

Question Paper

Exam Date & Time: 05-Sep-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER BPT / B.Sc. C.V.T./ B.Sc. R.T./ B.Sc. M.I.T./ B.Sc. RRT&DT / B.O.T./ B.Sc. E.S.S. DEGREE
EXAMINATION - SEPTEMBER 2019

SUBJECT : ANATOMY II

(ANAT 104; ANAT 102; ANAT 102/BRES 102; ANAT 102/BMIT 102; ANAT 102; ANAT 104; ANAT 102)

(2016 RV & 2016 SCHEME)

Thursday, September 05, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

1) Describe the hip joint under the following headings:

- | | | |
|-----|---|-----|
| 1A) | Articular surfaces | (2) |
| 1B) | Names of the ligaments | (3) |
| 1C) | Muscles producing each of its movements | (3) |
| 1D) | Applied anatomy | (2) |

Answer all the questions.

- | | | |
|-----|--|------|
| 2) | a) Describe the origin, insertion, nerve supply and actions of deltoid muscle.
b) Mention the applied anatomy of deltoid muscle.
c) Name any six structures lying deep to (under cover of) the deltoid muscle.
(2+1+1+2+1+3 = 10 marks) | (10) |
| 3A) | Gluteus medius muscle | (5) |
| 3B) | Ulnar nerve | (5) |
| 3C) | Hamstring muscles | (5) |
| 3D) | Brachial artery | (5) |
| 4A) | Vertebral column | (2) |
| 4B) | Carpal tunnel | (2) |
| 4C) | Serratus anterior muscle | (2) |
| 4D) | Posterior cord of brachial plexus | (2) |
| 4E) | Femoral nerve | (2) |

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Question Paper

Exam Date & Time: 12-Sep-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER B.Sc. M.R.T. / B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - SEPTEMBER 2019
SUBJECT: BMRT 108/BRTT 106 - RADIOBIOLOGY
(2016/2016 RV SCHEME)
Thursday, September 12, 2019 (14.00 - 17.00)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- 1A) Define free radical. Describe the radiolysis of water and its associated cascade of reactions. (20)
- 1B) What is cell survival curve? Draw a typical shouldered *in vitro* mammalian cell survival curve, explain the parameters D_0 , D_q and N and add a note on the various models. (20)
- 2A) Draw a typical metaphase chromosome and label the parts. Discuss radiation-induced chromosomal aberrations with illustrated diagrams. (10)
- 2B) Discuss the interactions of Photons with matter. (10)
- 3A) Briefly discuss Acute Radiation Syndrome. (5)
- 3B) Define $LD_{50(30)}$. Explain how $LD_{50(30)}$ is measured for mice. (5)
- 3C) Explain the stochastic and non-stochastic effects of radiation with suitable examples. (5)
- 3D) Briefly explain the effect of radiation on Skin and Foetus. (5)
- 3E) With the help of suitable experimental evidences discuss the differential radiosensitivity of cell nucleus vs cytoplasm. (5)
- 3F) Radiation induced cell cycle effect. (5)
- 4A) Difference between Direct and Indirect effect of radiation (2)
- 4B) Genetically Significant Dose (GSD) (2)
- 4C) Radiation induced DNA damage (2)
- 4D) Define radiation induced PLD and SLD. (2)
- 4E) Define radiation. Identify one major difference between X-rays and Gamma rays. (2)

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Question Paper

Exam Date & Time: 05-Sep-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - SEPTEMBER 2019
SUBJECT: BRTT 102 - RADIATION PHYSICS
(2016 RV SCHEME)
Thursday, September 05, 2019 (14.00 - 17.00)

Marks: 100

Duration: 180 mins.

1A) Explain in detail about:

- | | | |
|------|--|------|
| i) | Elastic scattering of photons | (5) |
| ii) | Photo electric effect | (5) |
| iii) | Compton effect | (5) |
| iv) | Pair production | (5) |
| 1B) | Derive expression for $N = N_0 \cdot e^{-\lambda t}$. Deduce relation of half-life with decay constant. | (20) |
| 2A) | On what factors the x-ray spectra depends upon? Discuss in detail with diagram. | (10) |
| 2B) | Discuss about the alpha, beta and gamma decay processes with examples. | (10) |
| 3A) | Discuss about the cooling mechanism of x-ray tube. | (5) |
| 3B) | The half-life of a radioactive element is 4×10^8 years. Calculate its decay constant and mean life. | (5) |
| 3C) | Write note on elastic scattering of photons. | (5) |
| 3D) | Write about the Planck's concept of quanta. | (5) |
| 3E) | Mention the properties of x-rays. | (5) |
| 3F) | What is focusing cup? Write its significance. | (5) |
| 4A) | What is isomer? Give an example. | (2) |
| 4B) | List advantage of rotating anode x-ray tube. | (2) |
| 4C) | What is photo nuclear reaction? Give an example. | (2) |
| 4D) | Define linear attenuation coefficient. | (2) |
| 4E) | Write Symbolic representation of a nucleus. Given an example. | (2) |

