Q.1  a) What are oncogenes?  
b) Give four common pathways of oncogene activation (from proto- oncogene to oncogene).  
c) Give current guidelines of testing Her-2 / neu oncogene in gastric and gastroesophageal adenocarcinoma.

Q.2  A 50 year old female presented with a mass on palate. Microscopically, the tumour was arranged in ductular, papillary and solid structures; lined by small to intermediate cells having bland, round nuclei with small nucleoli. Infiltration is also seen at the periphery.

a) What are the likely differentials in this case?  
b) How will you differentiate between them?

Q.3  a) Name two premalignant lesions associated with gastric adenocarcinoma with salient morphological features.  
b) Give WHO classification of gastric carcinoma.  
c) What histopathological features have greatest impact on clinical outcome?

Q.4  A middle age woman presented with persistant watery bloodless diarrhoea. Colonoscopic findings were normal. Multiple biopsies were obtained and sent for histopathological examination with suspicion of microscopic colitis.

a) Give your microscopic differential diagnoses, with salient histological features.  
b) Give three key microscopic features which can distinguish ischaemic colitis from inflammatory bowel disease.

Q.5  A 40 year old female had persistant altered LFT’s. Serology for hepatitis B and C is negative. Autoimmune profile is negative. Ultrasound showed fatty liver. A liver biopsy is carried out.

a) List your differential diagnoses.  
b) Give the morphological features of the most likely diagnosis.  
c) What morphological features would be helpful in differentiating the above entity from autoimmune hepatitis?
Q.6  a) What do you understand by the term systemic vasculitis? Give histological findings of systemic vasculitis.
   b) Give three common conditions leading to systemic vasculitis with clinical features, type of vessel involved and laboratory findings.

Q.7  A medical oncologist referred a diagnosed case of non-small cell carcinoma of lung to make a distinction if it is a primary adenocarcinoma or squamous cell carcinoma of the lung.

   a) Which five immunohistochemical stains will you utilize to reliably make this distinction?
   b) What implications this will have for further molecular testing?
   c) Which five entities have replaced the term bronchoalveolar carcinoma (BAC) in the IASLC / ATS / ERS 2011 classifications?

Q.8  An adult aged 30 years presenting with hydrocephalous shows intraventricular SOL in left lateral ventricle with cystic change and evidence of conspicuous calcification on radioimaging. The microscopy shows sheets of monomorphic cells with small nuclei and rounded contours. The background is fibrillar in appearance.

   a) Name two conditions, you will consider on priority?
   b) Summarize microscopic features of these lesions.
   c) What immunohistochemical stains you would request to confirm these lesions?
   d) List three common tumours which frequently metastasize to brain in females?

Q.9  a) Give etiological factors in the pathogenesis of gynaecomastia.

   b) A 30 years old female presented with a lump in the subareolar region. The lump was excised. Its microscopic examination revealed poorly circumscribed collections of bilayered epithelial tubular structures having comma shaped extensions set in a fibrous stroma.
   i) What is the likely differential diagnoses?
   ii) Tabulate the differences between the entities considered in differential diagnoses.
Q. 10 a) What are the distinguishing microscopic features you would consider in differentiating disordered proliferative endometrium from simple endometrial hyperplasia and endometrial polyp in endometrial biopsy / curettings?

b) List the microscopic findings helpful in differentiating well differentiated endometrial adenocarcinoma from complex endometrial hyperplasia with atypia in endometrial biopsy / curettings?
Q.11 a) What are antigen presenting cells in various organs and how they present antigen to T-cells?
   b) In HIV patients, what T-cells alterations you would expect in peripheral blood on immunophenotyping?
   c) What common malignancies are expected in HIV patients?

Q.12 a) What do you understand by gene expression molecular profiling of breast carcinoma?
   b) List the types identified with two key characteristics of each type.

Q.13 A 29 year old female presented with persistant amenorrhea after a molar pregnancy. Her serum β-HCG level was found to be 10,000 mIU/ml. Diagnostic D&C was performed. Microscopic examination revealed a tumour arranged in a dimorphic pattern with an admixture of mononuclear and multinucleated neoplastic cells containing abundant cytoplasm.

   a) What is the likely diagnosis?
   b) Which immunohistochemical stains will help in the diagnosis?
   c) What other trophoblastic tumors can mimic this clinical presentation?

Q.14 A 30 years old male presented with painless enlargement of right testis. An orchidectomy was done. On microscopic examination, it showed features on non-seminomatous germ cell tumor with various subtypes intermingled in different proportions.

   a) What histological subtypes you may expect in this tumor?
   b) How immunohistochemistry may help in making distinction among these sub-types?
   c) Which groups of lymph nodes are most likely to harbor nodal metastases in this case?

Q.15 a) What are the minimal criteria for adequacy of kidney biopsy?
   b) Give a brief account of the checklist.
   c) Tabulate the differences between renal oncocytoma and chromophobe renal cell carcinoma.
Q.16 a) Give a brief summary of pitfalls of grading soft tissue sarcomas with examples.
   b) Give histopathological parameters taken into account in FNCLCC grading system.

Q.17 A 40-year old male developed cervical lymphadenopathy. Excision of the lymph node was done which showed diffuse sheets of large neoplastic lymphoid cells. Most nuclei showed central prominent nucleoli. Cytoplasm was abundant and basophilic while mitoses were frequent.

   a) Give your morphologic diagnosis prognostic types.
   b) Briefly discuss favourable and unfavourable clinical (IPI index) and immunohistochemical / molecular subgroups.

Q.18 a) Classify adrenocortical neoplasms.
   b) Give immunohistochemical profile of these neoplasms and compare them with immunohistochemical profile of paraganglioma.
   c) Name most common metastatic tumours to adrenal glands.

Q.19 A 30 year old man had vesicobullous lesion having symmetrical distribution. The patient also had an enteropathy which was gluten sensitive and responded to Dapsone.

   a) What is the most likely diagnosis?
   b) Mention its key histological features.
   c) List two other bullous disorders with location of bullae and immunofluorescence patterns.
Q.20 A sixty year male developed massive pleural effusion which was aspirated and sent for cytological examination.

a) What cytomorphological features would help to differentiate between mesothelial hyperplasia, malignant mesothelioma and metastatic adenocarcinoma?

b) How will immunohistochemical stains help in making distinctions among the above three categories?