The West Bengal University of Health Sciences

MBBS 2nd Professional Examination (New Regulation) July-August 2024

Subject : Pathology
Paper : I

Full Marks : 100
Time : 3 hours

*Attempt **all** questions. The figures in the margin indicate full marks.*

1.a) A 10 year old boy while playing in the ground sustained an injury in the hand with immediate swelling, redness and pain. 2+7+6

i) Mention the type of inflammation in this case.
ii) Describe the vascular and cellular phenomena causing this inflammatory reaction.
iii) Enumerate the chemical mediators and their role in this type of inflammation.

b) A 1 year old male child was brought with loss of vision and a mass lesion of the eyeball. There was a family history of sarcoma of the long bone in the sibling. 7+5+3

i) What is your diagnosis? What are the molecular mechanisms involved in this family?
ii) Describe the normal cell cycle and how this gene affects the cell cycle?
iii) Name 3 other genes involved in familial syndromes.

2. Answer the following: 3×10

a) Peripheral blood and bone marrow picture of megaloblastic anemia.
b) Write down the mechanism of type-I hypersensitivity. Enumerate the different hypersensitivity along with examples.
c) Discuss the cellular and molecular hallmarks of carcinogenesis.

3. Write short notes on: 2x5

a) Counseling and precaution before lumber puncture during CSF aspiration.
b) Klinefelter syndrome.

4. Explain the following statements: 5x4

a) Fine needle aspiration cytology is a useful diagnostic tool in some benign and malignant lesions.
b) Prothrombin time is increased in disseminated intravascular coagulation.
c) Screening for some infectious agents is mandatory before transfusion of collected blood.
d) Reperfusion of ischemic tissue may prove to be harmful.
e) Different factors contribute to development of anaemia in thalassemia.

5. Choose the correct option for each of the following: 10×1

(i) A patient had undergone splenectomy 20 year back. The PBS would show the presence of:
a) Dohle bodies.
b) Hyper segmented neutrophils.
c) Spherocytosis.
d) Howell-jolly bodies.

(ii) C – MYC translocation is found in:
a) Follicular lymphoma. b) Mantle cell lymphoma.
c) Burkitt's lymphoma. d) Marginal zone lymphoma.

P.T.O

(iii) Which cytokine is responsible for conversion of macrophage to epitheloid cells?
a) IL 1.
b) IL 6.
c) IFN gama.
d) TNF alfa.

(iv) Primary abnormalities that lead to thrombosis are all except:
a) Endothelial injury.
b) Alteration of normal blood flow.
c) Hypercoagulability.
d) Thrombophillia.

(v) Carcinogenesis is a multistep process which includes all except:
a) Evasion of apoptosis.
b) Development of cellular senescence.
c) Ability to invade and metastasize.
d) Insensitivity to growth-inhibitory signals.

(vi) Following tobacco smoke constituents causes lung cancer in chronic smokers:
a) Polycyclic aromatic hydrocarbons.
b) 4-Aminobiphenyl, 2-Naphthylamine.
c) N-Nitrosonornicotine.
d) Phenol.

(vii) All are true about dystrophic calcification except:
a) Abnormal deposition of calcium salts.
b) Serum levels of calcium remains normal.
c) Associated with renal failure.
d) Mostly encountered in areas of necrosis.

(viii) All are the nuclear changes seen in the irreversible cell injury except:
a) Pyknosis.
b) Karyorrhexis.
c) Myelin figures.
d) Karyolysis.

(ix) Arthus reaction is a type of:
a) Type I hypersensitivity reaction.
b) Type II hypersensitivity reaction.
c) Type III hypersensitivity reaction.
d) Type IV hypersensitivity reaction.

(x) Which of the following is the most common complication of blood transfusion?
a) Acute hemolysis.
b) Acute lung injury.
c) Circulatory overload.
d) Fever.

