

Pathology

1. Elevated (8.5 ng/mL). Rectal examination reveals an enlarged and nodular prostate. A needle biopsy of the prostate discloses invasive prostatic adenocarcinoma. Grading of this carcinoma is based primarily on which of the following criteria?

- a. Capsular involvement
- b. Pulmonary metastases
- c. Volume of prostate involved by tumor
- d. Regional lymph nodes involvement
- e. **Resemblance to normal tissue of origin**

2. An episode of marked chest pain lasting 4 hours brings a 51-year-old man, to the emergency room. He is found to have an elevated serum creatine kinase. An angiogram reveals a complete blockage of the left circumflex artery 2 cm from its origin. Which of the following substances would you most expect to be elaborated around the region of tissue damage in the next 3 days as an initial response to promote healing?

- a. **Vascular endothelial growth factor**
- b. Histamine
- c. Leukotriene B₄.
- d. Complement component C_{3b}
- e. Immunoglobulin G

3. Transfer of a donor chromosome fragment by a bacterial virus is defined as which one of the following?

- a. Transformation
- b. Conjugation
- c. Competence
- d. Recombination

e. **Transduction**

4. A 25-year old male presents with a macula-papular rash on palms and soles. He gives history of developing a non-tender ulcer on the genital area 3 months back which healed spontaneously. Currently, the patient is suffering from:

- a. Early latent stage of syphilis
- b. Tertiary syphilis
- c. Late latent stage of syphilis
- d. **Secondary syphilis**

5. A patient was received in emergency department with complaints of low-grade fever, chronic cough, night sweats and body aches. Mycobacterium tuberculosis was among the top differentials. Which media is used to culture this pathogen?

- a. Loeffler's medium
- b. Chocolate agar
- c. Tellurite medium
- d. Lowenstein-Jensen media**
- e. Blood agar

6. A 23-year-old woman, G2, P1, gives birth at 37 weeks to a small for gestational age male infant. The hand of the infant shows a single palmar flexion crease and a single flexion crease on the fifth digit. During the pregnancy, fetal ultrasound showed an endocardial cushion defect and polyhydramnios from probable duodenal atresia. Which of the following chromosomal abnormality is most likely to be present?

- a. 47, XY+21
- b. 45, X

c. 47, XX+21/ Trisomy 21

7. Genetic reassortment or antigenic shift and drift can occur during replication of which of the following virus?

- a. Influenza virus**
- b. Hepatitis B virus
- c. Respiratory syncytial virus
- d. Picornaviruses
- e. Caliciviruses

8. Gram staining of sputum sample of a patient suspected to have pneumonia revealed Gram positive diplococci. Which of the following structure is found in the organism is anti-phagocytic and is responsible for positive quelling test?

- a. Outer membrane
- b. Cytoplasmic membrane
- c. Cell wall
- d. Ribosomes
- e. Capsule**

9. A 25-year-old woman with amenorrhea has never had menarche. On physical examination she is 145cm (4 ft 9 in) tall. She has a webbed neck, a broad chest, and widely spaced nipples. Strong pulses are palpable in the upper extremities, there are only weak pulses in the lower extremities. On abdominal MRI her ovaries are small, elongated and tubular. Which of the following karyotypes is she most likely to have?

9. A 25-year-old woman with amenorrhea has never had menarche. On physical examination she is 145cm (4 ft 9 in) tall. She has a webbed neck, a broad chest, and widely spaced nipples. Strong pulses are palpable in the upper extremities, there are only weak pulses in the lower extremities. On abdominal MRI her ovaries are small, elongated and tubular. Which of the following karyotypes is she most likely to have?

- a. 46, X X(fra)
- b. 47 XXY
- c. 47. XX.+16
- d. 47 XXX
- e. **45 X**

10. With regard to antibiotics which one of the following statements is correct?

- a. Vancomycin is a protein synthesis inhibitor
- b. Metronidazole has similar mechanism of action as erythromycin
- c. Chloramphenicol is a cell wall inhibitor
- d. Vancomycin and penicillin's inhibit bacterial cell wall synthesis through the same mechanisms,
- e. **Cephalosporins and penicillin's inhibit bacterial cell wall synthesis through the same mechanisms**

11. An athlete complains of discoloration and thickening of skin on his foot. The lesions are red, circular, with a vesiculated border and a central healing area. He is suspected to have infection with dermatophytes or ringworms. The most appropriate laboratory procedure would be:

- a. **Potassium hydroxide mount of skin scrapings**
- b. Fourfold rise in antibody titer against the organism
- c. Giemsa stain for multinucleated giant cells

12. A 27-year-old woman who is 2 months pregnant develops fever, malaise, and arthralgia. A fine maculopapular rash appears on her face trunk, and extremities. Rubella is diagnosed, and there is concern that the fetus will be infected resulting in the congenital rubella syndrome. Which of the following statements about this syndrome is correct?

