MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. MEDICAL (ANATOMY, PHYSIOLOGY, BIOCHEMISTRY, PHARMACOLOGY, MICROBIOLOGY) / MSc. FORENSIC SCIENCE DEGREE EXAMINATION – AUGUST 2022

SUBJECT: MCC 602 - COMMON CORE: INTRODUCTION TO RESEARCH
MFS 602 - COMMON CORE-2: RESEARCH METHODOLOGY

Tuesday, August 16, 2022

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. What are the different types of research? Discuss the steps involved in research process.

(10 marks)

2A. Write an explanatory note on Confidence Interval.

2B. If Z is normally distributed with $\mu = 0$ and $\sigma = 1$. Find the following probabilities:

   i) $P(Z \geq 2)$ ii) $P(-1 \leq Z \leq 1)$ iii) $P(Z \geq 1)$

(10 marks)

3. **Short Answer Questions:**

3A. Find the range, standard deviation and coefficient of variation for the following values of birth weight(kg):

   2.5, 2.8, 2.5, 2.8, 3.3, 3.5, 3.2, 3.0, 2.9, 3.5

3B. What is Non-Probability sampling? Explain any two commonly used Non-Probability sampling techniques with their advantages and disadvantages.

3C. From the following data, use X^2-test and conclude whether inoculation is effective in preventing tuberculosis:

Group	Attacked	Not Attacked	Total
Inoculated	10	90	**100**
Not inoculated	26	74	**100**
Total	**36**	**164**	**200**

(Given, $X^2_{0.05,1} = 3.84$)

3D. Explain cross-sectional study design, its advantages and disadvantages with an example.

3E. Define following terms:

   i)   Sensitivity   ii)   Specificity   iii)   Positive predictive value

   iv)   Negative predictive value.

3F. Discuss briefly privacy and confidentiality in medical research.

(5 marks × 6 = 30 marks)

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SECOND SEMESTER M.Sc. FORENSIC SCIENCE DEGREE EXAMINATION – AUGUST 2022

SUBJECT: MFS 606 – BASICS & APPLIED CYBER FORENSICS

Wednesday, August 17, 2022

Time: 14:00 – 16:30 Hrs.   Maximum Marks: 50

✍ **Answer ALL the questions.**

1. Write a note on internet crimes against children. Support your answer with relevant case studies.

(10 marks)

2. What is malware? Explain in detail the steps involved in malware incident response process with a case study.

(10 marks)

3. **Write short notes on:**

3A. Criminal liability in cyber crimes

3B. Difference between phishing and spoofing

3C. Cyber security policies and initiatives by Indian Government

3D. Credit card frauds and its prevention

3E. Intrusion prevention and intrusion detection systems

3F. Explain the role of forensic accountant.

(5 marks × 6 = 30 marks)

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SECOND SEMESTER M.Sc. FORENSIC SCIENCE DEGREE EXAMINATION – AUGUST 2022
SUBJECT: MFS 612 – FORENSIC APPROACH IN CRIME SCENE INVESTIGATION

Thursday, August 18, 2022

Time: 14:00 – 16:30 Hrs.   Maximum Marks: 50

✍   **Answer ALL the questions.**

✍   **Long answer questions:**

1.   Write briefly on the methods of searching a crime scene. Add a note on laws relating to search and seizures.

(5+5 = 10 marks)

2.   Write a detailed note on primary and secondary explosives. Explain the procedure of investigating bomb explosions.

(10 marks)

3.   **Write short notes on:**

3A.   Control of contamination in a crime scene

(5 marks)

3B.   Collection of trace evidences from a crime scene.

(5 marks)

3C.   Legal definition for theft. Add a note on procedure of investigating vehicular theft.

(1+4 = 5 marks)

3D.   Need for scientific investigation of a crime with case studies.

(5 marks)

3E.   Management of manpower and technology during a crime investigation.

(5 marks)

3F.   Procedure of reconstructing a burglary based on the MO.

(5 marks)

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SECOND SEMESTER M.Sc. FORENSIC SCIENCE DEGREE EXAMINATION – AUGUST 2022

SUBJECT: MFS 604 – BASICS OF FORENSIC PSYCHOLOGY

Tuesday, August 23, 2022

Time: 14:00 – 16:30 Hrs.   Maximum Marks: 50

✍   **Answer ALL the questions.**

✍   **Long answer questions:**

1.   Discuss the ethical issues in forensic psychology.

(10 marks)

2.   Explain any two *"Theories of Personality".*

(10 marks)

3.   **Write short notes on:**

3A. Crime and Psychopathology

3B. Case study method

3C. Peripheral nervous system

3D. Sensation and thresholds

3E. Amnesia

3F. Steps in problem solving

(5 marks × 6 = 30 marks)

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SECOND SEMESTER M.Sc. FORENSIC SCIENCE DEGREE EXAMINATION – AUGUST 2022
SUBJECT: MFS 608 – APPLIED FORENSIC CHEMISTRY AND INSTRUMENTATION

Monday, August 22, 2022

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Explain how mass spectrometer separates components in a mixture.

(10 marks)

2. What is the principle behind IR spectroscopy? Explain the sampling techniques in IR spectroscopy. Add a note on factors affecting IR spectra.

(10 marks)

3. **Write short notes on:**

3A. Flame spectrometry

3B. TEM and SEM

3C. SDS - PAGE

3D. Affinity chromatography

3E. Radical mechanism of polymerisation

3F. Plasticizers and stabilisers

(5 marks × 6 = 30 marks)

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