

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M.Sc (PRELIMINARY) DEGREE EXAMINATION – JULY 2002

PAPER I : ANATOMY

Monday, July 01, 2002

Time available: 3 Hours

Maximum Marks: 100

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- Answer ALL the questions.
 - Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.
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1. Describe the bronchopulmonary segments. Add a note on their applied importance. (15 Marks)
2. Describe the parts and relations of the duodenum. Add a note on its microscopic structure. (15 Marks)
3. Write short notes on each of the following: (4 x 5 = 20 Marks)
 - 3A. Spermiogenesis
 - 3B. Styloid process
 - 3C. Chorionic villi
 - 3D. Mylohyoid muscle
4. Describe the submandibular salivary gland. Add a note on its applied aspects. (15 Marks)
5. Describe the prostate gland. Add a note on age changes. (15 Marks)
6. Write short notes on each of the following: (4 x 5 = 20 Marks)
 - 6A. Macrophage
 - 6B. Circumvallate Papillae
 - 6C. Facial artery
 - 6D. Microscopic structure of spleen



6A. Where are respiratory centers located? Mention their function in

i. normal respiratory activity

iii. metabolic acidosis

ii. hypoxia

(1+2+1+1 = 5 marks)

6B. Explain the forces which expand the lungs during inspiration. What causes the normal expiration?

(3+2 = 5 marks)

7A. Explain the second stage of deglutition.

(5 marks)

7B. List the functions of the different constituents of gastric juice. Mention the role of gastrin in gastric function.

(3+2 = 5 marks)

8A. Explain the process of glomerular filtration.

(5 marks)

8B. Draw and label the micturition reflex arc. Mention how in adults, micturition is voluntary.

(3+2 = 5 marks)

9A. Describe the features of 'Cushing syndrome'.

(5 marks)

9B. Give a flow chart to show the fate of absorbed glucose. At what points hormones act to keep the blood glucose constant?

(5 marks)

9C. Outline the synthesis of thyroxine.

(5 marks)

10. Mention the site, steps and factors necessary for spermatogenesis.

(1+2+2 = 5 marks)

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M.Sc (PRELIMINARY) DEGREE EXAMINATION – JULY 2002

PAPER III : BIOCHEMISTRY
Wednesday, July 03, 2002

Time available: 3 Hours

Maximum Marks: 100

♠ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Describe the process of replication and transcription of DNA.

(15 marks)

2. Write briefly on following:

(5 x 7 = 35 Marks)

 - 2A. Role of lung and kidney in acid base balance
 - 2B. Lactose intolerance
 - 2C. Lipid classification with one example for each
 - 2D. Role of vit D in serum calcium level regulation
 - 2E. Diagnostic enzymes
 - 2F. Function of copper and zinc
 - 2G. Jaundice

3. Discuss the complete aerobic oxidation of glucose in body.

(15 Marks)

4. Give brief and precise answer to the following:

(5 x 7 = 35 marks)

 - 4A. Fatty acid synthase complex.
 - 4B. Tertiary and quaternary structure of proteins.
 - 4C. Tumor markers
 - 4D. Important compounds formed from tyrosine
 - 4E. Lipoproteins
 - 4F. Chemiosmotic theory
 - 4G. Energetics of oxidation of palmitic acid



MANIPAL ACADEMY OF HIGHER EDUCATION
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M.Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2002

PAPER I: ANATOMY
Monday, December 02, 2002

Time available: 3 Hours

Maximum Marks: 100

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- ➔ **Answer ALL the questions.**
 - ➔ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**
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1. Describe the right atrium of heart. (15 Marks)

2. Describe the parts, relations and blood supply of pancreas. (15 Marks)

3. Write short notes on each of the following: (4 x 5 = 20 Marks)
 - 3A. Fertilization
 - 3B. Mastoid process
 - 3C. Deep facial vein
 - 3D. Amnion.

4. Describe the palatine tonsil. Add a note on its microscopic structure. (15 Marks)

5. Describe supports of the uterus. Add a note on development of uterus. (15 Marks)

6. Write short notes on each of the following: (4 x 5 = 20 Marks)
 - 6A. Microscopic structure of aorta.
 - 6B. Morula
 - 6C. Epicranial aponeurosis
 - 6D. Hyaline cartilage.



Time available: 3 Hours

Maximum Marks: 100

♣ **Answer all the questions.**

♣ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Define blood pressure giving normal values. Explain the importance of keeping mean arterial blood pressure constant. Describe the role of baroreceptors and hormones in regulating blood pressure.
(2+2+6=10 marks)
- 2A. List the properties of cardiac muscle. Explain any one of them.
(2+3=5 marks)
- 2B. Name the proprioceptors. Draw a diagram to show the pathway for conscious kinaesthetic sensation.
(2+3=5 marks)
- 2C. Explain/define the following:
i) Presynaptic inhibition
ii) Referred pain
iii) Stereognosis
iv) Withdrawal reflex
(5 marks)
- 2D. Outline the formation, circulation and functions of CSF.
(5 marks)
- 2E. Draw and define a motor unit. Explain how quantal summation is brought about.
(2+3=5 marks)
- 2F. Name the photoreceptors. Explain the functions of each.
(1+4=5 marks)
- 2G. Briefly explain the functions of lymphocytes.
(5 marks)
- 2H. Describe the functions of plasma albumin.
(5 marks)
3. Give an account of uptake, transport and delivery of oxygen to the tissues.
(4+2+4=10 marks)

- 4A. List four functions of the placenta. Explain any one of them.
(2+3=5 marks)
- 4B. Name four features of cretinism. Explain their basis.
(2+3=5 marks)
- 4C. Name the hormones secreted by the adrenal medulla. Compare their action on CVS.
(1+4=5 marks)
- 4D. List any four hyperglycemic hormones. Explain the hyperglycemic actions of any two of them.
(2+3=5 marks)
- 4E. Define micturition. Draw a labelled diagram of micturition reflex arc.
(1+4=5 marks)
- 4F. Enumerate the functions of skin. Explain any one.
(2+3=5 marks)
- 4G. Enumerate the constituents of pancreatic juice. Describe the hormonal regulation of pancreatic juice.
(2+3=5 marks)
- 4H. Explain the regulation of cephalic phase of gastric secretion.
(5 marks)



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M.Sc(PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2002

PAPER III: BIOCHEMISTRY
Wednesday, December 04, 2002

Time available: 3 Hours

Maximum Marks: 100

♠ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

- 1A. Describe gluconeogenesis from lactate. Add a note on its regulation. (6+3 = 9 marks)
- 1B. Classify enzymes with an example for each class. (6 marks)
2. Write briefly on: (5 x 7 = 35 marks)
- 2A. Classification of proteins based on function with an example for each.
- 2B. Importance of the HMP shunt pathway.
- 2C. Ketone body synthesis and utilization.
- 2D. Prostaglandins
- 2E. Southern blotting and its applications.
3. Describe the metabolism of the sulfur containing amino acids. Add a note on the associated disorders. (12+3 = 15 marks)
4. Write briefly on: (5 x 7 = 35 marks)
- 4A. Replication of the lagging strand.
- 4B. Energy requirement of a 25-year-old male.
- 4C. Porphyrrias.
- 4D. Hyperuricemia.
- 4E. Fluid mosaic model of the cell membrane with diagram.

