03/24

The West Bengal University of Health Sciences

MBBS 2nd Professional Examination (New Regulation) March - April 2024

Full Marks: 100
Time: 3 hours

Subject: Pathology
Paper: I

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

1.a) A 22 year old man develops severe pain in the right iliac fossa over the past two days. On physical examination, there is rebound tenderness on palpation over that area. Laparoscopic surgery is performed and the appendix is removed. The appendix on gross examination is found to be red swollen and covered by purulent exudate. 2+5+5+3

i) What is your provisional diagnosis?
ii) Describe the pathogenesis of this condition.
iii) Enumerate the role of leukocytes in this condition.
iv) List the expected outcomes of this condition.

b) A 50 year old vegan lady presented with progressive weakness, pallor, tingling and numbness of fingers. 2+6+7

i) What is your provisional diagnosis?
ii) Describe the pathogenesis of this condition.
iii) How will you proceed to confirm your diagnosis?

2. Answer the following: 10

a) Pathogenesis of granuloma formation.
b) Describe the vascular events in acute inflammation. What are the different systems in activation of complement cascade? Enumerate three derivatives of complement cascade and their role in acute inflammation. 2+3+3+2
c) Pathogenesis of renal edema. 10

3. Write short notes on: 2x5

a) Role of AETCOM in disclosing the biopsy report to a patient of breast cancer.
b) Laboratory features of sickle cell anaemia.

4. Explain the following statements: 5x4

a) P53 is the guardian of the genome.
b) Transfusion related diseases can be avoided.
c) Reticulocyte count can differentiate between primary causes of anemia.
d) Cytological characteristics of a malignant cell is unique.
e) Glomerulonephritis can be explained on immunological basis.

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

(i) Amyloid protein found in Alzheimer's disease is:

a) AA. b)AL.
c) Aβ. d) transthyretin.

(ii) Pale infarct is found in which of the following organs?

a) Kidney b) Heart
c) Both d) None

P.T.O

(iii) Which receptor is the likely initiator of inflammation in sepsis?
a) TLR.
b) G-Protein coupled receptor.
c) NOD 1.
d) NOD 2.

(iv) Which of the following is a protooncogene?
a) APC.
b) k-RAS.
c) VHL.
d) RB.

(v) Lysosomal accumulation of sphingomyelin occurs in:
a) Gaucher disease.
b) Niemann-Pick disease.
c) Tay-Sachs disease.
d) Von Gierke disease.

(vi) The earliest feature of iron deficiency anaemia is:
a) Low level of serum iron.
b) Low haemoglobin concentration.
c) Reduction in iron reserve forms like ferritin and hemosiderin.
d) Hypochromic microcytic RBC's in blood smear.

(vii) Aortic dissection is not associated with:
a) Alport syndrome.
b) Ehler's Danlos syndrome.
c) Marfan syndrome.
d) Turner's syndrome.

(viii) SLE is an example of:
a) Type I hypersensitivity.
b) Type II hypersensitivity.
c) Type III hypersensitivity.
d) Type IV hypersensitivity.

(ix) Which of the following causes a transudative type of pleural effusion?
a) Tuberculosis.
b) Empyema.
c) Bronchogenic carcinoma.
d) Left ventricular failure.

(x) Which of the following CD markers is NOT primarily T-cell associated?
a) CD2.
b) CD19.
c) CD3.
d) CD7.

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Full Marks: 100
Time: 3 hours

Subject: Pathology
Paper: II

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

1.a) A 59 year old male presented with weight loss, painless hematuria, flank pain and a large mass in lower abdomen. 3+6+6

i) What is your provisional diagnosis?
ii) How will you proceed to investigate the patient in the laboratory?
iii) Describe the gross and microscopic features of the lesion.

b) A 45 year old male was brought to the hospital with complain of uneasiness and squeezing type of pain in chest radiating to left arm. His ECG showed ST elevation and T inversion in lead V3, V4. 2+6+4+3

i) What is the provisional diagnosis?
ii) Discuss the pathogenesis of this condition.
iii) What laboratory investigations are to be done to confirm the diagnosis?
iv) Mention the complications of this condition.

