

## MANIPAL UNIVERSITY

## FIRST YEAR (M.Sc. MLT/M.Sc. NMT (NR)/M.Sc. MIT/M.A.S.L.P. (NR))/SECOND SEMESTER M.Sc. HHIA DEGREE EXAMINATION – DECEMBER 2014

SUBJECT: BIostatISTICS/ PAPER IV – ADVANCED BIostatISTICS AND RESEARCH METHODOLOGY/STATISTICS &amp; RESEARCH METHODS/ BIostatISTICS/EPIDEMIOLOGY &amp; BIostatISTICS

Wednesday, December 17, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

Answer ALL the questions.

- List any two types of probability sampling? Describe any one of them in detail.  
(1+4 = 5 marks)
- Briefly explain various scales of measurement with suitable examples.  
(5 marks)
- Describe the concept of sampling distribution and standard error. In a study conducted on a sample of 1600 subjects, the prevalence of a particular condition was estimated to be 10%. Calculate 95% confidence interval for this estimate.  
(5+5 = 10 marks)
- Explain the rationale for and the concept of tests of significance. What are the steps involved in performing tests of significance.  
(6+4 = 10 marks)
- A team of cardiologists conducted a study to investigate the association between oral contraceptive use and hypertension. The results of the study are given below:

	Hypertensive	Normotensive	Total
Oral contraceptive	8	32	40
Other	15	45	60
Total	23	77	100

At 1% level of significance, do these data provide sufficient evidence to indicate the association between method of contraceptive use and hypertension? ( $\chi^2_{1df}(0.01) = 6.64$ )

(10 marks)

- What are the requirements for calculating minimum sample size for estimating proportion and how they influence the required minimum sample size?

(5 marks)

7. Distinguish between:
- 7A. Case report and case series studies
  - 7B. Correlational and other descriptive studies
  - 7C. Incidence rate and prevalence rate
  - 7D. Relative risk and odds ratio
  - 7E. Retrospective and prospective study designs
- (10 marks)
8. A cohort study was conducted to find the effect of oral contraceptive (OC) use on breast cancer. Ten thousand women free from breast cancer were selected for the study and followed up for 10 years. Forty out of 8000 non users of OC and 14 out of 2000 OC users developed breast cancer. Calculate appropriate measure of strength of association and interpret the same.
- (5 marks)
9. Take a suitable example and explain the situation for the application of logistic regression.
- (5 marks)
10. In order to assess the validity of a test, it was applied on 100 individuals with a disease and 100 without the disease. The test resulted in a positive diagnosis for 80 out of those with disease and 10 of those without disease. Construct appropriate  $2 \times 2$  table and calculate sensitivity, specificity, positive predictive value and negative predictive value of the test.
- (5 marks)
11. Explain the components of a scientific report.
- (10 marks)



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## MANIPAL UNIVERSITY

FIRST YEAR M.A.S.L.P. DEGREE EXAMINATION – DECEMBER 2014

SUBJECT: SH 102 – CLINICAL LINGUISTICS

(NEW REGULATION)

Thursday, December 18, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ Answer any FIVE questions.

1. Elaborate on discourse as a pragmatic ability. (16 marks)
2. Write briefly on the following:
  - 2A. Mental Lexicon
  - 2B. Deixis(8+8 = 16 marks)
3. 'One can learn about the relationship between brain and language by observing language related changes following damage to the brain tissues'. Elaborate (16 marks)
4. How is language acquired in a bilingual environment? Discuss (16 marks)
5. Write briefly on the following:
  - 5A. Motherese
  - 5B. Cognitive theory of language acquisition(8+8 = 16 marks)
6. Write briefly on the following:
  - 6A. Language and Gender
  - 6B. Stylistic variation of language(8+8 = 16 marks)
7. What is non-verbal and non-linguistic communication? Discuss. (16 marks)



**MANIPAL UNIVERSITY****FIRST YEAR M.A.S.L.P. DEGREE EXAMINATION – DECEMBER 2014****SUBJECT: SH 103 – SPEECH SCIENCE AND PRODUCTION**

Friday, December 19, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

- ✍ **Answer ALL the questions.**  
✍ **Draw neat labeled figures wherever appropriate.**

- 1A. Describe laryngeal biomechanics in detail.  
1B. Describe lamina propria.