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Subject : Pathology
Paper : II

Full Marks : 100
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*Attempt **all** questions. The figures in the margin indicate full marks.*

1.a) A 14 year old female presents with a painful tender swelling in the right thigh accompanied with fever, leucocytosis and high ESR. Plain X-ray shows osteolytic lesion with onion skin apperarnce. 2+5+5+3

i) What is your provisional diagnosis?
ii) Describe the gross and microscopic features of this lesion.
iii) Enumerate the molecular and genetic abnormalities associated with this disease entity.

b) A 34 year old male presented with fatigue, loss of appetite, jaundice and mild tender hepatomegaly. 2+7+6

i) What is the provisional diagnosis?
ii) What is the pathogenesis and fate of this condition?
iii) How will you diagnose the case?

2. Answer the following: 3x10

a) Which part of the bone is the commonest site of osteomyelitis in children and why? What is sequestrum ? Describe the pathogenesis of formation of involucrum. 3+2+5

b) Enumerate the risk factors of carcinoma cervix. Describe the role of viruses in the pathogenesis. Which test is used in screening of the disease? What is carcinoma in situ? 3+5+1+1

c) Discuss the role of FNAC in breast carcinoma. 10

3. Write short notes on: 2x5

a) Hashimoto's thyroiditis.
b) Nodular hyperplasia of prostate.

4. Explain the following statements: 5x4

a) Cavitary pulmonary tuberculosis may give rise to hemoptysis.
b) Carcinoma colon is a genetic disorder.
c) Rapidly progressive glomerulonephritis does not denote a specific etiologic form of glomerulonephritis.
d) In spite of increased pus cells in urine, routine culture may be negative.
e) Pathogenesis of development of ascites in cirrhosis is complex.

5. Choose the correct option for each of the following: 10×1

(i) Psammoma bodies can be seen in:

a) Astrocytoma.
b) Medulloblastoma.
c) Meningioma.
d) Ependymoma.

P.T.O

(ii) Which of the following is true of giant cell tumour?
a) Osteoclasts are neoplastic.
b) Neoplastic cells express RANKI.
c) Typically arise in metaphysis.
d) Produces sun-burst appearance in X- ray.

(iii) All are precancerous lesion of the skin except:
a) Actinic keratosis.
b) Seborrhic keratosis.
c) Bowen's disease.
d) Keratoacanthoma.

(iv) All are true for familial adenomatous polyposis except:
a) Presence of minimum of 500 polyps are required for diagnosis.
b) APC gene mutation is on chromosome 5q21.
c) All untreated FAP patients develop colon carcinoma.
d) Gardner syndrome and Turcot syndrome share the same genetic defect as FAP.

(v) Which is true for ulcerative colitis?
a) Skip lesion.
b) Creeping of fat.
c) Presence of granuloma.
d) Sparing of anal canal.

(vi) Germ cell tumor may occur in all the sites except:
a) Mediastinum.
b) Ovary.
c) Salivary gland.
d) Brain.

(vii) The highest malignant potential is seen in:
a) Crohn's disease.
b) Ulcerative colitis.
c) Infantile polyp.
d) Familial polyposis.

(viii) Azzopardi effect is seen in:
a) Renal cell carcinoma.
b) Small cell carcinoma of lung.
c) Seminoma.
d) Squamous cell carcinoma of lung.

(ix) Which statement is false about HPV infection and carcinoma cervix?
a) HPV infection always leads to CA cervix
b) High and low risk types are there.
c) Superficial squamous epithelial cells are resistant to infection.
d) Vaccination can prevent the cancer when given at early age.

(x) Gene associated with pancraeatic carcinoma is:
a) RB gene.
b) KRAS mutation.
c) BCL-6.
d) Loss of E cadherin.

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MBBS 2nd Professional Examination (New Regulation) July-August 2024

Full Marks : 100
Time : 3 hours

Subject: Microbiology
Paper: I

Attempt all questions. The figures in the margin indicate full marks.