2. Answer the following:

a) Classify Hodgkin's disease. Describe the microscopic feature of the mixed cellularity type. Describe the features of diagnostic cell present in Hodgkin's disease. 3+3+4

b) Briefly discuss the pathogenesis of cirrhosis of liver. 10

c) Describe the pathogenesis of acute (pyogenic) osteomyelitis. 10

3. Write short notes on: 2x5

a) Retinoblastoma.
b) Prognostic factors for invasive breast carcinoma.

4. Explain the following statements: 5x4

a) Bronchiectasis results from a defect in airway clearance.
b) The most important prognostic factor in colorectal adenocarcinoma are depth of invasion and the presence of lymph node metastases.
c) Pigment gallstones are seen in chronic haemolytic anaemia.
d) FNAC cannot replace histological study.
e) Dysgerminoma is the ovarian counterpart of testicular seminoma.

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

(i) Following are associated with EB virus infection except:

a) Infectious mononucleosis.
b) Nasopharyngeal carcinoma.
b) Epidermodysplasia verruciformis.
c) Oral hairy leucoplakia.

(ii) Most common gene involved in familial male breast cancer:

a) BRCA-1.
b) BRCA-2.
c) P53.
d) INK-2.

(iii) Bronchial asthma is predominantly mediated by:
a) T_H2 lymphocytes and IgE.
b) T_H1 lymphocytes and IgE.
c) Regulator T lymphocytes and IgE.
d) Cytotoxic T lymphocytes and IgE.

(iv) MaCallum patch is seen in:
a) Myocardial infarction.
b) Atherosclerosis.
c) Rheumatic heart disease.
d) SLE.

(v) All are features of alcoholic steatohepatitis except:
a) Hepatocyte swelling and necrosis.
b) Ground glass hepatocytes.
c) Mallory-Denk bodies.
d) Neutrophilic infiltration.

(vi) Renal papillary necrosis is seen in:
a) Urinary tract obstruction.
b) Sickle cell disease.
c) Diabetes mellitus.
d) All of the above.

(vii) Codman triangle is a radiological finding in:
a) Chondrosarcoma.
b) Giant cell tumor.
c) Ewing sarcoma.
d) Osteosarcoma.

(viii) Charcot Leyden crystals and Cruschmann's spirals are seen in:
a) Bronchial asthma.
b) Chronic bronchitis.
c) Bronchiectasis.
d) Emphysema.

(ix) All of the following are germ cell tumours except:
a) Mesonephroid tumors
b) Teratoma.
b) Dysgerminoma.
d) Endodermal sinus tumour.

(x) All are sex cord stromal tumor except:
a) Granulosa cell tumor.
b) Sertoil leydig cell tumor.
c) Embryonal carcinoma.
d) Fibroma thecoma of ovary.

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Full Marks: 100
Time: 3 hours

Subject: Microbiology
Paper: I

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

1. a) A 8 year old child presented to pediatric OPD with swollen, red and tender joint which migrate from one joint to another. Past H/O sore throat 3 weeks back was reported. On auscultation, murmur was heard over the mitral valve area. 2+5+3+5
   i) What is the clinical diagnosis and etiological agent?
   ii) Enlist different toxins and enzymes produced by this organism.
   iii) Describe the pathogenesis disease.
   iv) Mention serological tests to be done for this etiological agent with significant titre of these tests.

   a) A diabetic 60 year old lady was admitted to an ICU following a road traffic accident where she was placed on a ventilator. An initial chest x-ray was reported as normal. Five days after admission the patient's condition deteriorated. She developed an elevated temperature, neutrophilia and signs of bilateral basal consolidation in the chest. 1+2+2+6+4

   i) What is the clinical diagnosis?
   ii) Name the likely aetiological agents.
   iii) Describe the factors leading to the development of pneumonia in this condition.
   iv) Discuss in brief the laboratory diagnosis of this case.
   v) Enumerate the types of hospital acquired infections.

