

BLOCK H 3RD YR MBBS MCQS (MULTISYSTEM, BLOOD AND IMMUNOLOGY, MSK) Dated 1st september 2023

1. Cervical biopsy of a 30-year-old woman reveals invasive tumor containing areas of squamous epithelium, with pearls of keratin. In situ hybridization shows the presence of human papillomavirus type 16 (HPV-16) DNA within the tumor cells. Which of the following molecular abnormalities in this tumor is most likely related to infection with HPV-16?

- a) Trapping of the RAS protein in a GTP-bound state
- b) Increased expression of laminin receptor genes
- c) Inability to repair DNA damage
- d) Functional inactivation of the RB1 protein**
- e) Increased expression of epidermal growth factor receptor

2. Epstein Barr virus is most commonly associated with all of the following types of cancers and related conditions in humans, Except?

- a) Burkitt's lymphoma
- b) Hodgkin's disease
- c) Kaposi's sarcoma**
- d) Nasopharyngeal carcinoma
- e) Oral hairy leukoplakia

3. A 47 year old woman is suffering from gastritis for more than 3 years. She reported weight loss of more than 15 kg in last three months. A stomach ulcer was confirmed from endoscopy. Which of the following microbe could be the possible pathogen that has also been associated with gastrointestinal cancer mostly in developing countries?

- a) Hepatitis A
- b) Hepatitis C
- c) Human papillomavirus
- d) Helicobacter pylori**
- e) Enterococcus faecalis

4. The most important criterion of malignancy in a rectal tubular adenoma is:

- a) Excessive mitotic activity of epithelial components of the tumor
- b) Papillary overgrowth of epithelium, with loss of regular glandular pattern
- c) Anaplasia and disorientation of cells comprising the epithelial growth
- d) Invasion of the stalk or base of the polyp by the epithelial growth**
- e) The presence of multiple polypoid lesions

5. A 57-year-old female presents to general gynecology clinic for evaluation of a pelvic mass. The mass was detected on a routine visit to her primary care doctor during abdominal palpation. In the office, she receives a transvaginal ultrasound, which reveals a mass measuring 11 cm in diameter. In the evaluation of this mass, elevation of which tumor marker would be suggestive of an ovarian cancer?

- a) S-100
- b) CA-125**
- c) Beta-hCG
- d) Alpha fetoprotein
- e) CA-19-9

6. A 50-year-old woman is diagnosed with well-differentiated ductal carcinoma of the breast. There is no family history of cancer. Which of the following molecular abnormalities is most likely to be found in this setting?

- a) Inactivation of one BRCA1 gene copy
- b) Deletion of one p53 gene copy
- c) Amplification of the ERBB2 (HER2) gene**
- d) Deletion of an RB gene locus
- e) Fusion of BCR and C-ABL genes

7. Which of the following is not a Precancerous lesion?

- a) Villous adenoma of colon
- b) Leukoplakia of oral cavity
- c) Nodular goitre**
- d) Atypical endometrial hyperplasia
- e) Barrett esophagus

8. An 80-year-old man is diagnosed with invasive prostatic adenocarcinoma. Histologic grading of this patient's carcinoma is based primarily on which of the following criteria?

- a) Capsular involvement
- b) Extent of regional lymph nodes involvement
- c) Pulmonary metastases
- d) Degree of tumor differentiation**
- e) Volume of prostate involved by tumor

9. Staging of cancer is based on:

- a) the size of primary lesion**
- b) the degree of differentiation of tumour cells
- c) nuclear morphology
- d) Pleomorphism
- e) the number of mitoses within the tumour

10. A 51 year old woman delivers a full-term baby that has repeated vomiting of bile stained material. A flat plate of the abdomen reveals air in the stomach and proximal duodenum and no air in the remainder of the bowel. The maternal serum a-fetoprotein level is low. The baby has 46 chromosomes. The mechanism of the child's disease is most closely associated with which of the following?

- a) A Mendelian disorder

- b) A Robertsonian translocation**
- c) nondisjunction in meiosis
- d) A point mutation of a nucleotide
- e) A microdeletion disorder

11. While examining a 13 year old boy during a routine physical examination, you note bilaterally enlarged, non-tender testicles that do not transilluminate, a high arched palate, and a mid-systolic ejection click followed by a short murmur. You call the school counselor and find that the child has a moderately severe attention deficit syndrome. Which of the following studies would you recommend on this boy that would best explain all of the abnormalities noted on the examination?