1. a) An indoor burn patient complaints with bluish green discharge from wound, 14 days after admission in hospital. 1+3+1+5+5

i. What type of infection it is?
ii. Define this type of infection and explain.
iii. What is the most probable organism in this case?
iv. How will you proceed for lab diagnosis?
v. Describe the precautions to be taken to prevent such type of infection.

b) A male patient from Bihar attended OPD with fever, anemia and hugely enlarged spleen for last 6 months. He is having blackish discoloration of skin. 2+2+6+5

i. What is the most probable diagnosis and which one is the vector?
ii. Which protozoa is responsible for this?
iii. Describe the immunopathogenesis of the disease.
iv. How will you diagnose the case in the laboratory?

2. a) Describe the immune response unfolds/evolves when a microbial pathogen enters into the body of an immunocompetent host. 10

b) Define biomedical waste (BMW). Give an account on the categorization of them for disposal. Discuss the process of disposal of BMW, generated after collection. 2+3+5

c) Classify bacteria on the basis of flagella with examples. Describe the structure of a flagellum. Discuss the common methods used to demonstrate bacterial flagella. 4+3+3

3. Write short notes on following: 2 x 5

a) Management of needle stick injury of a phlebotomist.
b) How to communicate a patient diagnosed with chronic Hepatitis C infection regarding probable long-term complications? 5 x 4

4. Explain the following statements:

a) Sterilization of MacConkey media needs some modification.
b) Capsule contributes to bacterial virulence.
c) Enterococci can be vancomycin resistant.
d) Superantigen can cause more T cell activation than any antigen.
e) Free streaming is important step in autoclaving.

10 x 1

5. Choose the correct option for each of the following:

a) The smallest virus in size:

i) Picorna virus
ii) Parvo virus
iii) Adeno virus
iv) Hepatitis D virus

b) Generation time for Treponema pallidum is:

i) 20 min
ii) 30 min
iii) 33 hrs
iv) 7 days

c) The percentage of Gluteraldehyde for endoscopic decontamination is:

i) 1%
ii) 2%
iii) 1.5%
iv) 4%

d) Rota virus has got genome with:

i) 5 segment
ii) 7 segment
iii) 11 segment
iv) 9 segment

e) All are vector borne diseases except:

i) African sleeping sickness
ii) Dengue fever
iii) Enteric fever
iv) Zika viral disease

f) Which of the following is cell wall deficient bacterium?

i) Staphylococcus
ii) Streptococcus
iii) Mycoplasma
iv) Chlamydia

g) Definitive host of Echinococcus granulosus:

i) Dog
ii) Sheep
iii) Cat
iv) Man

h) L form of spheroplasts are sensitive to:

i) Bacitracin
ii) Cefoperazone
iii) Vancomycin
iv) Tetracycline

i) Essentially the pathogenesis of Rheumatic fever involves

i) Type II Hypersensitivity
ii) Serum sickness
iii) Arthus phenomenon
iv) Exotoxin mediated damage to endocardium

j) In ELISA technique, the antibodies are labeled by:

i) Acridine orange
ii) Neutral Red
iii) Alkaline phosphatase
iv) Bromothymol blue

The West Bengal University of Health Sciences

MBBS 2nd Professional Examination (New Regulation) July-August 2024

Subject : Microbiology
Paper : II

Full Marks : 100
Time : 3 hours

*Attempt **all** questions. The figures in the margin indicate full marks.*

1. a) A 30 year old man came to OPD with a painless, hard indurated ulcer over external genitalia along with non-tender, firm, enlarged inguinal lymph node. The patient gave a history of unprotected sexual exposure 3 weeks before. 2+2+7+2+2

   i) Write your provisional diagnosis.
   ii) What is the causative agent?
   iii) How the disease can be confirmed in laboratory?
   iv) What are the drugs that can be used for treatment?
   v) How response to treatment can be assessed?

   b) A 50 year old person was admitted 6 days after crush injury to his left leg following a road traffic accident. On examination, the wound which was bandaged with soiled gauze appeared to be heavily contaminated with soil and local muscles appear to have been crushed. At the site on examination tenderness, edema was found and crepitus was felt. 2+6+7

   i) What is the clinical condition and what are the etiological agents?
   ii) Briefly discuss the pathogenesis of the case.
   iii) How will you proceed for laboratory diagnosis?

