

Pathology final exam 022

Dr. Manar Hajeer pastpapers

1. Membrane damage, typical for a reperfusion injury following myocardial ischemia in a 58-year-old man, results from the action of:
 - A. Decreased ATP production.
 - B. Increased reactive oxygen species formation.
 - C. Accumulation of misfolded proteins
 - D. Hypoxia.
 - E. Decreased PH

2. Elimination of self-reactive lymphocytes by apoptosis is mediated by which of the following molecules.
 - A. BH3.
 - B. Bcl2.
 - C. P53.
 - D. Fas-Fas ligand.
 - E. Bax/Bak

3. One of the followings is an IRREVERSIBLE change in cell injury:
 - A. Cellular swelling.
 - B. Mitochondrial densities.
 - C. Myelin figures.
 - D. Cell membrane blebs.
 - E. Nuclear karyorrhexis

4. The changes in the epithelial lining of the lower esophagus in patients with reflux esophagitis, from squamous epithelium to glandular epithelium is termed:
 - A. Metaplasia.
 - B. Atrophy.
 - C. Dysplasia.
 - D. Hyperplasia.
 - E. Hypertroph

5. Coagulative necrosis is characterized by which of the following:
 - A. Central caseation.
 - B. Liquified center.
 - C. Eosenophilic Acellular center
 - D. Cheesy like material.
 - E. Caused by bacterial infections

6. Which of the following is considered a physiological trigger for apoptosis?
 - A. DNA damage
 - B. Viral infections
 - C. Accumulation of misfolded proteins
 - D. Elimination of self-reactive lymphocytes

1	2	3	4	5	6
B	D	E	A	C	D

7. Which of the following cellular processes that began in the breast during pregnancy allowed mother to nurse the infant for this period of time?
- Stromal hypertrophy
 - Epithelial dysplasia
 - Steatocyte atrophy
 - Ductal epithelial metaplasia
 - Lobular hyperplasia
8. A 3-year-old child has been diagnosed with ornithine transcarbamylase deficiency and has developed hepatic failure. The left lobe of an adult donor liver is used as an orthotopic transplant. A year later, the size of each liver in donor and recipient is greater than at the time of transplantation. Which of the following cellular alterations is most likely to explain this phenomenon?
- Metaplasia
 - Dysplasia
 - Hyperplasia
 - Anaplasia
 - Neoplasia
9. In some persons epithelial metaplasia occurs. In which of the following situations is the process of epithelial metaplasia most likely to take place?
- Tanning of the skin following sunlight exposure
 - Lactation following pregnancy
 - Vitamin A deficiency
 - Acute myocardial infarction
 - Urinary obstruction from an enlarged prostate
- 10.21. A 54-year-old man with a chronic cough has a squamous cell carcinoma diagnosed in his right lung. While performing a pneumonectomy, the thoracic surgeon notes that the hilar lymph nodes are small, 0.5 to 1.0 cm in size, and jet black in colour throughout. Which of the following is the most likely cause for this appearance to the hilar nodes?
- Anthraxotic pigment
 - Lipochrome deposits
 - Melanin accumulation
 - Hemosiderosis
 - Metastatic carcinoma
11. Which of the following is caused by an enlarged prostate:
- Atrophy
 - Hyperplasia
 - Hypertrophy
 - Metaplasia
 - There is no correct answer

7	8	9	10	11
E	C	C	A	B

12. A 35-year-old man struck on the leg by a falling pallet rack, which strikes him on his left leg in the region of his thigh. The skin is not broken. Within 2 days there is a 5 x 7 cm purple colour to the site of injury. Which of the following substances has most likely accumulated at the site of injury to produce a yellow-brown colour at the site of injury 16 days later?
- Lipofuscin
 - Bilirubin
 - Melanin
 - Hemosiderin
 - Glycogen
13. A 55-year-old man has a history of poorly controlled diabetes mellitus. He has had extensive black discoloration of skin and soft tissue of his right foot. A below-the-knee amputation is performed. The amputation specimen received in the surgical pathology laboratory is most likely to demonstrate which of the following pathologic abnormalities?
- Neoplasia
 - Gangrene
 - Vasculitis
 - Hemosiderosis
 - Caseation
14. A 38-year-old man has a health screening examination. A wedge resection of lung with the nodule is performed. On microscopic examination the nodule shows caseous necrosis and calcification. Which of the following processes best explains the appearance of the calcium deposition in his lung nodule?
- Dystrophic calcification
 - Apoptosis
 - Hypercalcemia
 - Metastatic calcification
 - Excessive ingestion of calcium
15. A cellular mutation results in transcription with translation of a protein that does not fold properly. The misfolded protein remains within the cell and is not excreted. Activation of which of the following cytoplasmic enzymes is most likely to occur?
- Caspase
 - Glutathione peroxidase
 - NADPH oxidase
 - Ribonuclease
 - Telomerase
16. Pyknosis means :
- Shrinkage of nucleus and increased basophilia
 - fragmentation of nuclear material.
 - basophilia fades
 - degradation of nuclear material