- a) Echocardiogram
- b) Buccal smear
- c) Serum gonadotropins
- d) Identification of triplet repeat**
- e) Chromosome study on his father

12. Prader-Willi and Angelman's syndrome have different clinical features, however they both share a defect at the same location on the same chromosome. This is an example of which of the following phenomenon?

- a) A variable expressivity
- b) A Robertsonian translocation
- c) Genetic heterogeneity
- d) Genomic imprinting**
- e) A balanced translocation

13. Which one of the following transplacental infections is associated with sensorineural hearing loss, blindness, and periventricular calcifications?

- a) Cytomegalovirus**
- b) Toxoplasmosis
- c) Syphilis
- d) Herpes genitalis
- e) Rubella

14. Which of the following is the predominant immunoglobulin isotype secreted in the human MALT (mucosa-associated lymphoid tissues)?

- a) IgA**
- b) IgD
- c) IgE
- d) IgG
- e) IgM

15. TYPE IV hypersensitivity is involved in the pathogenesis of which of the following?

- a) Arthus reaction.
- b) Contact dermatitis.**
- c) Erythroblastosis foetalis.
- d) Haemolytic transfusion ABO reaction.
- e) Serum sickness.

16. A 3-year-old recent immigrant is diagnosed with primary tuberculosis. Her body produces T cells that do not have IL-12 receptors on their surface, and she is noted to have impaired development of Th1 T-helper cells. Which of the following cytokines would benefit this patient for granulomatous response?

- a) IL-4
- b) IL-17
- c) IL-22
- d) Interferon-gamma**
- e) TGF-beta

17. CD4 + T cells that respond to intracellular pathogens by recruiting and activating phagocytic cells are termed as:

- a) antigen-presenting cells.
- b) cytotoxic T lymphocytes.
- c) Th0 cells.
- d) Th1 cells.**
- e) Th2 cells.

18. A 19-year-old male is found to have pneumococcal pneumonia. This bacterium produces an IgA protease capable of cleaving the IgA antibodies. What is the most likely physiological consequence of such a protease?

- a) Membrane attack complex formation is impaired
- b) Opsonization and phagocytosis of pathogen cannot occur
- c) Impaired adaptive immune system memory
- d) Impaired antibody binding to mast cells
- e) Impaired mucosal immune protection**

19. A 6-month-old male with an immune deficiency disorder is hospitalized with disseminated Mycobacterium avium complex. His history is significant for recurrent episodes of otitis media which responded poorly to antibiotics and episodes of severe thrush and diaper rash. Deficiencies of which aspect of the immune response could best account for the child's medical history?

- a) B cells
- b) B and T cells**
- c) Complement
- d) Macrophages
- e) Neutrophils

20. A 55-year-old Caucasian male presents for a routine colonoscopy. A polyp is found in the patient's transverse colon and is found to be cancerous on histological evaluation. Upon examination, it is found that these cancerous cells have decreased MHC class I expression on their surface. Which immune system cell is most capable of killing these tumor cells as innate defense?

- a) **Natural killer cells**
- b) B-cells
- c) Macrophages
- d) Eosinophils
- e) Cytotoxic T-cells

21. A 68 year old woman with long standing rheumatoid arthritis presents for evaluation of anemia. Laboratory studies show a hemoglobin of 8, MCV 78, ferritin 350, transferrin saturation 15%, TIBC 220, reticulocyte count 1.5%, white blood cell count 7600/mm³, platelet count 340,000/mm³. The likely cause is:

- a) Iron Deficiency Anemia
- b) **Anemia of Chronic Disease**
- c) Sickle Cell Anemia
- d) Aplastic Anemia
- e) Sideroblastic anemia

22. A febrile 23 year old college coed presents with fatigue and difficulty with swallowing. Physical exam reveals exudative tonsillitis, palatal petechia, cervical lymphadenopathy and tender hepatosplenomegaly. A CBC reveals a mild microcytic anemia, lymphocytic leukocytosis with 20% of the atypical lymphocytes, and a mild thrombocytopenia. You would expect this patient to have?

- a) A low TIBC
- b) A normal serum ferritin
- c) An elevated total bilirubin
- d) **Heterophile antibodies**
- e) Normal serum AST and ALT titers

23. A 19 year old woman presents with fatigue and exercise intolerance. She has a history of menorrhagia. A CBC reveals a microcytic hypochromic anemia, a low normal WBC count, a normal platelet count. A corrected reticulocyte count is <2%. The next most important step is to order which of the following investigations?