- a. None of the above
- b. Congenital abnormalities occur when a nonimmune pregnant woman is infected at any time during pregnancy.
- c. Only rare strains of rubella virus are teratogenic
- d. the disease can be prevented by vaccination of school age children with measles vaccine.
- e. **Deafness is a common defect associated with congenital**

13. Gram staining of a positive blood culture revealed Gram positive cocci. *Staphylococcus aureus* was suspected to be the causative agent. Which of the following test is required to differentiate *Staphylococcus aureus* from *Staphylococcus epidermidis*?

- a. Oxidase
- b. Catalase
- c. Coagulase**
- d. Protease
- e. Indole

14. A 3-year-old boy had complaint of headache with a two days history of fever of 39.7° C and extremely lethargic. A lumbar puncture revealed 2000 neutrophils/mm³ and CSF glucose level of 9 mg/dL (normal 15 to 45 mg/dL). The Gram stain showed gram negative diplococci. The most probable infecting organism is?

- a. *Streptococcus pneumoniae*
- b. *Neisseria meningitidis***
- c. *Escherichia coli*
- d. *Streptococcus agalactiae* *Hemophilus influenzae*

15. A 43-year-old man has a routine chest x-ray that shows a 2 cm nodule in the right lower lobe. The nodule has focal calcifications. A wedge resection of the nodule is done. On microscopic examination the nodule shows caseous necrosis and calcification. Which of the following processes explains the appearance of the calcium deposition and raised serum calcium levels?

- a. Apoptosis
- b. Hypercalcemia
- c. Dystrophic calcification
- d. Excessive ingestion of calcium

e. Metastatic calcification

16. Which one of the following viruses develops subacute sclerosing panencephalitis as its complication?

- a. Rubella virus
- b. Pox virus
- c. Mumps virus
- d. Varicella zoster virus
- e. Measles virus**

17. After eating canned mushrooms, a young boy developed diarrhea and vomiting, Gram positive rods survived in the canned food. Depending upon the O2 requirements of bacteria, where do you put this bacterium?

- a. Facultative
- b. Carbophilic
- c. Strict anaerobe**
- d. Microaerophilic
- e. Strict aerobe

18. A young boy had history of ingesting under cooked fish from a new restaurant and he developed megaloblastic anemia afterwards. Which of the following is the causative agent?

- a. *Ascaris lumbricoides*
- b. *Enterobius vermicularis*
- c. *Taenia solium*
- d. *Diphyllobothrium latum***
- e. *Ankylostoma duodenale*

19. A 68-year-old woman suddenly lost consciousness and on awakening 1 hour later, she could not speak or move her right arm. Two months later, a head CT scan showed a large cystic area in the left parietal lobe. Which of the following pathologic processes have most likely occurred in her brain?

- a. Karyolysis
- b. Apoptosis
- c. Coagulative necrosis
- d. Fat necrosis
- e. Liquefactive necrosis**

20. *Chlamydia trachomatis* is a well-known cause of venereal disease. This organism is also implicated in which of the following?

- a. Perinatal retinitis
- b. Blindness in neonates**
- c. Sexually transmitted cardiac disease in adults
- d. Urinary tract infection in children
- e. Middle ear infection in young children

21. Which of the following is true regarding healing by secondary union?

- a. Not infected

21. Which of the following is true regarding healing by secondary union?

- a. Not infected
- b. Extensive granulation tissue**
- c. Neat Margin
- d. Sutured wound
- e. Clear wound

22. A farmer having cows in his house having history of ingestion of contaminated under cooked beef, developed anorexia and diarrhea. Which one of the following also called as beef tapeworm is the causative agent?

- a. Taenia saginata**
- b. Taenia coli
- c. Echinococcus granulosus
- d. Taenia solium
- e. Diphylobothrium latum

23. A child stung by a bee experiences respiratory distress within minutes and lapses into unconsciousness. This reaction is probably mediated by?

