1. In which clinical subtype of adult T cell Leukemia/Lymphoma are Flower cells absent in the peripheral blood
   A) Acute
   B) Chronic
   C) Smouldering
   D) **Lymphoma**

2. Which of the following is not an example of a cutaneous T cell Lymphoma
   A) Pagetoid reticulosis
   B) Follicular Mycosis Fungoides
   C) **Cutaneous follicular centre cell lymphoma**
   D) Granulomatous slack skin

3. CD 5 is absent in all the subtypes of B cell NHL **except**
   A) MALT lymphoma
   B) Marginal zone lymphoma
   C) **Mantle cell lymphoma**
   D) Burkitt's lymphoma

4. Which cytogenetic abnormality is characteristic of mantle cell lymphoma
   A) t(14;18)(q32;q21)
   B) t(11;14)(q13;q32)
   C) t(11;18)(q21;q21)
   D) t(8;14)(q24;q32)

5. The international prognostic score for aggressive lymphoma in the high intermediate risk group would be
   A) 4
   B) 3
   C) 1
   D) 2

6. Lymphomas associated with HIV include all the following **except**
   A) Diffuse large B cell lymphoma
   B) Burkitt’s lymphoma
   C) Primary effusion lymphoma
   D) Lymphoblastic lymphoma

7. The following statements about Brentuximab vedotin are true **except**
   A) It is an Antibody – drug conjugate
   B) Used in refractory Hodgkin’s disease
   C) **It is a Bi alkylating agent**
   D) Peripheral neuropathy is an important toxicity
A patient with pulmonary fibrosis, seen as a late effect of chemotherapy received as a child would most likely have received which of the following chemotherapeutic agents?

A) Carmustine  
B) Doxorubicin  
C) Etoposide  
D) Gemcitabine

Which of the following is a high risk cytogenetic abnormality as per the Mayo Clinic risk – stratification of myeloma

A) t(11;14)  
B) t(6;14)  
C) t(14;16)  
D) t(4;14)

On flow cytometry, plasma cells in multiple myeloma typically stain positive for all the following except

A) CD38  
B) CD19  
C) CD56  
D) CD138

The putative primary teratogenic target of thalidomide is

A) NK –cell  
B) Proteasome  
C) Cereblon  
D) Histone

Which of the following is an example of histone deacetylase inhibitor

A) Carfilizomib  
B) Alemtuzumab  
C) Panobinostat  
D) Bendamustine

The following statement are true of cladribine (2-chlorodeoxyadenosine) except

A) It is resistant to adenosine deaminase  
B) It accumulates in lymphoid cells  
C) DNA synthesis is impaired by it  
D) It is a pyrimidine analogue

Hairy cell strongly express all of the following pan – B-cell antigens except

A) CD19  
B) CD20  
C) CD22  
D) CD23

A young male with chronic lymphatic leukemia has no lymphadenopathy, no palpable hepatosplenomegaly, no lymphocytosis, Hb 8gm/dl and platelet count of 2.5 lakhs. The stage as per the Rai staging would be

A) 1  
B) 2  
C) 3  
D) 4
The most common organism causing infectious complications in chronic lymphatic leukemia is
A) Pneumocystis carinii
B) Escherichia coli
C) Staphylococcus aureus
D) Streptococcus pneumoniae

Most common secondary malignancy in subjects with chronic lymphatic leukemia is
A) Lung cancer
B) Leukemia
C) Renal cancers
D) Skin cancer

Poor prognostic factors for Chronic Lymphocytic Leukemia include all of the following except
A) del(17p13.1)
B) del(11q22.3)
C) Mutated IGHV1
D) High LDH

The Philadelphia chromosome abnormality is present in all the following cells of the marrow except
A) Monocytes
B) B lymphocytes
C) Fibroblasts
D) Megakaryocytes

All the following are adverse prognostic factors in subjects with chronic myeloid leukemia on treatment with tyrosine kinase inhibitors except
A) Severe basophilia
B) High peripheral blast percent
C) Thrombocytosis
D) Massive splenomegaly

Genital Warts is associated with which subtype of human papilloma virus
A) 5
B) 6
C) 8
D) 16

Busulfan is an example of
A) Nitrosoureas
B) Epoxides
C) Alkyl sulfonates
D) Nitrogen mustards

Cis-diamminecyclobutanedicarboxylate platinum is the chemical name of which of the following?
A) Cisplatin
B) Carboplatin
C) Oxaliplatin
D) Lobaplatin
24 Which of the following agents is used for the management of refractory pediatric Acute Lymphoblastic Leukemia
A) Cladribine  
B) Fludarabine  
C) Methotrexate  
D) Clofarabine

