

# Question Paper

Exam Date & Time: 25-Apr-2022 (10:00 AM - 12:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER M.Sc. CLINICAL PSYCHOLOGY / M.Sc. ECHOCARDIOGRAPHY / M.Sc. IN AUDIOLOGY / M.Sc. IN SLP / M.Sc. CC & I T / MPT / M.Sc. RRT & DT / M.OPTOM / M.Sc. E & SS / M.Sc. H.I.M. / M.Sc. M.I.T / M.Sc. M.R.P. / M.Sc. N.M.T. / M.Sc. RT / M.Sc. MLT / MOT / M.Sc. MHI/ M.Sc. PFT DEGREE EXAMINATION - JAN/FEB 2022  
SUBJECT: ABS5101 - ADVANCED BIOSTATISTICS AND RESEARCH METHODOLOGY / RES 601 BIOSTATISTICS/RES 601 RESEARCH METHODS, EPIDEMIOLOGY AND STATISTICS/RES 601 ADVANCED BIOSTATISTICS AND RESEARCH METHODOLOGY  
(2021 SCHEME/2018 SCHEME )

Marks: 50

Duration: 120 mins.

Answer all the questions.

1A) The CD4 T cell counts ( $\times 10^6 / l$ ) at base line for 10 - HIV positive subjects are as follows: (8)  
230 210 313 173 158 103 181 115 301 216  
Calculate coefficient of variation.

1B) Define Skewness (2)

2A) The following table gives result of Screening test done for disease in a population (8)

Screening test	Disease present	Disease absent	Total
Positive	90	10	100
Absent	25	105	130

Calculate the sensitivity, Specificity, Positive predictive value, Negative predictive value of the test.

2B) Differentiate Standard deviation and Standard Error (2)

3. In a sample of 60 men who have had myocardial infarction, the mean CPK (Creatine Phosphokinase) level is  $285 \mu/l$  and the standard deviation is  $16 \mu/l$

3A) What is the standard error of this mean? (1)

3B) Determine the margin of error for the above estimate. (3)

3C) Construct a 95% confidence interval for the population mean. (1)

4) Draw the normal distribution curve and list its properties. (5)

5A) A study has been planned to compare mean body mass index between diabetes and non-diabetes subjects. A minimum difference of  $2 \text{ kg/m}^2$  is considered as clinically significant. What is the minimum number of subjects required in each group at 5% level of significance and 80% power if the pooled standard deviation is found to be  $7 \text{ kg/m}^2$ ? (5)  
( $Z_\alpha = 1.96$ ,  $Z_\beta = 0.84$ )

5B) Explain systematic random sampling with an example, what are the advantage and disadvantage of this method. (5)

- 6) Explain the design, conduct and analysis of cohort study (5)
- 7) Discuss about materials and methods in research report (5)

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# Question Paper

Exam Date & Time: 18-Apr-2022 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MSc. IN AUDIOLOGY DEGREE EXAMINATION - APRIL 2022  
SUBJECT: AUD 5101 - TECHNOLOGY IN AUDIOLOGY  
(2021 SCHEME)

All questions to be answered.

Marks: 100

Duration: 180 mins.

- |     |  |      |
|-----|--|------|
| 1)  | Explain working principles of EEG and event related potentials.                          | (20) |
| 2)  | Summarize technology available in the domain of audiology for intraoperative monitoring. | (20) |
| 3A) | Describe how speaker recognition is done using technology.                               | (10) |
| 3B) | Role of SPECT and TMS in audiology practice.   | (10) |
| 3C) | Importance of database in Audiology practice.  | (10) |
| 3D) | Is knowledge of audio editing important for an Audiologist? If so justify.               | (10) |
| 4A) | Remote consultations in Audiology.   | (5)  |
| 4B) | Complex cepstrum.  | (5)  |
| 4C) | Auto correlation.  | (5)  |
| 4D) | Auditorium acoustics principles.   | (5)  |

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# Question Paper

Exam Date & Time: 20-Apr-2022 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MSc. IN AUDIOLOGY DEGREE EXAMINATION - APRIL 2022  
SUBJECT: AUD 5102 - COCHLEAR PHYSIOLOGY  
(2021 SCHEME)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- 1) Describe the microanatomy of the cochlea with specific information on Organ of Corti, tectorial membrane, reticular lamina, lateral wall of cochlear duct and cochlear hair cells. (20)
- 2) Based on published articles, discuss the new findings on inner-ear efferents and their ability to modulate hair cell function. (20)
- 3) Discuss the clinical uses, interpretation, protocol and factors affecting Electrocochleography. (20)
- 4A) Discuss the role of prestin as the motor protein of cochlear outer hair cells. (10)
- 4B) Describe the inner hair cell physiology with reference to frequency and intensity coding. (10)

5. Write short notes on:

- 5A) Innervations of cochlea. (5)
- 5B) DPOAE fine structure. (5)
- 5C) Hyperacusis. (5)
- 5D) Greendwoods's technique of Cochlear mechanics. (5)

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# Question Paper

Exam Date & Time: 22-Apr-2022 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER M.Sc. (AUDIOLOGY) DEGREE EXAMINATION - APRIL 2022  
SUBJECT: AUD5104 - HEARING SCIENCES  
(2021 SCHEME)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- |     |  |      |
|-----|--|------|
| 1)  | Explain and critically evaluate various psychophysical procedures of threshold estimation. | (20) |
| 2)  | Explain the importance of loudness perception in auditory diagnosis and rehabilitation.    | (20) |
| 3A) | Explain the concept of pure tone and complex tone pitch perception.                        | (10) |
| 3B) | Explain the various methods to estimate the critical bandwidth.                            | (10) |
| 3C) | Explain central masking with its application.  | (10) |
| 3D) | Explain the psychophysical laws and their application.                                     | (10) |
| 4A) | Explain equal-loudness contour curves MAP and MAF  | (5)  |
| 4B) | Explain the forced-choice method   | (5)  |
| 4C) | Explain time-intensity trading   | (5)  |
| 4D) | Explain masking patten and excitation pattern  | (5)  |

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