(12+4 = 16 marks)

**OR**

- 2A. Describe relaxation pressure curve and checking action with a neat diagram.  
2B. Describe in brief vital capacity and MAFR.

(12+4 = 16 marks)

- 3A. Describe the neurophysiology of articulatory system.  
3B. Describe the lower and upper airway dynamics in the production of vowels.

(6+10 = 16 marks)

**OR**

- 4A. Discuss the physiology of velopharyngeal function.  
4B. Describe the anatomy of lips and palate.

(8+8 = 16 marks)

- 5A. Describe the Kozavnikov and Chistovich model of speech production.  
5B. Describe speech motor programming & execution.

(12+4 = 16 marks)

**OR**

- 6A. Critically evaluate Levelts model of speech production.  
6B. Discuss the role of feedback in speech and language development.

(12+4 = 16 marks)

- 7A. Describe the acoustic properties of stop consonants.  
7B. How do you identify aspiration in a spectrogram?

(12+4 = 16 marks)

**OR**

- 8A. Explain the source filter theory for the production of vowel /i/.  
8B. Explain narrow band spectrogram.

(12+4 = 16 marks)

- 9A. Write notes on 8 acoustic parameters that can be measured in infant cry analysis.  
9B. Discuss the forensic voice evaluation procedure.

(10+6 = 16 marks)

**OR**

- 10A. Discuss the spectrographic patterns of laughter.  
10B. Describe the various types of speech synthesis methods.

(6+10 = 16 marks)



## MANIPAL UNIVERSITY

FIRST YEAR M.A.S.L.P. DEGREE EXAMINATION – DECEMBER 2014

SUBJECT: SH 104 – SPEECH AND LANGUAGE PROCESSING

Saturday, December 20, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

☞ Answer ALL the questions.

- 1A. Describe the acoustic cues in the perception of fricatives.  
1B. How is the perception of stops different from perception of fricatives. (8+8 = 16 marks)

OR

2. Studies pertaining to co-articulation are vital in the field of speech perception. Discuss (16 marks)

- 3A. Explain word spotting and lexical decision tasks.  
3B. How is spoken word recognition different from visual word recognition? (8+8 = 16 marks)

OR

- 4A. There are numerous studies done pertaining to word under noise conditions. Elaborate on the nature of the task and its clinical implications.  
4B. What are the different types of priming? How are the studies on priming relevant for language processing? (10+6 = 16 marks)

- 5A. Explain phonological encoding and production.  
5B. What is LAFS? Explain the nature of LAFS model. (8+8 = 16 marks)

OR

6. Compare and contrast TRACE and COHORT Model. Justify the dominance of one over the other. (16 marks)

- 7A. How is lexical ambiguity resolution different from syntactic ambiguity resolution?  
7B. Explain the PDP model of reading. (10+6 = 16 marks)

OR

8. Explain parsing based on top down and bottom up models using appropriate examples. (16 marks)

9. Describe native language and foreign language contrasts with empirical evidence. (16 marks)

OR

- 10A. Explain the basic capacities for perception of phonetic contrasts.  
10B. The human speech processing system can cope with variability in speech signal. Explain. (8+8 = 16 marks)



**MANIPAL UNIVERSITY****FIRST YEAR M.A.S.L.P. DEGREE EXAMINATION – DECEMBER 2014****SUBJECT: SH 105 – VOICE AND FLUENCY DISORDERS**

Monday, December 22, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ **Answer ALL the questions.**

- 1A. Voice assessment is multidimensional. Discuss  
1B. Describe Laryngeal EMG.

(8+8 = 16 marks)

**OR**

- 2A. Discuss spectral and cepstral analysis of voice.  
2B. Describe the need for assessing handicap in voice evaluation. Add a note on VHI.