12	13	14	15	16
D	B	A	A	A

17. Parkinson's disease, neurons loss ,by which mechanisms?

- A. Hypoxia cell injury
- B. Ischemia cell injury
- C. apoptosis due to accumulation of misfolded proteins

18. Acetaminophen is an indirectly toxin , its toxicity to the cells by which of the following mechanisms?

- A. Apoptosis
- B. Inflammation
- C. ER stress
- D. Membrane phospholipid peroxidation

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19. Inherited skin cancer due to ultraviolet light is caused by a mutation in:

- A. RAS gene
- B. BRCA 1 gene
- C. Recombination repair genes
- D. TP53 gene
- E. Nucleotide excision repair genes.

20. A 65 year old woman has breast cancer that metastasized to the bone. She has no family history of breast cancer. The least likely mutated gene in her case is:

- A. RAS
- B. TP53
- C. BRCA 1
- D. E cadherin
- E. SLUG/SNAIL

21. years old boy has a numerous colon polyps. His doctor advise colectomy to prevent adenocarcinoma, which inherited gene is mutated ?

- A. APC
- B. WNT
- C. E Cadherin
- D. TP 53
- E. Caretin

17	18	19	20	21
C	D	E. :This is mutated in xeroderma pigmentosa	C: this gene mutation is common in inherited but not sporadic breast cancer	A

22. A normal fibroblast can divide up to 70 times. In a fibrosarcoma, malignant fibrous cells still can divide after the 80th division. Which of the following genes is activated to acquire this ability?
- Telomerase gene
 - Mismatch repair gene
 - Merlin gene
 - TWIST gene
 - Microsatellite instability gene
23. Which of the following cells doesn't play a role in immunosurveillance?
- Natural killer cells
 - Plasma cell
 - M1 macrophage
 - T helper lymphocyte
 - Cytotoxic T lymphocyte
24. All of the following statements are correct regarding tumours' changes in metabolism except:
- Warburg effect is novel and doesn't found in normal human cell
 - Warburg effect is utilised clinically in PET scan.
 - IDH mutations result in oncometabolites that cause epigenetic changes leading to carcinogenesis.
 - Autophagy is used by tumor cells during chemotherapy treatment to aid survival.
 - Warburg effect is facilitated by overactivation of oncogenes and downregulation of tumor suppressor genes
25. Malignant cells can suppress host immunity by:
- CEA
 - alpha fetoprotein
 - TGF beta
 - IL 1
 - Mucin
26. A well-defined mass in the wall of the stomach composed of well- organized pancreatic tissue is
- Non-neoplastic
 - Malignant
 - Hamartoma
 - Choriocarcinoma
 - Teratoma

