

**MANIPAL UNIVERSITY**

**FOURTH YEAR B.P.T. AND **THIRD YEAR B.Sc. C.V.T.** / B.Sc. M.L.T.  
DEGREE EXAMINATION – DECEMBER 2015**

**SUBJECT: RESEARCH METHODOLOGY & BIostatISTICS / BIostatISTICS & RESEARCH  
METHODOLOGY (PAPER IV) / BIostatISTICS  
(COMMON FOR OLD, 2009, 2011 REGULATION/OR & 2011 SCHEME / NR)**

Tuesday, December 15, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. What are the steps involved in a research process? (5 marks)
  
2. Define with distinction the validity and reliability. (5 marks)
  
3. Differentiate between nominal and ordinal variables with examples. (5 marks)
  
4. Classify the following into different scales of measurements (Nominal, Ordinal, Interval and Ratio)
 

a) Name	b) Age	c) Religion
d) Designation of teachers	e) Pain score	

(5 marks)
  
5. Write a note on systematic sampling. (5 marks)

6A. The following table shows tuberculin reaction measured in 206 persons who were never vaccinated. Present the data graphically by a histogram.

Reaction in mm	Number of persons
8 – 10	30
10 – 12	43
12 – 14	54
14 – 16	43
16 – 18	32
18 – 20	23
20 – 22	14
22 – 24	04

6B. Form a frequency table and calculate relative frequencies for the given data regarding number of babies born during a year in 40 community hospitals  
(class intervals: 20 – 25, 25 – 30, 30 – 35 and so on)

42	32	59	35	46	37	55	52	34	54
48	45	49	32	57	30	55	27	45	56
53	30	53	21	34	39	56	59	58	49
54	29	42	42	54	32	26	40	28	53

(5+5 = 10 marks)

- 7A. Calculate median and standard deviation of the following data:  
Hb level (in gm%): 14 10 11 12 10 13 14 11 13 16
- 7B. Define coefficient of variation. Mean and standard deviation of pulse rate for a group of individuals is 75 and 3 beats per minute respectively. The mean and standard deviation of height is 65 and 3 inches respectively. Which of the two characteristics has more variability?  
(5+5 = 10 marks)
8. The total cholesterol values for a certain population are approximately normally distributed with a mean of 200 mg/dl and a standard deviation of 20 mg/dl. Find the probability that an individual picked at random will have cholesterol level.
- Between 220 mg/dl and 240 mg/dl
  - Less than 160 mg/dl
- (5 marks)
9. Explain the assessment of correlation by means of scatter diagram.  
(5 marks)
10. Enumerate the uses and sources of health information system.  
(5 marks)
- 11A. Explain the terms rate and ratio with examples.
- 11B. During the year 2012, there were 750 deaths in a town. The estimated mid-year population of the town for the same year was 25050. Calculate the crude death rate. What are the limitations of crude death rate?  
(5+5 = 10 marks)
12. What are the uses of epidemiology? Explain case series study design with its merits and demerits.  
(10 marks)



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## MANIPAL UNIVERSITY

**THIRD YEAR B.Sc. C.V.T. DEGREE EXAMINATION – DECEMBER 2015**

**SUBJECT: PAPER I – ECHOCARDIOGRAPHY  
(COMMON FOR OR & 2011 SCHEME)**

Wednesday, December 16, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

✍ **Answer ALL the questions.**

✍ **Draw the diagram wherever necessary.**

1. Define types of prosthetic valve. Explain various methods of prosthetic valve function assessment in detail.

(20 marks)

2. Explain Echocardiography in coronary artery disease. Explain contrast echo in detail.

(20 marks)

3. **Write short note on:**

3A. CW and PW Doppler

3B. M-mode Echocardiography

3C. RV function assessment

3D. Total anomalous pulmonary venous connection

3E. Pulmonary stenosis

(8 marks × 5 = 40 marks)



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## MANIPAL UNIVERSITY

THIRD YEAR B.Sc. C.V.T. DEGREE EXAMINATION – DECEMBER 2015

SUBJECT: PAPER II – CARDIAC CATH AND INTERVENTION/  
CARDIAC CATHETERISATION AND INTERVENTION  
(COMMON FOR OR & 2011 SCHEME)

Thursday, December 17, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

- ✍ Answer ALL the questions.
- ✍ Draw the diagram wherever necessary.

1. Describe assessment of mitral valve area by cath (gorlin formula) and explain procedural details of Balloon mitral valvulotomy and its complications.

(20 marks)

2. Explain coronary vascular system, common coronary anomalies and angiography views.

(20 marks)

3. Write short note on:

- 3A. Carotid artery stenting
- 3B. Intra vascular ultrasound
- 3C. Rate adaptive pacing
- 3D. Intra aortic balloon counter pulsation (IABP)
- 3E. Coronary TIMI flow and frame rate

(8 marks × 5 = 40 marks)