2. a) Name the various methods of horizontal gene transfer. Discuss in detail about mechanism of conjugation. 3+7

   b) What are the different components of innate immunity? How does it differ from adaptive immunity? Describe in brief the components of adaptive immunity. 4+2+4

   c) Write down the laboratory diagnosis of intestinal amoebiasis. 10

3. Write short notes on : 5+5
   a) Bacterial capsule.
   b) Demonstration of respect for patient's sample.

4. Explain the following statements: 5 x 4
   a) Motility helps in the laboratory diagnosis of syphilis.
   b) Antibiotic stewardship is a priority for proper patient management.
   c) Mutation may be induced by various chemical agents.
   d) Infusion of a sterile solution containing endotoxin may causes serious illness.
   e) Culture is very important for the species identification in a case of dermatophytosis.

10 x 1

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

a) Lysogenic conversion has got role in pathogenicity of:

i) Vibrio Cholerae. ii) ETEC.
iii) Mycobacterium tuberculosis. iv) Enterococcus faecalis.

b) L –form and spheroplasts are sensitive to:

i) Bacitracin. ii) Vancomycin.
iii) Cefoperazone. iv) Tetracyclin.

c) All the following automated systems can perform antimicrobial susceptibility testing, except:

i) VITEK 2. ii) MALDI-TOF.
iii) Phoenix. iv) Micro scan Walkaway.

d) How is Crimean congo haemorrhagic fever virus transmitted to humans?

i) Body fluids of infected rodents. ii) Droplet nuclei.
iii) Consumption of contaminated water. iv) Bite of infected ticks.

e) Which of the following paramyxoviruses has a surface glycoprotein lacking hemagglutinin activity?

i) Mumps. ii) Measles.
iii) Respiratory syncytial virus. iv) Parainfluenza virus type 1.

f) Following bacteria, usually does not cause infective endocarditis, beyond 6 month of age:

i) Enterococcus faecium ii) Streptococcus bovis.
iii) Staphylococcus aureus. iv) Listeria monocytogenes.

g) Heat-labile toxin of ETEC acts by which of the following mechanisms?

i) Attachment and effacement. ii) Activation of adenylyl cyclase.
iii) Aggregative adherence. iv) Ribosomal dysfunction.

h) Sometimes, the plasmid may integrate with chromosomal DNA of bacteria and such plasmids are called as:

i) Episomes. ii) Vectors.
iii) Transfer factors. iv) Cosmids.

i) A mother states that she has observed her 3 year old son scratching his anal area frequently. The most likely causative agent for this condition is

i) T. vaginalis. ii) E. vermicularis.
iii) A. lumbricoides. iv) N. americanus.

j) Spirochete shows all types of motility except:

i) Corkscrew. ii) Gliding.
iii) Flexion-Extension. iv) Translatory.

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MBBS 2nd Professional Examination (New Regulation) March - April 2024

Full Marks : 100
Time : 3 hours

Subject : Microbiology
Paper : II

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

1. a) A 40 year old male patient attended emergency with trismus. Relatives of patient informed that he had also muscular pain, stiffness, back pain and also difficulty in swallowing. He got a bullet injury one week back. 1+1+4+3+3+3

   i) What is the probable clinical diagnosis and causative agent?
   ii) Briefly discuss the pathogenesis.
   iii) How you can isolate the organism in the laboratory? Why toxigenicity test is needed after isolation?
   iv) Outline the laboratory diagnosis of such a case.
   v) Briefly describe immunoprophylaxis of the disease.