2. a) Write an account of disease stages and associated 'Opportunistic Infection' and malignancies in a case of transfusion associated retroviral infection. 10
   b) Write on rapid diagnostic tests of vector borne blood stream infections. 10
   c) Enumerate the causative agents of neonatal meningitis. Discuss the lab diagnosis of neonatal meningitis. 3+7

3. Write short notes on following: 2 x
   a) NACO strategies for HIV testing.
   b)Visceral Larva Migrans.

4. Explain the following statements: 5 x 4

   a) Malaria can be transmitted by mosquitoes.
   b) SDA is a selective media for fungus.
   c) Stool examination helps in the diagnosis of Ascariasis.
   d) Both active and passive immunization are often required against Hepatitis B.
   e) Tetanus results in spastic muscle contraction.

5. Choose the correct option for each of the following: 10 x 1

a) Epstein-Barr virus is associated with the following malignancies except:
   i) Nasopharyngeal carcinoma.
   ii) Burkitt's lymphoma.
   iii) Carcinoma of cervix.
   iv) Non Hodgkin lymphoma.

b) Dienes' stain is used to detect:
   i) Bacillus anthracis.
   ii) Mycoplasma.
   iii) Corynebacterium.
   iv) Mycobacterium.

c) Most common manifestation of Toxoplasma gondii in immune competent adult is:
   i) Lymphadenopathy
   ii) Encephalitis
   iii) Chorioretinitis
   iv) Myocarditis

d) Commonest cause of persistent diarrhoea in AIDS patients is:
   i) Giardia lamblia
   ii) Entamoeba histolytica
   iii) Neobalantidium coli
   iv) Cryptosporidium parvum

e) Which statement about D. medinensis is wrong:
   i) In India, after eradication, the parasite shows fresh cases indicating reemergence.
   ii) It infects man by penetrating skin.
   iii) Adult female migrate from intestine to skin.
   iv) It cause blister in skin at dry areas.

f) Each of the following organism is an important cause of urinary tract infections except:
   i) Klebsiella pneumoniae ii) Escherichia coli
   iii) Bacteroides fragilis iv) Proteus mirabilis

g) Botryomycosis is caused by:
   i) Dermatophytes ii) Staphylococcus aureus
   iii) Aspergillus nidulans iv) Bipolaris sp

h) All of the following vaccines are included in National Immunization Schedule at birth except:
   i) BCG ii) DPT
   iii) OPV iv) Hep B vaccine

i) Which of the following statement is false regarding influenza virus?
   i) It belongs to orthomyxoviridae family
   ii) Envelope has two peplomers- haemagglutinin and neuraminidase
   iii) Antigenic drift is responsible for pandemic
   iv) Pigs act as mixing vessels for mutation

j) A 3 days neonate born to a multigravida with history of Pre mature rupture of membrane(PROM) of more than 12 hr duration presented with lethargy, poor feeding and recurrent apnoea. What is the most likely organism causing infection in this neonate?
   i) Staphylococcus aureus ii) Streptococcus pneumoniae
   iii) Escherichia coli iv) Neisseria meningitidis

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The West Bengal University of Health Sciences

MBBS 2nd Professional Examination (New Regulation) July-August 2024

Subject: Pharmacology
Paper: I

Full Marks: 100
Time: 3hours

Attempt all questions. The figures in the margin indicate full marks.