- a) **serum ferritin**
- b) Coombs' test
- c) Serum folate/Biz
- d) Hgb electrophoresis
- e) Sickle cell preparation

24. A 55 yr old man has a microcytic anemia. Which of the following is the first step in the work-up of the patient?

- a) Serum ferritin

- b) **Stool guaiac**
- c) Bone marrow
- d) Direct Coombs test
- e) Hgb electrophoresis

25. A 58-year-old woman is seen in the clinic for reports of severe back pain. Her chest x-ray demonstrates generalized bone demineralization and compression fracture. Blood studies demonstrate elevated calcium levels and renal insufficiency. The most likely diagnosis is:

- a) Leukemia
- b) **Myeloma**
- c) Hodgkin disease
- d) Back trauma
- e) None of the above

26. A male patient 68 years of age was found to have generalized lymphadenopathy and hepatosplenomegaly. His Peripheral blood film showed lymphocytosis, with mature lymphocytes and smudge cells. The most likely diagnosis is?

- a) Acute lymphoblastic leukaemia
- b) Acute myeloid leukaemia
- c) **Chronic lymphocytic leukaemia**
- d) Chronic myeloid leukaemia
- e) Multiple myeloma

27. A 45 yo woman presents with painless cervical lymphadenopathy for 6 months. She has no fever, sweats, or weight loss. Excisional biopsy reveals clonal population of small lymphocytes in the follicular growth pattern, with follicles of different shapes and sizes. Cytogenetic analysis would most likely demonstrate which of the following:

- a) C-MYC Overexpression
- b) P53 mutation
- c) Cyclin D1 overexpression
- d) Monosomy 7
- e) **Bcl-2 overexpression**

28. A 40 year old man presents with marked splenomegaly. During his workup Complete Blood counts are performed which show total leukocyte count (TLC) $117 \times 10^9 /L$, Haemoglobin (Hb) 12.4 g/dL and Platelet count $253 \times 10^9 /L$. Differential leukocyte count shows small number of myeloblasts and promyelocytes with predominance of neutrophils, myelocytes and metamyelocytes. His LAP score (Leukocyte alkaline phosphatase score) is 8 (low). Which of the following best describes a major characteristic of this disorder?

- a) Peak incidence at 9 years of age.
- b) **t (9;22) translocation.**
- c) Predilection of male sex.
- d) Expansion of mature T lymphocytes.

e) Hypogammaglobulinemia.

29. A 9 year old girl presents with colicky pain secondary to entrapment of small bowel by enlarged para-aortic lymph nodes. A section of lymph node removed at laparotomy reveals a diffuse neoplastic infiltrate of small, round lymphocytes with a "starry sky" appearance. The probable diagnosis is:

- a) Sezary syndrome
- b) Hodgkin's disease
- c) Burkitt's lymphoma**
- d) Immunoblastic lymphoma
- e) Waldenstrom's macroglobulinemia

30. A 28 yr old woman has an anterior mediastinal mass and non-tender lymphadenopathy in the right supraclavicular node is most likely diagnosed with which of the following?

- a) Histiocytosis X
- b) Sezary syndrome
- c) Hodgkin's disease**
- d) Burkitt's lymphoma
- e) Immunoblastic lymphoma

31. A 36 year old woman presented with weakness, lassitude and feeling easily tired. Her bone marrow aspirate showed 15% myeloblasts and reduced erythropoiesis. The most likely cause is:

- a) Acute myeloid leukaemia
- b) Acute lymphoid leukaemia.
- c) Myelofibrosis
- d) Myelodysplastic syndrome**
- e) Chronic myeloid leukaemia

32. A peripheral blood smear showing increase in numbers of neutrophils, band cells, metamyelocytes, myelocytes, basophils, eosinophils and platelets is most suggestive of which of the following diagnosis?

- a) Acute myeloid leukaemia
- b) Acute lymphoid leukaemia.
- c) Chronic myelocytic leukaemia**
- d) Chronic lymphocytic leukaemia
- e) Hairy cell leukaemia.