- a. IgG antibody
- b. IgM antibody
- c. Complement
- d. IgE antibody**
- e. Sensitized T cells

24. A man 45 years has complained of mild burning substernal pain following meals for the past 3 years. Upper GI endoscopy reveals erythematous area of the lower esophageal mucosa and the biopsies show the presence of columnar epithelium with goblet cells. Which of the following mucosal alterations is most likely represented by these findings?

- a. Ischemia
- b. Dysplasia
- c. carcinoma



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24. A man 45 years has complained of mild burning substernal pain following meals for the past 3 years. Upper GI endoscopy reveals erythematous area of the lower esophageal mucosa and the biopsies show the presence of columnar epithelium with goblet cells. Which of the following mucosal alterations is most likely represented by these findings?

- a. Ischemia
- b. Dysplasia
- c. carcinoma

- d. Hyperplasia
- e. Metaplasia**

25. A 40-year-old man diagnosed with Acute Cholecystitis and develops abdominal pain. The pain experienced by this patient is predominantly the result of which of the following two chemical mediators?

- a. Prostaglandin and bradykinin**
- b. Leukotriene and HPETE
- c. Interleukin-1 and tumor necrosis factor
- d. Histamine and serotonin

26. A 20-year-old male is brought to the emergency department with a 1-day history of delirium, sustained fever of up to 102°F, headache, myalgia and constipation which began 10 days back. Physical examination revealed hepatosplenomegaly, diffuse abdominal tenderness & rose spots on the chest and neck. Colonies of a Gram-negative non-lactose fermenting rods with H₂S production were obtained. What is the most likely diagnosis?

- a. Shigellosis
- b. Typhoid fever**
- c. Tularemia

27. Fluid in a blister produced as a result of acute inflammation is most likely:

- a. CSF X
- b. Pus
- c. Transudate
- d. Blood



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27. Fluid in a blister produced as a result of acute inflammation is most likely:

- a. CSF X
- b. Pus
- c. Transudate
- d. Blood

e. Exudate

28. A 50 years old male presented with severe abdominal pain. Later he also developed bloody stools with mucus. Laboratory findings and clinical tests reveals amoebiasis. Which of the following will be the most appropriate intestinal finding in this patient?

- a. Granulomatous inflammation
- b. Tumor like masses
- c. Blunting of the intestinal villi
- d. Cobble stone appearance of the intestine
- e. Flask shaped ulcers with undermined edges**

29. Tzanck smear is useful for the diagnosis of which one of the following viral infection?

- a. HPV infection
- b. Herpes zoster Virus infection**
- c. HIV infection
- d. Measles
- e. Rabies

30. Which of the following zoonotic Gram-negative rod has flea as a vector and leads to plague?

- a. Yersinia**
- b. Legionella
- c. Bordetella
- d. Brucella
- e. Pasteurella



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31. A 35-year-old man has had increasing dyspnea and chest pain for 1 year. He has no cough or fever. He had chronic exposure to inhalation of asbestos dust for many years in his job. A chest x-ray now shows increased interstitial markings and parenchymal 1 to 3 cm solid nodules. His pulmonary problems are most likely to be mediated through which of the following inflammatory processes?

- a. Foreign body giant cell formation
- b. Macrophage elaboration of cytokines

32. Which category of hypersensitivity best describes haemolytic disease in the newborn caused by Rh incompatibility/ erythroblastosis fetalis?

- a. Delayed hypersensitivity/ Type 4
- b. Immune complex mediated/ Type 3
- c. Anaphylactic/ Type 1
- d. Cytotoxic/ Type 2**
- e. All of the above

33. A patient presented in emergency with third degree burns. Treatment was started. After 6 days green colored pus was seen in his wound dressing. Name the organism causing this infection:

- a. Pseudomonas**
- b. Staphylococcus
- c. Klebsiella
- d. E. coli
- e. Enterobacter

34. A man of 58 years has experienced severe chest pain and tachycardia. Laboratory studies show a serum troponin I of 10 ng/mL. A coronary angiogram

reveals >90% occlusion of the anterior interventricular artery. Which one of the following is a feature of an irreversible injury?