1. a) A 48 yrs old male with uncontrolled high blood pressure is presented in the cardiology OPD with complaints of breathlessness when lying down, palpitation, cough with pink blood tinged mucus and swelling of both legs. Echocardiography reveals dilated ventricles with left ventricular ejection fraction 30%. 5+(3+4+3)

i) Name the drugs effective for this condition.
ii) Write the uses, adverse effects and contraindications of cardiac glycosides.

b) A 54 old lady was brought to the hospital emergency with severe breathlessness and wheezing. Chest auscultation revealed marked bronchoconstriction. The asthmatic attack was controlled in 6 hrs with 100% O_2 inhalation and nebulization with salbutamol and ipratropium bromide. History revealed that she suffers from mild episodic asthma. A day before this incidence she was prescribed timolol eye drop 0.5% twice daily for each eye for raised intraocular pressure (24 mm of Hg in left and 26 mm of Hg in right eye). 2+6+5+2

i) What is the most likely explanation for this acute severe attack of asthma?
ii) Name the drugs, their mechanism of actions and adverse effect that can be prescribed for glaucoma to prevent such complication in future.
iii) How will you manage case of acute congestive glaucoma?
iv) Name one anti cholinergic drug that cannot be given to this patient and why?

2. a) A middle aged gardener has been rushed to the emergency ward with loss of consciousness following an insect bite. He is diagnosed as having anaphylactic shock. 5+5

i. What types of medications are used to treat this case and why?
ii. Which drug can reverse anaphylaxis and how?

b) Write down the indications of parenteral iron therapy. Mention various preparations of parenteral iron indicating advantages and disadvantages. 4+3+3

c) Write down the mechanism of action, uses, adverse effects and contraindications of unfractionated heparin. What is the advantage of LMW heparin over unfractionated heparin? 10

3. Write short notes on following: 2 x 5

a) Cardiac glycosides.

b) Good clinical practice and international committee for harmonization.

4. Explain the following statements: 5 x 4

a) Ambroxol is used as mucolytic.
b) Chlorthalidone is preferred diuretic for hypertension.
c) Vitamin K is the antidote to warfarin induced bleeding.
d) Spironolactone is used in cirrhotic edema.
e) Inhalation route is preferred for pulmonary drug delivery.

5. Choose the correct option for each of the following: 10 x 1

i) The antianginal drug which acts by inhibiting mitochondrial long chain 3 ketoacyl-CoA enzyme in fatty acid oxidation pathway is:
a) Ivabradine b) Dipyridamole c) Nicorandil d) Trimetazidine

ii) Tolvaptan is used for:
a) SIADH. b) Central Diabetes Insipidus
c) Von willebrand disease d) Catecholamine resistant shock

iii) A partial agonist can antagonize the effects of a full agonist because it has :
a) High affinity but low intrinsic activity b) Low affinity but intrinsic activity
c) No affinity but intrinsic activity d) High affinity but no intrinsic activity

iv) All are treatment options in myasthenia gravis except:
a) Ambenonium b) Penicillamine c) Azathioprine d) Prednisolone

v) The following attributes of a drug tends to reduce its volume of distribution
a) High lipid solubility b) Low ionization at physiological PH values
c) High plasma protein binding d) High tissue binding

vi) All of the following drugs in higher therapeutic doses are nephrotoxic except:
a) Amphotericin b) Lithium c) Clindamycin d) Atorvastatin

vii) Calcium disodium edentate is very effective in poisoning by:
a) Arsenic b) Mercury c) Lead d) Bismuth

viii) Plasma level of Vitamin A may be significantly affected by:
a) Vitamin D b) OCP c) Cephalosporin d) Aspirin

ix) The following cotransmitter is most probably involved in mediating NANC relaxation of the gut:
a) Nitrous oxide b) Epinephrine c) Neuropeptide Y d) Kallidin

x) Pharmacovigilance is included in the following phase of clinical trial:
a) Phase 1 b) Phase 2 c) Phase 3 d) Phase 4

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Paper: II

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*Attempt **all** questions. The figures in the margin indicate full marks.*