33. A 3-year-old boy who exhibits prolonged bleeding after minor trauma and a prolonged aPTT but a normal platelet count, is likely to be diagnosed with:

- a) Liver dysfunction.
- b) Disseminated intravascular coagulation.
- c) Hemophilia**

- d) Thrombocytopenia
- e) Thromboasthenia

34. A 15-year-old boy presented with pallor and jaundice for last three years. His mother had cholecystectomy for gall stones. His spleen was palpable 5 cm below costal margin. His complete blood counts revealed Haemoglobin 9.1 g/dL, MCV 91 fL, MCH 31 pg, serum bilirubin 3.1 mg/dL with unconjugated serum bilirubin 2.7 mg/dL, reticulocyte count 8.7 % (high) and serum lactate dehydrogenase (LDH) 800 U/L (high). Peripheral film shows small monomorphic RBCs with no normal central pallor. Ultrasound shows multiple gallstones in the gall bladder along with splenomegaly. What is the most likely diagnosis in this patient?

- a) Chronic malaria.
- b) Glucose 6 phosphate dehydrogenase deficiency.
- c) Hereditary spherocytosis.**
- d) Acute viral hepatitis.
- e) Microangiopathic haemolytic anaemia.

35. Which of the following laboratory findings characterize a patient with DIC?

- a) Elevated plasminogen
- b) Elevated protein S and C
- c) Decreased fibrinogen**
- d) Normal clotting times (PT, APTT and TT)
- e) Thrombocytosis

36. A 23-year-old man requires a root canal for an abscessed tooth for which he has been taking pain medication. On the day prior to the procedure, he develops a severe nosebleed, which prompts his dentist to order a few laboratory studies. He has normal PT and PTT. Bleeding time is 16 min (2-7 min), platelet count 200,000 mm³ (150,000-400,000 mm³), Hgb 15.5 g/dL (13.5-17.5 g/dL). Which of the following hemostasis abnormalities is most likely present in this patient?

- a) Von Willebrand's disease**
- b) Hemophilia A
- c) Factor IX deficiency
- d) Acquired platelet defect
- e) Acquired vascular defect

37. A 30-year-old man presents with fever and pain in his right big toe that woke him up at night. He has been taking aspirin to relieve the pain without relief. His mother has severe Osteoarthritis. The right toe is swollen, hot and exquisitely sensitive to touch. Laboratory studies reveal a neutrophilic leukocytosis and left shift. A synovial tap was performed. Based on the above history, his problem is most likely related to which of the following?

- a) A joint inflammation secondary to a positively birefringent crystal with septic arthritis
- b) Disseminated gonococemia
- c) Underexcretion of uric acid in the urine**
- d) Osteomyelitis secondary to hematogenous spread of Staphylococcus aureus

e) An HLA B27 positive spondyloarthropathy

38. A 65 years old male is surprised to find that his hat size has increased. In routine check up, serum alkaline phosphatase is markedly elevated. Serum calcium and phosphorus are normal. Examination reveals enlargement of skull with frontal bossing, enlarged maxilla and progressive hearing loss. Which of the following is associated with bone disorder suggested by these findings?

- a) Brown tumor
- b) Polystotic fibrous dysplasia with severe deformities
- c) Subperiosteal hemorrhage and osteoporosis
- d) Defective calcification of osteoid matrix
- e) **Pagets disease of bone**

39. A 36 year old man, who has had problems with his lower back since his early twenties, presents with blurry vision in his right eye. Physical exam reveals a ciliary flush and a poor pupillary response to light in the right eye. The intraocular pressure is normal. He also has reduced anterior flexion and dry inspiratory crackles at both lung bases. The patient is presently taking indomethacin for back pain. You would expect an x-ray of the patient's back to reveal...

- a) Radiodense lesions in the vertebra
- b) Osteophytes at the joint margins
- c) Lytic lesions in the vertebra
- d) **Fusion of the vertebra**
- e) Vertebral compression fractures

40. Which of the following characterizes joint disease associated with rheumatoid arthritis rather than osteoarthritis?

- a) Cartilage fibrillation
- b) Subchondral bone cysts
- c) Osteophytes
- d) **Ankylosis of the joint**
- e) Bouchard's nodes

41. Disabling joint disease, nodular lesions in the lung associated with dust borne diseases, xerostomia, and splenomegaly characterize a rheumatologic disease with which one of the following laboratory abnormalities?

- a) Positive serum antinuclear antibody with a rim pattern
- b) Anti-centromere antibodies
- c) **IgM antibodies against IgG**
- d) Positive band test on a skin biopsy
- e) Anti-ribonucleoprotein antibodies

42. A 24 year old woman with a previous history of morning stiffness of both hands presents with dyspnea, neck vein distention with inspiration, and muffled heart sounds. Urinalysis reveals RBC casts,

hematuria, and mild to moderate proteinuria. A serum antinuclear antibody test is positive and has a titer of 1:1280. Based on these findings, the most likely diagnosis is:

- a) mixed connective tissue disorder
- b) progressive systemic sclerosis
- c) **systemic lupus erythematosus**
- d) juvenile rheumatoid arthritis
- e) adult rheumatoid arthritis

43. A 17 years boy presented with pain and swelling about left knee for the past 1 month and was severe enough to cause him to limp. Radiographs of the knee demonstrated a lifting of the periosteum and a speculated sunburst pattern in distal femur. Which of the following is most likely diagnosis?