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Question Paper

Exam Date & Time: 11-Sep-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE EXAMINATION - SEPTEMBER 2019
SUBJECT: BRTT 104 - RADIATION QUANTITIES AND DETECTION
(2016 RV SCHEME)
Wednesday, September 11, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1) **Define:** (10)
a) Exposure b) KERMA c) Absorbed Dose d) Fluence, with all relevant notions and units.
- 2) What is thermoluminescence? Briefly discuss about the TLD badge. (10)
- 3A) Define equivalent dose and effective dose. (5)
- 3B) Define Radiation weighting Factor and Tissue weighting Factor. (5)
- 3C) Write a short note on LET and RBE. (5)
- 3D) What are the advantages and disadvantages of scintillation detector. (5)
- 4A) Define glow curve. Explain p-type and n-type semiconductors. (2)
- 4B) Define Specific activity with units. (2)
- 4C) Define gamma ray constant with units. (2)
- 4D) Draw the characteristic curve of different regions of gas filled detectors. (2)
- 4E) Define Dead time. (2)

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Question Paper

Exam Date & Time: 10-Sep-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER BPT/ B.Sc. MRT/ B.Sc. CVT/ B.Sc. R.T./ B.Sc. MIT/ B.Sc. RRT & DT/ BOT/ B.Sc. E.S.S./ B.Sc. MLT/
B. Sc. PFT/ DEGREE EXAMINATION - SEPTEMBER 2019
SUBJECT: PHYSIOLOGY - II
(PHYS 102 & BMRT 102)
(2016 RV & 2016 SCHEME)
Tuesday, September 10, 2019 (14.00 - 16.00 Hrs.)

Marks: 50

Duration: 120 mins.

Answer all the questions.

- 1A) Name the major subdivisions of cerebellum. Enumerate three functions of cerebellum. (5)
- 1B) List any five clinical features seen in cerebellar lesions. (5)
- 2A) Name the hormones of thyroid gland and mention any five physiological actions of thyroid hormones. (5)
- 2B) Mention the cause and four clinical features seen in myxedema. (5)
- 3A) Describe glucose reabsorption in the renal tubules. (5)
- 3B) Explain the actions of testosterone. (5)
- 3C) Describe the events in the second phase of deglutition. (5)
- 3D) Mention the site of formation and functions of CSF. (5)
- 4A) Mention any two clinical features observed in lower motor neuron lesion. (2)
- 4B) Define GFR. Mention its normal value. (2)
- 4C) Enumerate any two functions of placenta. (2)
- 4D) List the small intestinal movements. (2)
- 4E) Mention any two features of Cushing syndrome. (2)

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Question Paper

Exam Date & Time: 13-Sep-2019 (02:00 PM - 04:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER B.Sc. MEDICAL RADIOTHERAPY TECHNOLOGY / B.Sc. RADIOTHERAPY TECHNOLOGY DEGREE
EXAMINATION - SEPTEMBER 2019
SUBJECT: PSYC 202 - GENERAL PSYCHOLOGY
(2016 RV SCHEME)
Friday, September 13, 2019 (14.00 - 16.00)

Marks: 50

Duration: 120 mins.

Write essays on:

- 1) Briefly explain Piaget's theory of cognitive development. (10)
- 2) Discuss any five branches of Psychology. (10)

3) Write short notes on:

- 3A) Reinforcement (5)
- 3B) Experimental method in Psychology (5)
- 3C) Maslow's hierarchy of needs (5)
- 3D) Types of attention (5)

4) Write very short answers on:

- 4A) Ego (2)
- 4B) James Lange theory of emotion (2)
- 4C) Rehearsal (2)
- 4D) Concepts (2)
- 4E) Sensory memory (2)

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