- a. Decrease intracellular pH
- b. Nuclei undergo karyorrhexis**
- c. Blebs form on cell membranes
- d. Cytoplasmic sodium increases
- e. Glycogen stores are depleted

35. An immune-compromised chronic diabetic patient had to go for amputation of his foot after he developed gas gangrene. The organism isolated from the pus was a gram-positive rod, showing double zone of hemolysis on blood agar and positive



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35. An immune-compromised chronic diabetic patient had to go for amputation of his foot after he developed gas gangrene. The organism isolated from the pus was a gram-positive rod, showing double zone of hemolysis on blood agar and positive Nagler's reaction. Pick the causative agent:

- a. *Clostridium difficile*
- b. *Bacillus anthracis*
- c. *Clostridium perfringens***
- d. *Clostridium botulinum*

36. A 60-year-old man complains of muscle weakness and a dry cough for 4 months. He has smoked two packs of cigarettes daily for 45 years. A chest X-ray shows a 4-cm central, left lung mass. Laboratory studies reveal hyperglycemia and hypertension. On transbronchial biopsy, the tumor is found to be small cell carcinoma. Metastases to the liver is detected by CT scan. Which of the following might account for the development of hyperglycemia and hypertension in this patient?

- a. Adrenal metastases
- b. Thrombosis of the renal artery

- c. Pituitary metastases
- d. Paraneoplastic syndrome**
- e. Pituitary adenoma

37. A 50-year-old patient who had been intubated after an accident developed signs and symptoms of sepsis. Blood culture revealed Gram positive, catalase positive, coagulase negative cocci that is also a normal flora of our body?

- a. *Staphylococcus aureus*
- b. *Bacteroides fragilis*
- c. *Enterococcus*
- d. *Staphylococcus epidermidis***
- e. *Lactobacillus*

38. A 45-year-old diabetic female is diagnosed with vulvovaginitis having creamy white cotton cheese like vaginal discharge. When a smear is made, an oval shaped structure with a single bud is seen. Which of the following is the most likely organism?

- a. *Aspergillus fumigatus*
- b. *Candida albicans***
- c. *Pneumocystis carinii*



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39. A young boy was received in emergency department with history of fever, malaise, headache and cough. Along with that he had joint and muscle pains. On examination a maculopapular rash was observed on his body. His labs showed leucopenia, decreased MCV and decreased platelet count. The most likely virus would be:

a. West Nile virus

b. Yellow fever virus

c. California encephalitis virus

d. St. Louis encephalitis virus

e. Dengue virus

40. Ultrasonography shows a 7.5 cms cystic ovarian mass which was subsequently excised surgically. The surface of the mass is smooth and is non-adherent to surrounding pelvic structures. Grossly the mass is cystic and filled with hair. Microscopically squamous epithelium, tall columnar glandular epithelium, cartilage and fibrous connective tissue are present. Which one of the following is the most likely diagnosis?

a. Fibroadenoma

b. Teratoma

c. Adenocarcinoma

d. Hamartoma

e. Rhabdomyosarcoma

41. A patient after dining outside developed diarrhea after 24 hours. A toxin produced by Staph. aureus was suspected to be responsible for his condition. Which one of the following is the property of exotoxin:

a. Lipo-polysaccharide in nature

b. Not secreted from the cell

c. Toxoids can be used as vaccines

d. Weakly immunogenic

e. Stable and withstands heating above 100 degree centigrade for hours

42. A patient taking anti-malarial drugs irregularly for chronic falciparum malaria now presented with complaint of dark or black coloured urine. Black water fever was diagnosed. The dark color of the urine is because of:



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42. A patient taking anti-malarial drugs irregularly for chronic falciparum malaria now presented with complaint of dark or black coloured urine. Black water fever was diagnosed. The dark color of the urine is because of:

- a. hemolysis destroying affected parasitized RBCs and unaffected RBCs
- b. presence of malarial parasites in urine
- c. Excretion of the anti-malarial HER in

43. Dependent edema found in congestive heart failure is most likely due to:

- a. **Increase hydrostatic pressure.**
- b. Lymphatic obstruction.
- c. Reduced plasma oncotic pressure.
- d. Arteriolar dilatation,
- e. Endothelial injury.

Your answer is correct.