22	23	24	25	26
A	B	A	C	A .Choristoma= Congenital anomaly= non-neoplastic

27. Which of the following cells doesn't play a role in immunosurveillance?
- Natural killer cells
 - Plasma cell
 - M1 macrophage
 - T helper lymphocyte
 - Cytotoxic T lymphocyte
28. Choose the incorrect combination:
- H pylori and gastric carcinoma
 - HPV and cervical carcinoma
 - HTLV1 and B cell lymphoma:
 - Aphlatoxin B and hepatocellular carcinoma
 - H pylori and gastric lymphoma
29. Which of the following statements is incorrect regarding epithelial- mesenchymal transition (EMT) in neoplasia?
- EMT is a process aiming at acquiring a phenotype that permits increased motility of cells.
 - SLUG and SNAIL transcription factors are downregulated in this process.
 - E cadherin is downregulated
 - EMT is essential for tumor invasion and metastasis
 - Cells acquire actin filaments during EMT
30. All of the following statements are correct regarding tumours' changes in metabolism except:
- Warburg metabolism ensures obtaining the maximum energy from each mole of glucose consumed.
 - Warburg effect is utilised clinically in PET scan.
 - IDH mutations result in oncometabolites that cause epigenetic changes leading to carcinogenesis.
 - Autophagy is used by tumour cells during chemotherapy treatment to aid survival.
 - Warburg effect is facilitated by overactivation of oncogenes and downregulation of tumour suppressor genes
31. Choose the correct statement regarding RB gene:
- To cause cancer, both copies of the RB gene must be deleted in germ cells; somatic mutations are incapable of causing cancer.
 - The protein product of the RB gene is stimulated via gaining more phosphate groups.
 - Normal RB causes arrest of cell cycle at the G2/M phase.
 - HPV can cause cancer by binding to and functionally deleting RB.
 - RB acts via binding to and inhibiting the transcription of cyclin B.

27	28	29	30	31
B	C:HTLV causes T cell lymphoma	B	A maximum carbon atoms but less energy	D

32. Micro RNAs are:
- Short double stranded segments of nucleic acids.
 - Modulate gene expression by increasing DNA methylation. transcription by any means.
 - Inhibitors of protein translation
 - Negative regulators of gene expression that work at the transcription level
 - Inhibitors of mRNA formation
33. Which of the following definitions is incorrect?
- Clonality: neoplasms originate from one single transformed cell
 - Autonomy: complete ability of tumors to sustain their growth without any support from the host cells
 - Polyp: a mass projecting from a mucosal surface regardless of its histopathological nature
 - Dysplasia: disorganised growth confined to the mucosa with intact basement membrane
 - Tumor grade: the extent to which tumor cells resemble their cell of origin
34. Ki 67 is an immunohistochemical stain that stains mitotically active cells. Of the following tumors, which one will show more staining with Ki67?
- Hamartoma
 - Lipoma
 - Choristoma
 - Adenoma
 - Lymphoma
35. Which of the following statements is incorrect regarding P53:
- When phosphorylated it inhibits Rb protein causing cell cycle arrest.
 - Is inhibited by binding to HPV
 - During hypoxia p53 induces DNA repair and causes cell senescence
 - Mutated p53 enables malignancy by increasing the chance of accumulation of other genetic mutations.
 - Patients with Li-Fraumeni syndrome inherit a mutated copy of P53.
36. A 47-year-old man presented with abdominal pain. Colonoscopy revealed a 7 cm tumor which on histological examination was a poorly differentiated adenocarcinoma. He has lymph node metastases and liver and lung nodules. Which of the following statements regarding his tumor's stage and grade is correct:
- T stage is determined by the size of his tumor
 - His N stage is considered N0
 - The poor differentiation is irrelevant to the stage
 - He has a grade 2 tumor
 - The 5-year survival of his tumor exceeds 90%

32	33	34	35	36
C	B	E	A	C

37. A child is born with a single functional wild type allele of a tumor suppressor gene. At the age of five the remaining normal allele is lost through a point mutation. As a result, the ability to inhibit cell cycle progression until the cell is ready to divide is lost. Which of the following neoplasms is most likely to arise via this mechanism?

- A. Breast ductal carcinoma
- B. Pulmonary small cell anaplastic carcinoma
- C. Ocular retinoblastoma
- D. Cerebral astrocytoma
- E. Chronic myeloid leukemia

38. Inhibition of all of the following help the cancer to evade apoptosis , except :

- A. IAP
- B. Bax
- C. Caspase
- D. Cytocrome
- E. PUMA

39. A toxin present in cigarette smoke and can cause lung cancer :

- A. Beta naphthalamine
- B. Benzo pyrene
- C. Nitrites
- D. Aflatoxin B

40. A 48 year old woman goes to her physician for a routine physical examination . A 4 cm diameter non tender mass is palpated in her right breast. The mass appears fixed to the chest wall. another 2 cm non tender mass is palpable in the left axilla. Which of the following classification best indicates the stage of her disease:

- A. T1 N1 M0
- B. T1 N0 M1
- C. T2 N1 M0
- D. T3 N0 M0
- E. T4 N1 M1

37	38	39	40
C The RB gene is the classic example of the 'two hit' mechanism for loss of tumor suppression	A	B	E

