

**MANIPAL ACADEMY OF HIGHER EDUCATION****FIRST YEAR M.Sc. R.R.T. & D.T. DEGREE EXAMINATION – MAY/JUNE 2018****SUBJECT: MDT 602 – PATHOLOGY, MICROBIOLOGY & PHARMACOLOGY  
RELATED TO KIDNEY AND DIALYSIS  
(TWO YEARS PROGRAMME 2014-15)**

Saturday, June 02, 2018

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

**1. Multiple choice questions – select the single best answer:**

1A. One of the following is not a complication of arteriovenous fistula:

- i) Thrombosis
- ii) Steal phenomenon
- iii) Hemorrhage
- iv) Hemolysis

1B. Access recirculation is more likely in all of these conditions EXCEPT:

- i) Low pump blood flow rate
- ii) High pump blood flow rate
- iii) Low access blood flow
- iv) Venous stenosis

1C. A patient with stable estimated glomerular filtration rate of around 55ml/min has:

- i) Chronic kidney disease stage 2
- ii) Chronic kidney disease stage 3
- iii) Not got chronic kidney disease stage if the urinalysis is normal
- iv) Chronic kidney disease stage 4

1D. Which one of the following is false with regards to acute kidney injury?

- i) Renal recovery is common
- ii) Hemodialysis is required in a majority of patients with acute kidney injury
- iii) Prerenal acute kidney injury is common in hospitalized patients
- iv) Elderly patients with acute kidney injury have increased mortality compared to younger patients

1E. The commonest cause of death in end stage renal disease patients is:

- i) Cardiovascular
- ii) Sepsis
- iii) Catheter related septicemia
- iv) None of the above

1F. Advanced renal failure causes all of the following EXCEPT:

- i) Pulmonary edema
- ii) Gastropathy
- iii) Uremia frost
- iv) Hypernatremia

1G. Catheter related bacteremia is commonly due to:

- i) Streptococci
- ii) Klebsiella
- iii) Staph aureus
- iv) Escherichia coli

1H. Exit site infection in continuous ambulatory peritoneal dialysis is usually treated with:

- i) Intravenous antibiotics
- ii) Oral antibiotics
- iii) Oral or topical antibiotics
- iv) None of the above

1I. Access surveillance helps to:

- i) Predict access failure
- ii) Prevent graft infection
- iii) Reduce need for access angioplasty
- iv) None of the above

1J. Complications of Peritoneal dialysis does not include:

- i) Encapsulating peritoneal sclerosis
- ii) Peritonitis
- iii) Gangrene of the bowel
- iv) Pleural effusion

(1 mark × 10 = 10 marks)

2. **Long essay questions:**

2A. Discuss the use of heparin in hemodialysis treatment.

2B. Describe how the spread of blood borne viruses in the dialysis unit can be prevented.

(10 marks × 2 = 20 marks)

3. **Short essay questions:**

3A. Define and classify chronic kidney disease.

3B. What are the causes of acute kidney injury?

3C. Discuss the complications of peritoneal dialysis.

3D. Write a note on infection control precaution for dialysis unit.

3E. List the modalities of continuous renal replacement therapy and their indications.

3F. Discuss the advantages and disadvantages of arteriovenous synthetic graft.

(5 marks × 6 = 30 marks)

4. **Short notes questions:**

4A. List the Gastrointestinal manifestations of end stage renal disease.

4B. What are the indications for plasmapheresis?

4C. What are the contraindications for peritoneal dialysis in end stage renal disease?

4D. What is a disinfectant? Mention the common disinfectants used in the hemodialysis unit.

4E. Classify diuretics.

4F. Mention four complications of acute kidney injury.

4G. How is hyperphosphatemia of chronic kidney disease treated?

4H. List the complications of arteriovenous fistulae.

4I. Mention four causes for hypotension during hemodialysis treatment in end stage renal disease.

4J. What are the causes of end stage renal disease in India?

(2 marks × 10 = 20 marks)





2. **Long essay questions:**

- 2A. Explain the specifications for an artificial kidney and write a note on dialyzer types.
- 2B. Discuss management of poisoning with extracorporeal blood therapies.

(10 marks × 2 = 20 marks)

3. **Short essay questions:**

- 3A. Write the functions of dialysate. Explain disadvantages of bicarbonate buffer.
- 3B. Write a note on hyperkalemia in chronic kidney disease condition.
- 3C. Write a note on iron deficiency in dialysis patients.
- 3D. Explain functioning of softener in water treatment plant.
- 3E. Discuss SLED.
- 3F. Discuss anticoagulation in continuous renal replacement therapy.