44. Tzanck smear is useful for the diagnosis of which one of the following viral infection?

- a. HPV infection
- b. **Herpes zoster Virus infection**
- c. HIV infection
- d. Measles
- e. Rabies

45. A 70-year-old man presents with signs of fatigue due to anemia. Workup reveals anemia as a result of bleeding from a colon cancer located in sigmoid colon. The lesion is resected and metastatic disease is found. Which of the following markers would be most useful for future follow-up of this patient of the evaluation of possible metastatic disease from his colon cancer?

- a. Chloroacetate esterase (CAE)
- b. **Carcinoembryonic antigen (CAE)**
- c. alpha fetoprotein (AFP)
- d. Prostate-specific antigen (PSA)



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46. A middle-aged lady was found to have a coarse liver echo texture and moderate ascites on ultrasound examination of abdomen carried out during her investigation of vague abdominal complaints. Her ALT was marginally raised. Which one of the following viruses do you think causes chronic carrier state?

- a. **Hepatitis C virus**
- b. Hepatitis A virus
- c. Hepatitis B and D virus co infection
- d. Hepatitis E viruses
- e. Cytomegalovirus

47. Reduced plasma oncotic pressure is the most important mechanism of edema in:

- a. Congestive heart failure.
- b. **Nephrotic syndrome**
- c. Brain trauma.
- d. Edema of the arm in breast cancer patients.
- e. Edema of leg affected by venous thrombosis.

48. She has a chest radiograph that reveals multiple small parenchymal nodules along with hilar and cervical lymphadenopathy. A cervical lymph node biopsy is performed. Microscopic examination of the biopsy shows noncaseating granulomatous inflammation. Cultures for bacterial, fungal, and mycobacterial organisms are negative. Which of the following chemical mediators are most important in the development of her inflammatory response?

- a. Bradykinin
- b. Histamine
- c. **Interferon-gamma**
- d. Prostaglandin E2

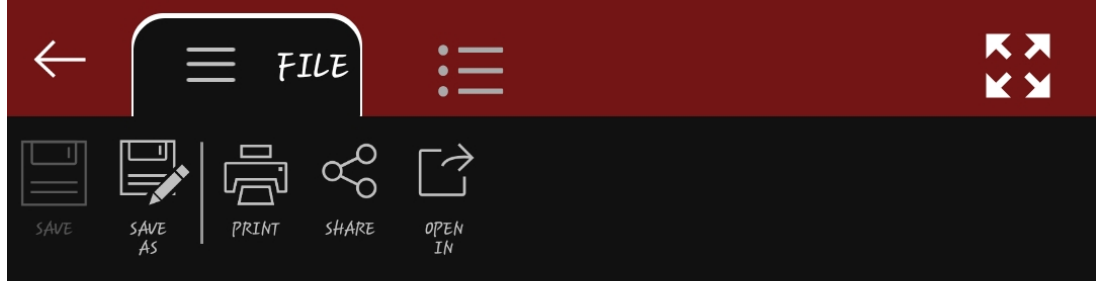
e. Complement C5a

49. A 50-year-old woman presents with abdominal pain and vaginal bleeding. A hysterectomy shows a benign myometrial tumor of the uterus. What is the appropriate diagnosis?

- a. **Leiomyoma**
- b. Adenoma
- c. Leiomyosarcoma
- d. Angiomyolipoma
- e. Papilloma

50. The function of C3a and C5a is to cause:

- a. Aggregation of Ca



- b. Histamine
- c. Interferon-gamma**
- d. Prostaglandin E2

e. Complement C5a

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- c. Leiomyosarcoma
- d. Angiomyolipoma
- e. Papilloma

50. The function of C3a and C5a is to cause:

- a. Aggregation of Ca
- b. Chemotaxis**



THE SUPERIOR COLLEGE, LAHORE

3rd YEAR MBBS

ANNUAL EXAMINATION 2020

PATHOLOGY

(SEQ'S)

Roll No. -----
Total Marks: 75

Time Allowed: 2 hours

Instructions

1. The SEQ's part is to be submitted within 2 hours, Extra time will not be given.
2. Neat Hand Writing use of margin and marker for headlines will increase the presentation of your paper.
3. Do not write your name or disclose your identity in anyway.

Attempt all Questions. Each Question carries 5 marks

Q1) (a) Enumerate three outcomes of ACUTE INFLAMMATION. (3)

(b) What are two different types WOUND HEALING? (2)

Q2) What is an embolus? (2)

(b) Enumerate the three primary abnormalities that lead to thrombus formation. (3)

Q3) (a) Define necrosis and apoptosis. (1)

(b) Enlist different types of necrosis. (2)

(c) Briefly describe the morphology of any two types of necrosis. (2)

Q4) Scar tissue is formed at the site of healed clean surgical wound.