25 Capecitabine and its metabolites are primarily excreted by the
A) Liver  
B) Gut  
C) Skin  
D) Kidney

26 Methotrexate accumulation in tumor cells is enhanced in vitro by which one of the following drugs
A) Bleomycin  
B) Doxorubicin  
C) Vincristine  
D) Mitomycin

27 The target of vemurafenib is
A) BTK  
B) MEK  
C) BRAF  
D) P13K delta

28 Single strand DNA breaks following treatment are repaired by the following methods except
A) Base – excision repair  
B) Homologous recombination  
C) Nucleotide – excision repair  
D) Mismatch repair

29 L-asparaginase can antagonize the antineoplastic effects of which of the following drug if given concurrently
A) Cyclophosphamide  
B) Methotrexate  
C) Doxorubicin  
D) 6-mercaptopurine

30 Bleomycin related toxicity can be aggravated by all of the following except
A) Brentuximab Vedotin  
B) High concentration of oxygen  
C) Granulocyte colony-stimulating factor  
D) Etoposide

31 Which of the following statements about Vismodigib is true except
A) Used in metastatic basal cell carcinoma  
B) inhibits Hedgehog pathway  
C) It is a small molecule inhibitor  
D) Has antiangiogenesis activity
32 The most common toxicity of Tamoxifen is
A) Depression
B) Hot flashes
C) Hypertension
D) Cataract

33 Estrogen receptor antagonist with no known agonist activity
A) Tamoxifen
B) Toremifene
C) Fluvestrant
D) Raloxifene

34 Which of the following agents is an aromatase inactivator
A) Anastrozole
B) Letrozole
C) Exemestane
D) Fadrozole

35 All of the following possess anti VEGF activity except
A) Sorafenib
B) Axitinib
C) Regorafenib
D) Homoharringtonine

36 Which of the following is an example of a chimeric monoclonal antibody
A) Rituximab
B) Alemtuzumab
C) Trastuzumab
D) Bevacizumab

37 Which of the following is a fully human IgG2 RANK ligand neutralizing antibody?
A) Panitumab
B) BRETuximab Vedotin
C) Denosumab
D) Trastuzumab

38 Former smoking is typically defined as no current cigarette use, within the past
A) 1 week
B) 6 months
C) 1 year
D) 8 months
39. The genetic abnormality associated with more than 90% of patients diagnosed with polycythemia vera
A) BCR ABL mutation
B) JAK2 mutation
C) EGFR mutation
D) NFkB mutation

40. Which of the following subtype is an example of high risk human papilloma virus
A) 6
B) 7
C) 11
D) 16

41. Patients with high-risk human papilloma virus positive head and neck cancers tend to have all of the following features
A) Are young
B) Strong history of tobacco use
C) Less likely to have ethanol use
D) Low rate of second primary tumors

42. All of the following sites in the head and neck have sparse lymphatics except
A) Paranasal sinuses
B) Middle ear
C) Vocal chords
D) Hard palate

43. Verrucous carcinoma is most seen in the
A) Floor of the mouth
B) Hard palate
C) Gingiva
D) Tongue

44. In head and neck cancer, metastasis in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension, would be classified as per 2010 American Joint Committee on Cancer Stages of Regional Lymph Node Involvement as
A) N2a
B) N2b
C) N2c
D) N3

45. Which of the following biochemical imbalances is not included in defining tumor lysis syndrome
A) Hypocalcemia
B) Hypernatremia
C) Hyperkalemia
D) Hyperuricemia

46. The most common histological subtype of lung cancer is
A) Squamous cell Ca
B) Adenocarcinoma
C) Adeno-squamous Ca
D) Small cell carcinoma
47. Necitumumab is used in the management of which subtype of lung cancer
   A) Adenocarcinoma
   B) **Squamous cell Carcinoma**
   C) Small cell carcinoma
   D) Neuroendocrine carcinoma

48. The following drugs are used in EGFR mutation bearing lung cancers **except**
   A) Gefitinib
   B) **Ceritinib**
   C) Erlotinib
   D) Afatinib

49. The most common histological type of carcinoma of the esophagus is
   A) Adenocarcinoma
   B) **Squamous cell Carcinoma**
   C) Small cell carcinoma
   D) Adeno squamous Carcinoma

50. Metronomic chemotherapy is hypothesized to act by
   A) Stem cell destruction
   B) **Anti-angiogenic effect**
   C) Immunological effect
   D) Radiation sensitizer

51. Which is the most common mesenchymal tumor that affects the esophagus
   A) Leiomyosarcoma
   B) Fibrosarcoma
   C) Synovial sarcoma
   D) Clear cell sarcoma

52. The greatest risk factor for pancreatic cancer is
   A) Pancreatitis
   B) Diabetes
   C) **Strong family history**
   D) Alcohol consumption