   b) A 60 year old man presents to the hospital with huge progressive swelling of his right leg and scrotum for the last 3 months. On examination he is found to have inguinal lymphadenopathy, hydrocoele and non-pitting oedema on the right leg. What is the probable diagnosis? Name the causative organisms. Mention the vector for this disease. Describe the pathogenesis of this disease. How is the disease diagnosed in the laboratory? 1+2+1+4+7

2. a) Enumerate different morphological forms of organism causing kala azar. Briefly describe pathogenesis of Kala azar. Write a note on PKDL. 2+3+5
   b) What are the members of Mycobacterium Tuberculosis Complex? Write about molecular methods used for diagnosis of tuberculosis. 3+7
   c) Enumerate the bacteria causing sexually transmitted infections (STI) in humans. What are the methods for laboratory diagnosis of STIs? 4+6

3. Write short notes on following: 2 x 5
   i) Madura foot.
   ii) Gonococcal urethritis.

4. Explain the following statements: 5 x 4
   i) Spontaneous or traumatic rupture of Hydatid cyst may prone to produce serious complications.
   ii) Role of KOH mount in diagnostic mycology.
   iii) Zoonotic diseases are responsible for major outbreaks of cases in humans.
   iv) Beta hemolytic streptococcal infection has immunological consequences.
   v) Smallpox virus is a good candidate for bioterrorism.

10 x 1

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

a) Post-streptococcal glomerulonephritis is detected by the following test:
   i) ASO titre
   ii) CAMP test.
   iii) Anti DNAse-B antibody.
   iv) Bacitracin sensitivity

b) Find the true statement about 'Leptospirosis':
   i) Hepato Renal failure may occur in most of the untreated cases.
   ii) Latent and mild illness is not found
   iii) After 6 days of illness, the bacteria is not found in blood
   iv) ELISA test to detect Ab uses plates coated with L. icterohaemorrhagiae strain

c) All are nonfermenting gram negative bacilli except:
   i) Acinetobacter
   ii) Hafnia
   iii) Stenotrophomonas
   iv) Elizabethkingia meningosepticum

d) All are examples of tissue nematodes except:
   i) Onchocerca volvulus
   ii) Mansonella ozzardi
   iii) Hymenolepis nana
   iv) Dracunculus medinensis

e) Which of the following not a component of classical triad of congenital rubella syndrome-
   i) Limb hypoplasia
   ii) Sensory neural deafness
   iii) PDA
   iv) Salt and pepper retinopathy

f) Mycetoma having pink grain is caused by:
   i) Madurella mycetomatis
   ii) Aspergillus nidulans
   iii) Nocardia sp
   iv) Actinomadura pelletieri

g) The trivalent vaccine for influenza includes all except:
   i) A/H1N1
   ii) A/H5N1
   iii) Influenza B strain
   iv) A/H3N2

h) Receptor for SARS-Cov 2 is:
   i) ACE 2
   ii) CXCR
   iii) Sialylated glycan
   iv) CCR5

i) The most commonly used method for isolation of Chlamydia:
   i) Culture on artificial media
   ii) Culture on Vero cell-line
   iii) Inoculation into guinea pig
   iv) Culture on McCoy cell line

j) The mechanism of action of exotoxin of Corynebacterium diphtheriae is:
   i) Degradation of lecithin
   ii) Inactivation of the 60S ribosomal subunit
   iii) Intracellular protein ribosylation
   iv) Autoimmune activation by antigenic mimicry

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Subject: Pharmacology **Full Marks: 100**
Paper: I **Time: 3 hours**

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

1. a) A 40 year old farmer presented with excessive salivation, lacrimation and drowsiness and diagnosed to be a case of organophosphorus poisoning. 5+3+5+2
   i) How will you manage the case?
   ii) Write the antidote and its mechanism of action.
   iii) What are the uses of Atropine substitutes?
   iv) Role of cholinesterase reactivator in organophosphorus poisoning?

   b) A man age 45 year presented with complains of gradual onset double vision, drooping eye lid, difficulty in swallowing food and weakness of limbs which is accentuated with exercise. The symptoms fluctuate in intensity over time. 1+3+3+5+3
   i) What is your diagnosis of the given case scenario?
   ii) What pharmacological test can be performed to confirm the diagnosis?
   iii) What is the primary pathophysiological mechanism underlying this condition?
   iv) Outline the principles for treatment including pharmacological and non-pharmacological interventions of the above mention scenario.
   v) Explain why neostigmine is preferred over physostigmine for management of such condition.