(6+10 = 16 marks)

- 3A. Discuss the types of muscle tension dysphonia.  
3B. LPR causes voice disorder. Discuss

(6+10 = 16 marks)

**OR**

- 4A. Discuss the anatomical and physiological effects of aging on laryngeal system.  
4B. Describe any one neurogenic voice disorder encountered in your clinic.

(8+8 = 16 marks)

- 5A. Describe the air intake procedures for esophageal speech.  
5B. Highlight the preoperative and postoperative counseling tips recommended for laryngectomees.

(8+8 = 16 marks)

**OR**

- 6A. Explain TNM classification system for staging cancer.  
6B. Discuss the air intake procedures for gastric speech.

(6+10 = 16 marks)

- 7A. Stuttering is a speech motor control disorder. Discuss with studies.  
7B. Describe the relationship between Language and stuttering.

**OR**

- 8A. Describe the characteristics of neurogenic stuttering.  
8B. Stuttering is a temporal processing disorder. Discuss

(8+8 = 16 marks)

9. Plan an assessment protocol for stuttering based on ICF model.

**OR**

10. Explain the treatment procedures available for SAAND with research evidences.

(16 marks)



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**MANIPAL UNIVERSITY**  
**FIRST YEAR M.A.S.L.P. DEGREE EXAMINATION – DECEMBER 2014**  
**SUBJECT: SH 106 – PSYCHOPHYSICS**  
Tuesday, December 23, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ **Answer ALL the questions.**

- 1A. Explain the relationship between intensity and loudness using Fechner's and Steven's power law.
- 1B. Describe the procedure for measurement of MAPC and also mention the applications of MAP and MAF.

(8+8 = 16 marks)

**OR**

- 2A. Explain any two models of loudness perception.
- 2B. Write a note on equal loudness contours and its applications.

(8+8 = 16 marks)

3. **Write a note on following:**

- 3A. Band widening experiment
- 3B. ERB
- 3C. Symmetrical and asymmetrical notched noise method

(4+4+8 = 16 marks)

**OR**

4. Write an essay on effect of spectral characteristics of masker on pure tone maskee.
5. Describe the effect of stimulus characteristics and cochlear hearing loss on gap detection and TMTF.

(16 marks)

**OR**

6. Explain the methods to study adaptation and physiology of adaptation.

(16 marks)

7. Write an essay on auditory stream segregation.

**OR**

8. Elaborate on auditory timbre perception.

(16 marks)

9. Describe any four models of binaural hearing.

**OR**

10. Elaborate on cues that help in localizing the sounds in all three planes.

(16 marks)



**MANIPAL UNIVERSITY**  
**FIRST YEAR M.A.S.L.P. DEGREE EXAMINATION – DECEMBER 2014**  
**SUBJECT: SH 107 – AUDITORY PHYSIOLOGY**

Wednesday, December 24, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

**Answer ALL the questions.**

- 1A. Describe the anatomy of temporal bone with a neat diagram.  
1B. Describe the anatomy of tympanic membrane with a neat diagram. (10+6 = 16 marks)

**OR**

- 2A. Explain the role of middle ear in hearing.  
2B. Explain the anatomy of Eusthesian tube. (10+6 = 16 marks)

- 3A. Discuss the neural innervations of cochlea with a neat diagram.  
3B. Write a note on action potential. (10+6 = 16 marks)

**OR**

- 4A. Discuss the various theories that explains bone conduction hearing.  
4B. Write a note on place volley theory. (10+6 = 16 marks)

- 5A. Describe the anatomy of internal acoustic meatus.  
5B. Write a note on tonotopicity of auditory nerve. (8+8 = 16 marks)

**OR**

6. Explain detail the anatomy of Otolithic organs and semi circular canal. (8+8 = 16 marks)

- 7A. Discuss the central auditory pathway with a neat diagram.  
7B. Write a note on tonotopical organization at each level. (6+10 = 16 marks)

**OR**

8. Explain the anatomy and functioning of cochlear nucleus. (8+8 = 16 marks)

9. Discuss the information coding on auditory cortex in detail. (16 marks)

**OR**

10. Discuss the role of auditory cortex in hearing. (16 marks)