(a) Enumerate three processes involved in its formation. (2)

(b) Describe fibroblast migration and proliferation during scar formation. (3)

Q5) A mother notices that her 1 year old child is unresponsive to the environment, abundant neck skin, transverse palmar crease, flat facial profile, epicanthic folds, and wide set ears.

a) What genetic disorder does this child have? (2)

b) What is the pathogenesis? (3)

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Q6) A 28 Year old mother gives birth to her first child. The father is homozygous Rh D positive and mother is homozygous Rh D negative. The baby is born without any complications but the mother is not given anti Rh immunoglobulin following the delivery. 18 months later, she delivers another child who is anemic; slight jaundiced and has an enlarged spleen and liver.

- a) Which type of hypersensitivity best describes this condition? (1) 3
b) Give the immunological basis of this condition in this patient. (2)
c) Give two other examples of this type of hypersensitivity. (2)

Q7) (a) Define neoplasia. (1) 3

(b) Tabulate atleast 4 differences between benign and malignant tumors. (4)

Q8) A 24 year old female with a history of heavy and painful menstrual period has been having difficulty conceiving despite months of trying to become pregnant. Her workup included a bimanual pelvic examination and an ultrasound, which demonstrated a massive uterus that was presumed to be leiomyoma

- a. Enlist any four mesenchymal benign tumors other than leiomyoma? (2) 3
b. Enumerate three pathways for dissemination of cancer (3)

Q9) A 35 year old man who is HIV +ve has had a persistent headache and a low grade fever (100oF) for past 2 weeks. Budding yeasts with a wide capsule in India ink preparation of spinal fluid are seen.

- (a) What is the most likely diagnosis? (1) 3
(b) What is the mode of transmission? (2)
(c) Write down its laboratory diagnosis? (2)

Q10) A 50 years old woman visits her physician complaining of "feeling unwell" with fever, chills, muscle aches, dry cough and sore throat. She has had these symptoms for several days with no significant improvement. There is H/O similar illness in other family members. Physical examination reveals small, tender cervical lymphadenopathy, swollen nasal mucosa & erythematous pharynx.

- (a) What is the diagnosis? (1)
(b) What is the causative agent? (1)
(c) Although the patient had similar infection in the past, why is not her immune system protecting from this illness? (1) 2
(d) What characteristics of this microorganism's genome makes deadly epidemic possible? (2)

Q11) A 20 years old farmer develops periodic bouts of fever with chills and rigors occurring every 36-48 hrs. He is anemic and has splenomegaly. His peripheral smear shows crescentic structures.

- (a) What is the most likely diagnosis? (1)
(b) Enlist its possible complications. (4) 3

Q12) A previously healthy 12 years old boy came to the emergency room complaining of worsening bloody diarrhea and abdominal pain for the past 24 hours. He was anuric for 12 hours. His physical examination was unremarkable except for dehydration. His mother does admit to cooking his son a hamburger using meat that has been sitting on the kitchen counter for "sometime". Blood examination showed evidence of reduced renal function and lysed blood cells.

- (a) Based on the symptoms and family activities, what organism and strain is the cause of the disease? (2) 4
- (b) What unique complications can be caused by this organism? (3)

Q13) A young male develops a large area of gangrenous necrosis on the lateral aspect of leg following wound contamination associated with compound fracture during a road traffic accident. A large gas and fluid filled bulla appears, producing subcutaneous crepitations close to the area of gangrene.

- (a) Name the causative organism and give the most likely diagnosis. (3) 4
- (b) Briefly discuss its pathogenesis. (2)

Q14) A 10 years old boy is brought to pediatrician with complaints of weakness, fever, malaise and passing of low quantity of brownish urine. The urine microscopic examination was positive for RBC casts. Mother gives history of child having a severe attack of sore throat 2-3 weeks back.

- (a) If throat swab of the child was cultured at the time of active throat infection, which organism would have been isolated? (1) 3
- (b) Give an account of the toxins and enzymes produced by these bacteria. (4)

Q15) Enumerate various methods of sterilization, giving examples of each. (5) 2