- a) Giant cell tumor
- b) Chondrosarcoma
- c) Ewing sarcoma
- d) Knee sprain
- e) **Osteosarcoma**

44. A 12-year-old Caucasian male presents with his mother to the pediatrician's office complaining of right thigh pain. He reports that he has noticed slowly progressive pain and swelling over the distal aspect of his right thigh over the past two months. A radiograph of the patient's right leg shows distal femoral diaphysis with periosteal reaction leading to the classic "onion skinning" appearance. Biopsy of the lesion demonstrates sheets of monotonous small round blue cells with minimal cytoplasm. Which of the following genetic mutations is most likely associated with this patient's condition?

- a) t(8;14)
- b) **t(11;22)**
- c) APC inactivation
- d) TP53 inactivation
- e) RB1 inactivation

45. A 25-year-old woman complains of weakness and easy fatigability, which is most pronounced in the late afternoon. She describes difficulty reading and tiredness while watching television. She has problems chewing and swallowing and loses her voice while talking. Physical examination reveals ptosis and diplopia. Laboratory studies would most likely demonstrate serum autoantibodies directed against which of the following proteins?

- a) **Acetylcholine receptor**
- b) Phosphodiesterase
- c) Desmin
- d) Dystrophin
- e) Troponin

46. A 4 year-old boy is brought to the physician by his parents because he falls a lot, cannot jump and tires easily. Physical examination reveals weakness in the pelvic and shoulder girdles and enlargement of the child's calf muscles. The serum level of creatine kinase is elevated. A biopsy of calf muscle reveals marked variation in size and shape of muscle fibers. There are foci of muscle fiber necrosis, myophagocytosis, regenerating fibers, and fibrosis. Which of the following is the most likely diagnosis?

- a) Limb-girdle muscular dystrophy
- b) Becker muscular dystrophy
- c) Congenital muscular dystrophy
- d) Duchenne muscular dystrophy**
- e) Spinal muscular atrophy

47. The test likely to help in diagnosis of a patient who presents with an itchy annular plaque associated with a scaly, palpable edge, on the face is:

- a) Gram's stain
- b) Wood's lamp examination
- c) Potassium hydroxide mount**
- d) Tissue smear
- e) Patch test

48. A 37-year-old man presented to his primary care physician with a 2-week history of painful lesions on his soft palate that prevent him from eating normally. Three weeks later, additional lesions appeared on the patient's face, chest, and extremities. On examination there are multiple erythematous ulcers of the oral mucosa and round to oval vesicles and flaccid bullae seen on the patient's arm. Microscopy reveals a suprabasal blister due to acantholysis. The diagnosis is:

- a) Pemphigus foilaceous
- b) Bullous pemphigoid
- c) Pemphigus vulgaris**
- d) Dermatitis herpetiformis
- e) Aphthous ulcer

49. In a skin lesion removal of scales reveals a glistening red membrane. Small bleeding points are observed after breaking through the membrane (Auspitz sign). The diagnosis is:

- a) Staph scalded skin syndrome
- b) Tinea
- c) Pityriasis
- d) Psoriasis**
- e) Pemphigus

50. A 50-year-old driver presents to the clinic for evaluation of a pigmented lesion on his arm. He states that he first noticed the lesion last year, but he believes that it has been slowly growing in size. He is concerned with risk of melanoma. Which of the following findings on physical exam would suggest a malignant diagnosis?

- a) Flat lesion with symmetric hyperpigmentation
- b) Hyperpigmented lesion with smooth borders
- c) Symmetrical ovoid lesion
- d) Different pigmentation throughout the lesion**
- e) Tenderness to palpation

51. A 25-year-old man is diagnosed to have of erythema multiforme. Which of the following is the probable etiology of this condition?

- a) Physical scratching of the skin
- b) IgG autoantibodies directed against the epidermal intercellular cement substance
- c) IgA antibody deposits localized to the tips of dermal papillae
- d) Hypersensitivity to multiple concomitant infectious agents or drugs**
- e) Chemical exposure