1. a) A 34 year old woman was on combined OCP. She was diagnosed as a case of pulmonary TB and was prescribed HRZE daily for 2 months followed by HR thrice weekly for 4 months. In the 3rd month of treatment she failed to have withdrawal bleeding during the gap period of contraceptive cycle. Her pregnancy test was positive one week later. 2+5+5+3
   i) What is the reason for contraceptive failure?
   ii) Write down the mechanism of action of OCP.
   iii) What are the serious complications of OCP use?
   iv) Add a note on other health benefits of OCP use other than prevention of unwanted pregnancy.

   b) A 34 year old man is being prepared for an abdominal surgery with pre anesthetic medications. 2+(5+5)+3
   i) What is pre anesthetic medication?
   ii) Enumerate the drugs to be used as pre anesthetic medications with individual specific reasons of their requirement.
   iii) What are the disadvantages of pre anesthetic medications?

2. a) Classify Gluco-corticoids as per their duration of action. Write down the uses and adverse effects of corticosteroids. 3+3+4

   b) A patient came to medicine OPD with features of gout.
   i) Enumerate the drugs used in acute gout.
   ii) Allopurinol is used for what purpose and how does it help in gout?
   iii) Why should allopurinol not be used with 6-mercaptopurine? 3+4+3

   c) What is the treatment regimen for chloroquine resistant falciparum malaria? Explain the role of primaquine as an antimalarial agent. Mention two extra malarial uses of chloroquine. 4+4+2

3. Write short notes on following: 2 x 5
   a) Sodium glucose Co-transporter-2 inhibitors.
   b) Anti Pseudomonal antibiotics.

4. Explain the following statements: 5 x 4
   a) Imipenem is administered with cilastin.
   b) Bupivacaine injected epidurally has become very popular in obstetrics.
   c) Clopidogrel should not be co-administered with omeprazole.
   d) Non selective MAO inhibitors should not be combined with pethidine.
   e) Morphine is contraindicated in head injury.

5. Choose the correct option for each of the following: 10 x 1

i) What is true regarding tolerance occurring in regular opium abusers?

a) Tolerance develops to all actions of morphine.
b) No tolerance occurs to euphoric and sedative actions of morphine.
c) No tolerance occurs to constipating and miotic actions of morphine.
d) Lethal dose of morphine is not significantly increased.

ii) The 'neuroleptic syndrome' produced by chlorpromazine like drugs is characterized by the following except:

a) Emotional quietening
b) Paucity of movements
c) Ataxia
d) Indifference to external cues

iii) The success of oral rehydration therapy of diarrhea depends upon the following process in the intestinal mucosa:

a) Sodium pump mediated sodium absorption
b) Glucose coupled sodium absorption
c) Bicarbonate coupled sodium absorption
d) Passive sodium diffusion secondary to nutrient absorption

iv) Shortest acting proton pump inhibitor is:

a) Omeprazole
b) Pantoprazole
c) Lansoprazole
d) Rabeprazole

v) Ezetimibe acts by:

a) Enhanced excretion of bile acids
b) Decreased absorption of cholesterol
c) Inhibiting HMG-CoA reductase
d) Inhibiting intracellular lipase

vi) Drug causing deafness is:

a) Thiazide
b) Spironolactone
c) Ethacrynic acid
d) Triamterene

vii) Antiemetic known as hurrying agent is:

a) Metoclopramide
b) Ondansetron
c) Aluminium hydroxide gel
d) Magnesium hydroxide

viii) Tetracyclines:

a) Have three cyclic rings in its structure
b) Inhibits cell wall synthesis
c) Causes grey baby syndrome
d) Can precipitate fatal acute hepatic necrosis in pregnant woman

ix) Which of the following drugs does not affect $GABA_a$ gated chloride channel?

a) Alcohol
b) Picrotoxin
c) Muscimol
d) Buspirone

x) Least sedative antihistaminic drug is:

a) Fexofenadine
b) Cetrizine
c) Chlorpheniramine
d) Diphenhydramine