(5 marks × 6 = 30 marks)

4. **Short note questions:**

- 4A. What are the advantages of arterio venous shunt?
- 4B. What is anuria?
- 4C. Define plasma clearance.
- 4D. What are the causes for aneurysm in arterio venous fistula?
- 4E. What is icodextrin?
- 4F. Define chronic kidney disease stage 5.
- 4G. Write the adverse effects of erythropoietin.
- 4H. What are the renal replacement therapies available for acute kidney injury?
- 4I. What are phosphate binders?
- 4J. Define reverse osmosis.

(2 marks × 10 = 20 marks)



# MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST YEAR M.Sc. (RRT & DT) DEGREE EXAMINATION – MAY/JUNE 2018

SUBJECT: MDT 604 – RENAL TRANSPLANTATION  
(TWO YEARS PROGRAMME – 2014-15 BATCH)

Thursday, June 07, 2018

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ Select the single best answer:

- 1A. One of the following does not usually cause neutropenia:
- i) Sirolimus
  - ii) Tacrolimus
  - iii) Azathioprine
  - iv) ATG
- 1B. Which of the following is true in case of hyperacute rejection?
- i) It is mediated by preformed cytotoxic antibody
  - ii) It occurs after many years of transplantation
  - iii) Dialysis can reverse it
  - iv) None of the above
- 1C. In following case, deceased donor kidney transplant cannot be performed EXCEPT:
- i) Heart beating deceased donor, with elevated serum creatinine level
  - ii) Non heart beating – brought dead, family is keen to donate organ to the needy
  - iii) Heart beating deceased donor, normal RFT, family members not willing for donation
  - iv) None of the above
- 1D. Kidney donation can be accepted from:
- i) Solitary kidney, normal renal function test
  - ii) Living donor, age below 18, normal renal function
  - iii) Deceased donor, age below 18, normal renal function
  - iv) None of the above
- 1E. A graft between members of the different species is termed as:
- i) Autograft
  - ii) Isograft
  - iii) Xenograft
  - iv) Allograft
- 1F. Graft survival is highest with:
- i) Living related transplant
  - ii) Donation after cardiac death transplant
  - iii) Donation after brain death transplant
  - iv) ABO incompatible transplant
- 1G. All of the drugs are used in immunosuppression in transplantation EXCEPT:
- i) Tacrolimus
  - ii) Mycophenolate
  - iii) Steroids
  - iv) Cyclophosphamide
- 1H. All are true about kidney transplantation EXCEPT:
- i) The kidney is usually placed in the site of one of their old kidneys
  - ii) Administration of steroids inhibits gene transcription in immune cells
  - iii) They may reject the kidney if they stop taking immunosuppressive drugs
  - iv) Cyclosporine administration will inhibit cytokine synthesis and T cell activation

1I. Cells involved in acquired immunity include:

- |                               |                  |
|-------------------------------|------------------|
| i) T cells                    | ii) B cells      |
| iii) Antigen presenting cells | iv) All of these |

1J. Location of origin & maturation of B cells:

- |                 |                 |
|-----------------|-----------------|
| i) Thymus       | ii) Bone marrow |
| iii) Lymph node | iv) Kidney      |

(1 mark × 10 = 10 marks)

2. **Long essay questions:**

2A. Describe acquired immunity & its functions.

2B. What is Maastricht's classification? Explain each category.

(10 marks × 2 = 20 marks)

3. **Short essay questions:**

3A. Compare Deceased donor transplantation with Living donor transplantation.

3B. Discuss the side effects of steroids.

3C. Discuss the typical workup of a potential living organ donor.

3D. Describe complement dependent cytotoxicity cross matching.

3E. Explain major histo compatibility cells.

3F. Discuss chronic allograft nephropathy.

(5 marks × 6 = 30 marks)

4. **Short note questions:**

4A. Write a note on memory cells.

4B. What is paired donation?

4C. What is sensitization?

4D. Define organ donation.

4E. Define brain stem death.

4F. What is the location of native kidneys?

4G. List the common viral infections seen in post-transplant patients.

4H. What meant by rejection?

4I. What is positive cross match?

4J. Write a note on xenotransplantation.