53. The following chemotherapeutic agents are used in the treatment of gastrointestinal stromal tumors **except**
   A) Imatinib
   B) Sunitinib
   C) Regorafenib
   D) **Sorafenib**

54. Which one of the following mutations in exon 18 in gastrointestinal stromal tumors is resistant to imatinib
   A) **D842V**
   B) D846Y
   C) N848K
   D) Y849K
55 Which of these brain tumors are associated with familial Adenomatous Polyposis Coli
A) Meningioma
B) Glioma
C) Medulloblastoma
D) Pinealocytoma

56 Which of the following is the commonest cancer arising in the small intestine
A) Adenocarcinoma
B) Lymphoma
C) Carcinoid tumor
D) Gastrointestinal stromal tumor

57 Most common site of gastrointestinal lymphoma is
A) Colon
B) Rectum
C) Stomach
D) Duodenum

58 The commonest subtype of lymphoma affecting the small bowel is
A) Diffuse large B cell
B) Marginal zone lymphoma
C) Burkitt’s lymphoma
D) Mantle Cell Lymphoma

59 The most common mesenchymal tumor of the small bowel
A) Leiomyoma
B) Leimyosarcoma
C) Gastro intestinal stromal tumor
D) Schwannoma

60 The most common tumor to metastasize to the small bowel is
A) Ca lung
B) Ca ovary
C) Melanoma
D) Ovary

61 Which of the following is not a VEGF receptor inhibitor used in metastatic renal cell cancer
A) Sunitinib
B) Sorafenib
C) Bevacizumab
D) Pazopanib

62 The most undifferentiated type of testicular germ cell tumor
A) Seminoma
B) Teratoma
C) Embryonal carcinoma
D) Yolk Sac tumor
The half-life of AFP (Alpha Feto Protein) is

A) 1-2 days  
B) 3-4 days  
C) **5-7 days**  
D) 8-9 days

Psammoma bodies are encountered in which of the following subtypes of ovarian tumors

A) Mucinous tumors  
B) **Papillary serous cystadenocarcinoma**  
C) Endometroid tumors  
D) Clear cell tumors

Galactomannan assay is used for diagnosis of

A) **Aspergillosis**  
B) Mucormycosis  
C) Pneumocystis jirovecii  
D) Gram negative bacterial infection

Which of the following drugs is used in management of hypercalcemia due to malignancy

A) Rituximab  
B) **Zoledronate**  
C) Tamoxifen  
D) Anastrazole

On histopathology examination of the uterus of a postmenopausal lady who underwent total hysterectomy and bilateral salpingo oophorectomy for cancer endometrium, the tumor was found to involve the pelvic nodes. The FIGO stage would be

A) III A  
B) III B  
C) **III C1**  
D) III C2

Which of the following multiple endocrine neoplasia syndromes is associated with mutations of the menin gene

A) **MEN1**  
B) MEN2  
C) MEN3  
D) FMTC (Familial Medullary Thyroid Cancer)

A patient with IgG Myeloma with serum β2 microglobulin 4.5mg/L and serum albumin of 5g/dL would be staged as per international staging system as

A) I  
B) II  
C) III  
D) Unclassifiable
All of the following multiple endocrine neoplastic syndromes are caused by mutations in the RET proto-oncogenes except

A) MEN1  
B) MEN2  
C) MEN3  
D) Familial medullary thyroid cancer

The typical Karyotype of a partial Hydatidiform mole is

A) 46XX  
B) 46XX0  
C) 46XY  
D) 69XXY

The following statements regarding placental site trophoblastic tumors are true except

A) Slow growing  
B) High free beta HCG  
C) Low beta HCG  
D) Commonly occurs after molar pregnancy

The characteristic cytogenetic abnormality seen in synovial sarcoma is

A) t(12;16)(q13;q11)  
B) t(2;13)(q35;q14)  
C) t(X;18)(p11;q11)  
D) t(11;12)(p13;q12)

The characteristic cytogenetic abnormality seen in alveolar rhabdomyosarcoma is

A) t(2;13)(q35;q14)  
B) t(9;22)(q22;q12)  
C) t(1;2)(q25;p23)  
D) t(12;15)(p13;q25)

Kaplan Meier plots are statistical methods used for

A) Descriptive statistics  
B) Regression analysis  
C) Survival analysis  
D) Comparing means

The drug Rasburicase used for treating tumor lysis syndrome is

A) Recombinant urate Oxidase  
B) Recombinant Xanthine Oxidase  
C) Recombinant Ribonucleotide Reductase  
D) Recombinant Thymidine synthetase