2. a) Classify diuretics. Describe the mechanism of action of furosemide in chronic heart failure. Mention three important adverse effects of long term use of thiazide diuretics. 3+4+3

   b) A 8 year old child presented with severe pallor and huge splenomegaly. He has history of repeated blood transfusion for beta thalassemia major. 5+3+2
   i. What are the iron chelating agents used to manage the iron overload in this condition and their side effects?
   ii. What is the role of folic acid in beta thalassemia?
   iii. Mention the uses of penicillamine.

   c) Define drug clearance. Write down the factors influence drug clearance. Mention two pharmacokinetic parameters which depend on clearance with suitable explanations. 2+3+5

3. Write short notes on following: 2 x 5
   a) Convey of bad news to patient.
   b) Therapeutic adherence.

4. Explain the following statements: 5 x 4
   a) Ticagrelor is preferred as antiplatelet drug over clopidogrel.
   b) Pilocarpine is used in both open angle and angle closure glaucoma.
   c) Aspirin use may precipitate an attack of bronchial asthma in susceptible individual.
   d) Adrenaline but not noradrenaline is the drug of choice in anaphylactic shock.
   e) Pralidoxime is not used in carbamate poisoning.

10 x 1

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

i) Dabigatran is:
   a) Direct factor Xa inhibitor
   b) Direct thrombin inhibitor
   c) Gp IIIb/IIa inhibitor
   d) P2Y12 receptor antagonist

ii) Transdermal drug delivery systems offer the following advantages except:
   a) They produce high peak plasma concentration of the drug.
   b) They produce smooth and non-fluctuating plasma concentration of drug.
   c) They minimise inter-interval variations in the achieved plasma drug concentration.
   d) They avoid hepatic first-pass metabolism of the drug

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

iv)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

v) Patient of iron deficiency anemia is put on iron therpy. What should be the rate of rise of Hb level so that response is considered adequate
   a) 0.05 to 0.1 gm/dl per week
   b) 0.1 to 0.2 gm/dl per week
   c) more than 1 gm/dl per week
   d) 0.5 to 1 gm/dl per week

vi) Drug which is contraindicated in acute myocardial infarction is:
   a) Morphine
   b) Nitroglycerine
   c) Beta blocker
   d) Pentazocine

vii) Which of the following is prodrug :
   a) Omeprazole
   b) Enalapril
   c) Aspirin
   d) Atenolo

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

ix) Bronchodilator action, but is commonly present in proprietary cough formulations :
   a) Ambroxol
   b) Chlorpheniramine
   c) Guaifenesin
   d) Noscapine

x) Which PG is responsible for Niacin induced flushing?
   a) PGE1
   b) PGF2alpha
   c) PGD2
   d) PGE2

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Subject: Pharmacology **Full Marks: 100**
Paper: II **Time: 3hours**

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

1. a) A 8 year old boy was sent for neurological evaluation because of episodes of apparent inattention. His mother gave a h/o episodes of staring look which lasts for few seconds, following which he resumes his normal activity. He was diagnosed to have absence seizures. 3+8+2+2

   i) Describe the mechanism of action of the drug of choice for absence seizures.
   ii) Write down the adverse effect, uses and drug interactions of the said drug.
   iii) What is fosphenytoin and it has replaced IV phenytoin in treatment of status epilepticus.
   iv) How will you manage a case of febrile convulsion.

   b) A 30 year old patient of IDDM presented in emergency in confused state with shortness of breath, sweating, palpitation. She had history of fever for few days. Physical examination revealed deep acidotic breathing with fruity smell. Blood report shows total leucocyte count-21650/cu.mm, CBG – 485mg/dl, ABG Shows HCO3-10 mEq/Lt, ketone bodies positive in urine routine examination. 1+6+4+2+2

   i) What is your provisional diagnosis?
   ii) How do you manage this condition?
   iii) What is the mechanism of action of insulin?
   iv) What is acute insulin resistance?
   v) Mention two newer insulin delivery devices.