(2 marks × 10 = 20 marks)



## MANIPAL ACADEMY OF HIGHER EDUCATION

FRIST YEAR MSC. RT / MOPT/MSc. ECG/MSc. CCIT/ MSc. NMT/ MSc. MLT/ MOT/ MSc. RRT & DT/ MASLP  
SECOND SEMESTER M.Sc. MRP/MSc. EXERCISE AND SPORTS SCIENCE / M.Sc. MIT/ M.Sc. HIM/M.Sc. CLINICAL PSYCHOLOGY  
DEGREE EXAMINATION – MAY/JUNE 2018

**SUBJECT: ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY / PAPER IV: RESEARCH METHODOLOGY & BIOSTATISTICS / PAPER IV: EPIDEMIOLOGY & BIOSTATISTICS/ PAPER IV: ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY / BIOSTATISTICS / ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY/ ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY/ STATISTICS & RESEARCH METHODS/RESEARCH METHODOLOGY & BIOSTATISTICS / BIOSTATISTICS/ EPIDEMIOLOGY & BIOSTATISTICS / ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY**

Tuesday, May 29, 2018

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

**Answer ALL the questions.**

- 1A. Define mean, median, mode, standard deviation and coefficient of variation.
- 1B. What do you mean by simple random sampling? Explain lottery method in simple random sampling with the help of an example.  
(5+5 = 10 marks)
  
- 2A. Write two examples of Poisson random variable. Enumerate the properties of Poisson distribution.
- 2B. Define sampling distribution, standard error and confidence interval. Write two applications of standard error in inferential statistics.  
(5+5 = 10 marks)
  
- 3A. Briefly explain the steps involved in one way ANOVA.
- 3B. A research team wants to know the prevalence of anaemia among primary school going children in a rural area in southern India. A previous study conducted few years before in the same population showed that the prevalence of anaemia among primary school children was 15%. What is the minimum sample size required if absolute precision (margin of error) is 3% and confidence level of 95%?  
(5+5 = 10 marks)
  
4. Explain the structure of a research thesis.  
(10 marks)
  
5. A sample of 160 women between 75 and 80 years old were classified into one of two groups based on whether they took Vitamin E supplements at the time of enrolment. Each woman was subsequently given a test to measure cognitive ability. Higher scores on this test indicate better cognition. The average test score amongst 60 women taking vitamin E was 27 with standard

deviation of 6.9 as compared to a mean score of 24 with a standard deviation of 6.2 among 100 women not taking the supplements. The research team wants to know whether the mean scores differ significantly between the two groups.

- i) Name the statistical test used for comparing the mean scores between the two groups.
- ii) What are the assumptions for this test?
- iii) State the null and alternate hypothesis for this test?
- iv) Compute the test statistic for this test.
- v) State whether the test is one sided or two sided test. Justify your answer.

(1+2+2+4+1 = 10 marks)

6. Explain the design, measure of strength of association, strength and weakness of cohort study design.

(10 marks)

7. **Write short notes on:**

- 7A. Wilcoxon signed rank test
- 7B. Cross sectional study design
- 7C. Logistic regression
- 7D. Validity of diagnostic tests

(5 marks × 4 = 20 marks)







2. **Long essay questions:**

- 2A. Write a note on factors affecting peritoneal dialysis.
- 2B. Explain the structure of kidney.

(10 marks × 2 = 20 marks)

3. **Short essay questions:**

- 3A. Describe the glomerular filtration barrier.
- 3B. Illustrate the coagulation cascade.
- 3C. Explain the renal auto regulation.
- 3D. Describe the blood supply of kidney.
- 3E. Explain the Henderson-Hasselbalch equation.
- 3F. What are the causes of anemia in chronic kidney disease?

(5 marks × 6 = 30 marks)

4. **Short notes questions:**

- 4A. Which blood vessels are commonly used for temporary vascular access in hemodialysis?
- 4B. Define diffusion.
- 4C. Which are the two major organs involved in acid base regulation?
- 4D. What is macula densa?
- 4E. What are the rules of blood transfusion with regards to blood grouping?
- 4F. Write a note on renal glomerulus.
- 4G. What is anemia? What is the recommended target hemoglobin level in chronic kidney disease patients?
- 4H. Name the cations of extracellular fluid & intracellular fluid.
- 4I. What is uremia? Name any two uremic complications.
- 4J. What are the normal serum creatinine levels in males & females?

(2 marks × 10 = 20 marks)

