Q. 1 A 25 year old man presents to the clinic with fever for 3 days and swelling on both cheeks for 1 day. On examination both parotid glands are noted to be swollen and tender.

a) What is the most likely diagnosis?
b) List 4 extra salivary gland manifestations.
c) List 3 viral etiologic agents which may present in a similar manner.
d) What infection control measures would you take on this patient if admitted in the hospital?

Q. 2 A new drug (drug X) has been developed which is for Ebola patients. A study is done to test this drug. Of the 100 patients with Ebola who got the placebo, 75 died while 25 survived of the 100 who got drug X, 75 survived and 25 died.

a) What study design is desired above?
b) What is the risk of death in Ebola patients treated with drug X?
c) How much is the risk of death reduced by using drug X?
d) How many patients of Ebola need to be treated by drug X to save one life?

Q. 3 A 36 year old woman from Bombay presents with progressive weight loss, fever and chronic diarrhea. On examination she is noted to have thrush and bilateral lymphnodes. The following initial investigations are sent:

HIV ELISA Positive
HIV rapid test Positive
HIV Viral load: Undetectable
CD4 count:    20 cells/mm³
FNAC of lymph node: Chronic granulomatous inflammation with few acid fast bacilli
GeneXprt of lymph node Negative
Line Probe Assay of Lymph node Negative
Husband's HIV ELISA Negative

a) What initial anti-retroviral regimen would you recommend for this patient?
b) When will you start this patient on anti-retroviral treatment?
c) What primary prophylaxis will you start on this patient?
d) How will you prevent the husband from acquiring HIV?
Q.4 A 35 year old man with focal sclerosing glomerulonephritis on high dose steroids and azathioprine is being evaluated for renal transplantation. His initial PPD reveals an induration of 02 mm. His CMV serology is positive. Donor PPD is negative and CMV is positive.

a) What will be the next step in investigating this patient’s TB status?
b) What will be the indication to treat this patient for latent TB?
c) What regimen will you prescribe for latent TB infection?
d) List 4 drugs that can be used to prevent CMV reactivation in this patient post transplantation.

Q.5 A 40 year old, a known case of mitral valve prolapse and a veterinarian by profession, presents with a 10 days' history of high fevers (up to 104-105°F). He reports severe headache, malaise, myalgia and non-productive cough. Recently he has developed nausea, vomiting and abdominal pain. Physical examination reveals a heart rate of 120/min, BP of 100/60 mmHg, temperature 40°C. Chest examination reveals right basal crackles. Lab investigations show a white cell count of 5,000/cumm, platelets, 95,000/cumm and ESR, 80 mm/h; ALT 120 IU/L, alkaline phosphatase 200IU/L, creatinine, 3 mg/dl (N: upto 1.1). RA factor is +.

a) Name 5 conditions which can present in this manner.
b) List the 5 most relevant investigations which will help you in confirming your diagnosis.

Q.6 A 25 year old male presents with a history of fever and loose stools for the last 2 weeks. Recently, the stools have become mucoid and bloody and he has developed severe abdominal pain. On examination, heart rate is 106/min, BP, 110/60 mm Hg, temperature is 38°C. Abdomen is tender in the umbilical region and right lower quadrant. White cell count is 15000/cumm with neutrophilia. Stool DR shows pus, blood and mucus. CT abdomen shows small bowel intussusception. Stool and blood culture are reported as growing curved, microaerophilic gram negative rods.

a) What are the possible causative agents in this case?
b) List 4 common food items associated with this infection?
c) Is it common to see this organism in blood culture? Explain your answer?
d) List 2 treatment options for this infection.
Q.7 A 6-month-old baby is brought to the emergency room suffering from fever and macular rash. A week ago, the baby was bitten by a rat that was to be fed to the family’s pet snakes. The child is prescribed syrup paracetamol and discharged. Three days later, the baby develops high fever and lethargy and is brought back to the hospital. MRI brain with contrast reveals meningeal enhancement; Echocardiography shows diffuse myocardial dysfunction suggestive of myocarditis. Two sets of blood culture are growing pleomorphic gram positive cocci and gram negative bacilli.

a) Give a list of differential diagnoses
b) What are the most likely causative agents?
c) How will you treat this baby?

Q.8 A 65 year old lady, presents to the ER with complaints of burning micturition, right sided abdominal pain and high-grade fever for the last 4 days and drowsiness for the last 12 hours. On examination, her temperature is 40°C, HR 140/min, RR 40/min, BP 80/50 mmHg. Ultrasound KUB revealed right sided hydronephrosis and hydroureter.

a) What initial 5 investigations will you send on this patient?
b) What initial management will you provide this patient?
c) List 2 antibiotic choices in this patient while awaiting cultures.

Q.9 A couple with their 2 children aged 3 and 5 are planning a trip to Europe for vacation. They have the following questions about the travel restrictions imposed on Pakistanis for polio.

a) According to the WHO’s advisory, when should Pakistani travelers ideally get polio vaccine?
b) Do foreigners visiting Pakistan also need to get polio vaccine before leaving Pakistan? What is the recommendation for them?
c) How long is the vaccination certificate valid for Pakistani travelers?
d) Why has Pakistan been included in the list of countries with travel restrictions, while Afghanistan is not?
e) List one advantages of Injectable polio vaccine over oral polio vaccine and one advantage of oral polio vaccine over injectable polio vaccine.
Q.10 A 25 year old man presents to your clinic with fever and abdominal pain. He has recently returned from a safari in Uganda. During his trip he explored the savannah, drank from the streams, swam in the river, ate wild game and raw fish and had unprotected sex with 3 commercial sex workers. On examination he has high grade fever and generalized abdominal tenderness. Ultrasound abdomen is unrevealing for a pathology. Laboratory investigations are significant for marked eosinophilia.

a) What is the most likely syndrome and etiologic agent?
b) What is the route of transmission of this infection?
c) What is the long term complication of this infection if left untreated?
d) Give one treatment option for this infection.