2. a) Classify peripherally acting muscle relaxant. Write down the mechanism of action of depolarizing muscle relaxant and its adverse effects. Rationale of using Dantrolene sodium in Malignant hyperthermia. 4+4+2

   b) Enumerate the drugs used in acid-peptic disorders. Write the mechanism of actions of proton pump inhibitor with schematic diagram. Outline the triple and quadruple therapy for helicobacter pylori infection. 4+4+2

   c) A 42 year old lady reported with breast carcinoma and bone metastasis. Her cancer was managed and now she receives morphine 6 hourly for her bone pain. What is the mechanism of action of morphine as an analgesic? Why is morphine contraindicated in cases of head injury? Which drug is used in morphine overdose and what is its mechanism of action? 4+2+2+2

3. Write short notes on following: 2 x 5
   a) Monoclonal antibodies as anti-cancer agent.
   b) Atypical antipsychotics.

4. Explain the following statements: 5 x 4
   a) Isoniazid is an essential component of all antitubercular regimens.
   b) Recombinant parathyroid hormone is used to prevent osteoporosis.
   c) Dapagliflozin is useful beyond diabetes mellitus.
   d) Mesna is combined with cyclophosphamide.
   e) Letrozole is first line adjuvant therapy after mastectomy in post menopausal women.

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

i) Major limitations of clozapine for treatment of schizophrenia:

a) Inability to benefit negative symptoms.
b) Its potential to cause agranulocytosis.
c) It produces hyperlactinemia.
d) High incidence of extrapyramidal symptoms.

ii) Bisphosphonates are beneficial in all of the following except:

a) Paget's disease. b) Rickets.
c) Osteolytic bony metastasis d) Senile osteoporosis

iii) 'Diffusion hypoxia' is likely to occur only after use of nitrous oxide because it:

a) Is a respiratory depressant
b) Has low blood solubility and is used in high concentration
c) Is a very potent anaesthetic
d) Interferes with diffusion of oxygen into the tissues

iv) A gastrokinetic drug acts by inhibiting 5HT2 and D2 receptor as well as stimulating 5HT4 receptor in myenteric plexus:

a) Levosulpiride b) Metoclopramide
c) Itopride d) Cinitapride

v) In nodulocystic acne, treatment is:

a) Antifungal b) Antibiotics
c) Steroids d) Isotretinoin

vi) One of the following is glucocorticoid of choice for fetal lung maturity:

a) Prednisolone b) Fluticasone
c) Beclomethasone d) Dexomethasone

vii) Ketamine is the preferred anesthetic for the following except:

a) Hypertensive b) Trauma cases who have bled significantly
c) Burn dressing d) Short operations on asthmatics

viii) A 35 year old male presented with an attack of acute gout. He was treated with 10 day course of naproxen. His blood uric acid level is high. What future line of treatment is most appropriate?

a) No regular medication and treat attacks of acute gout when they occur with naproxen
b) Regular long-term treatment with naproxen
c) Regular long-term treatment with allopurinol
d) Start with allopurinol and naproxen for 2 months followed by long-term allopurinol treatment

ix) Cell cycle specific anticancer agents are all except:

a) Vinca alkaloids b) Bleomycin
c) Hydroxyurea d) Cisplatin

x) Total dose of levonorgestrel for emergency contraception:

a) 1.5 mg single pill b) 1.5 mg two pills b) 7.5 mg single pill d) 0.25 mg two pills