The most common pediatric cancer is

A) Leukemia  
B) Brain tumor  
C) Nephroblastoma  
D) Neuroblastoma
CA 19-9 is widely used as serum marker in:

A) Breast cancer
B) Ovarian cancer
C) **Pancreatic cancer**
D) hepatocellular carcinoma

All of the following conditions are associated with the development of Wilms tumor **except**:

A) Simpson – Golabi-Behmel syndrome
B) Sotos syndrome
C) Perlman syndrome
D) **Bloom syndrome**

A young child with a solitary retinoblastoma and the tumor is 8 disc diameters in size and anterior to the equator; it would then be staged as per Rees Ellsworth classification as:

A) IIA
B) IIB
C) IIIA
D) IIIB

Small-cell osteosarcoma can be histologically commonly confused with which round cell tumor:

A) Non-Hodgkin’s lymphoma
B) Neuroblastoma
C) **Ewing’s sarcoma**
D) Rhabdomyosarcoma

Which of the following subtypes of osteosarcoma tends to occur in older patients, has an indolent course, and is more often associated with local recurrences than with distant metastases:

A) Extra osseous osteosarcoma
B) Small cell osteosarcoma
C) **Osteosarcoma of the jaw**
D) Periosteal osteosarcoma

Which of these cancers has not been conclusively associated with tobacco exposure?

A) Lung
B) Bladder
C) Oesophagus
D) **Breast**

All the following are risk factors for the development of hepatoblastoma **except**:

A) Low birth weight
B) Familial adenomatous polyposis coli
C) **Trisomy 21**
D) Beckwith Wiedemann syndrome

The most common Germ Cell tumors in the pediatric population is:

A) Seminoma
B) **Teratoma**
C) Embryonal carcinoma
D) Choriocarcinoma
All the following are considered favorable parameters in pediatric ALL (Acute lymphoblastic leukemia) except:

A) Age: 1-9 years
B) White blood cell count <50,000/cumm
C) ETV6-RUNX1- positivity
D) MLL gene rearrangement

All of the following are unfavorable factors in pediatric AML (Acute myelogenous leukemia) except:

A) Monosomy 5
B) Monosomy 7
C) Inv(16)
D) FLT3 internal tandem duplication

Which of the following is not an acceptable agent for pleurodesis in a patient with malignant pleural effusion:

A) Talc
B) Bleomycin
C) Vincristine
D) Doxycycline

All the following syndromes are associated with thymoma except:

A) Addison’s disease
B) Pure red cell aplasia
C) Limbic encephalopathy
D) Opsoclonus myoclonus syndrome

Which of the following is not a known risk factor for the development of melanomas?

A) White race
B) Ultraviolet –B exposure
C) Use of hair dyes
D) Heritable predisposition

Cofactors for cardiotoxicity of anthracyclines include all of the following except:

A) Known coronary artery disease
B) Antecedent Valvular heart disease
C) Hypertension
D) Bronchial asthma

Which of the following is not a feature of the international prognostic index for Hodgkin’s lymphoma also known as the Hasenclever index?

A) Serum albumin
B) Lactate dehydrogenase
C) Lymphocyte count
D) Leukocyte count

The most common histopathological type of primary CNS lymphoma is:

A) Burkitt’s lymphoma
B) Plasmablastic lymphoma
C) Diffuse large B cell lymphoma
D) T Cell lymphoma
94 Risk factors for skin cancer following allogeneic bone marrow transplantation include all of the following except

A) Total body irradiation
B) GVHD (Graft Versus Host Disease)
C) Females
D) Allo-transplant at an early age

95 Modified Chang system of tumor staging is used in

A) Wilms tumor
B) Neuroblastoma
C) Hepatoblastoma
D) Medulloblastoma

96 Plerixafor

A) Is an anti-emetic
B) Is an antibiotic
C) Is a stem cell mobilizing agent
D) Is a tyrosine kinase inhibitor

97 Which is the most common histological type of Hodgkin’s lymphoma seen following allogeneic transplant

A) Lymphocyte predominant
B) Mixed cellularity
C) Lymphocyte depleted
D) Nodular sclerosis

98 Hemolytic uremic syndrome is commonly associated with

A) Mitoxantrone
B) Dacarbazine
C) Mustine hydrochloride
D) Mitomycin C

99 Functional or surgical splenectomy is associated with risk of sepsis with the following organisms except

A) Streptococcus pneumoniae
B) Hemophilus influenza
C) Nisseria meningitidis
D) Escherichia coli

100 Which organism is associated with the pathogenesis of post–transplant lymphoproliferative disease

A) Cytomegalovirus
B) Ebstein Barr virus
C) Human T lymphoma virus
D) Varicella Zoster virus

Note: This is the final key. No further queries or objections from the candidates will be entertained under any circumstances.