B.Sc. C.V.T./  
B.Sc. R.R.T & D.T./M.Sc. N.M.T. DEGREE EXAMINATION – JUNE 2015

**SUBJECT: ANATOMY**

Tuesday, June 02, 2015

Time: 10.00-11.30 Hrs.

Max. Marks: 40

**Answer ALL the questions.**

1. Name the parts of urinary system. Describe the right kidney.

(5+5 = 10 marks)

2. **Write short notes on:**

2A. Spinal cord

2B. Vas deferens

2C. Typical synovial joint

2D. Nasal septum

2E. Ovary

2F. Maxillary air sinus

(5 marks × 6 = 30 marks)



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## MANIPAL UNIVERSITY

FIRST YEAR BOT/B.Sc. MLT/B.Sc. CVT/B.Sc. MIT/B.Sc. RT/B.Sc. NMT/  
B.Sc. RRT & DT/B.Sc. MRT/M.Sc. NMT DEGREE EXAMINATION – JUNE 2015

SUBJECT: PHYSIOLOGY

Thursday, June 04, 2015

Time: 10.00-11.30 Hours.

Max. Marks: 40

✍ Answer ALL questions. Draw diagrams wherever necessary.

1. Essay Questions:

- 1A. Explain the chemical regulation of respiration.
  - 1B. Draw and label an electrocardiogram (ECG) from limb lead II. Indicate any two intervals of ECG. Mention any two uses of ECG.
  - 1C. Mention any two functions of cerebellum. List any three features of cerebellar lesion.
  - 1D. Mention any two actions of growth hormone. List any three clinical features of acromegaly.
- (5 marks × 4 = 20 marks)

2. Write short answers for the following:

- 2A. List any two functions of hemoglobin.
- 2B. List any two functions of white blood cells.
- 2C. Write a note on achalasia cardia.
- 2D. Name the parts of the vestibular apparatus and mention one function of vestibular apparatus.
- 2E. Define blood pressure. Mention the normal systolic and diastolic blood pressure range in a normal adult, at rest.
- 2F. Mention any two functions of skin.
- 2G. Name two indicators of ovulation.
- 2H. Mention two differences between facilitated diffusion and active transport mechanism.
- 2I. Mention two differences between skeletal and cardiac muscles.
- 2J. Give any two differences between rods and cones.

(2 marks × 10 = 20 marks)



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FIRST YEAR BPT/BOT/B.Sc. MLT/B.Sc. NMT/B.Sc. RT/B.Sc. MIT/B.Sc. CVT /  
B.Sc. RRT & DT/M.Sc. NMT DEGREE EXAMINATION – JUNE 2015

SUBJECT: BIOCHEMISTRY

Saturday, June 06, 2015

Time: 10.00-11.30 Hours

Max. Marks: 40

- ✍ Answer ALL the questions.
- ✍ Draw diagrams and flow charts wherever appropriate.

1. Explain anaerobic glycolysis and add a note on its energetics.  
(8 marks)
2. Give a diagrammatic representation of the processes of emulsification and absorption of lipids in the intestine.  
(6 marks)
3. Write short notes on the following:
  - 3A. Components of electron transport chain and order of their arrangement
  - 3B. Reactions of  $\beta$ -oxidation in mitochondria
  - 3C. Importance of dietary fibers
  - 3D. Secondary structure of proteins(4 marks  $\times$  4 = 16 marks)
4. Answer the following:
  - 4A. List four differences between DNA and RNA.
  - 4B. Write two reactions where the coenzyme form of niacin is required.
  - 4C. List the four key enzymes of gluconeogenesis.
  - 4D. Name one condition in which these biochemical parameters are increased in blood: glucose, uric acid, bilirubin and urea.
  - 4E. Define buffer and write the Henderson- Hasselbalch equation.(2 marks  $\times$  5 = 10 marks)



## MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.L.T. DEGREE EXAMINATION – JUNE 2015

SUBJECT: BIOMEDICAL INSTRUMENTATION TECHNIQUES

Tuesday, June 09, 2015

Time: 10.00-13.00 Hrs.

Max. Marks: 80

✍ Answer ALL questions. Draw diagrams if necessary.

1A. What is an electron microscope? Describe transmission and scanning electron microscopes with diagram.

(2+4+4 = 10 marks)

1B. What is electroencephalograph? Explain the working of ECG with the help of block diagram. Add a note on ECG leads.

(2+6+2 = 10 marks)

1C. Define electrophoresis. Elaborate on general technique of an electrophoresis. Describe SDS-PAGE.

(2+4+4 = 10 marks)

2. Write detailed notes on:

2A. Spectrophotometer

2B. Autoclave

2C. Working of CT scanner with block diagram

2D. Blood gas analyser

2E. HPLC

2F. Mammography

2G. Homogenizer

(5 marks × 7 = 35 marks)

3. Write short notes on:

3A. Laser applications in medicine

3B. Paper chromatography

3C. Sandwich ELISA

3D. BAL

3E. Vortex mixer

(3 marks × 5 = 15 marks)

