

UNIVERSITI SAINS MALAYSIA

PROGRAM SARJANA FARMASI
SEMESTER II 1994/95

APRIL 1995

FCP 557: FARMAKOTERAPEUTIK V

(2 HOURS)

This examination consists of two sections.

Section A consists of 50 multiple choice questions.

Section B consists of two(2) long questions.

Answer ALL question.

Answers to section A must be entered into the scripts provided.

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Section A

Mark (/) the answers on the opposite space corresponding to a correct or most appropriate answer for each question. Each question has only one correct or most appropriate answer or statement.

Q1. Which of the following laboratory tests aid the diagnosis of pernicious anemia ?

- I. Complete blood cell count .
- II. Serum cobalamine level.
- III. Serum unconjugated bilirubin level.
- IV. Hemoglobin electrophoresis.

- A. I and II only.
- B. I and III only.
- C. II and III only.
- D. II, III and IV only.

Q2. Which of the following conditions is associated with a normal Schilling Test in a patient with a low serum cobalamine level ?

- A. Blind loop syndrome.
- B. Early pernicious anemia.
- C. Food-bound cobalamin malabsorption.
- D. Celiac sprue.

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Q3. Which of the following is statements regarding neurologic abnormalities in a patient with pernicious anemia is true?

- A. They seldom respond to treatment.
- B. They may be seen in the absence of anemia or macrocytosis.
- C. They parallel the progression of symptoms of anemia.
- D. They could be treated with 1 mg folic acid daily.

Q4. Which of the following is not a compensatory mechanism for the decrease in oxygen transport associated with anemia?

- A. An increase in cardiac output.
- B. An increase in hemoglobin-oxygen affinity.
- C. An increase in oxygen extraction.
- D. A decrease in circulation time.

Q5. Which of the following routes is recommended for the administration of deferoxamine in the treatment of iron overload?

- A. Subcutaneous infusion.
- B. Intramuscular injection.
- C. Intravenous infusion.
- D. Oral administration.

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Q6. Which of the following is usually associated with sideroblastic anemia?

- A. Methyldopa.
- B. Iron deficiency.
- C. Chronic renal failure.
- D. Alcohol.

Q7. Which of the following is/are the mechanisms of action of erythropoietin?

- I. It stimulates stem cell differentiation.
 - II. It increases mitosis rate of stem cells.
 - III. It induces hemoglobin synthesis.
 - IV. It increases the release of reticulocytes from bone marrow
-
- A. I and II only.
 - B. II and III only.
 - C. I, II and III only.
 - D. I, II, III and IV .

Q8. Which of the following parameters would be elevated in β -thalasemia but not in sideroblastic anemia?

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- A. Transferin saturation.
- B. Mean corpuscular hemoglobin concentration (MCHC).
- C. Serum ferritin.
- D. Hemoglobin A₂.

Q9. Which of the following antineoplastic agents has the highest potential to cause emesis?

- A. Bleomycin.
- B. Bulsulfan.
- C. Chlorambucil.
- D. Carmustine.

Q10. Which of the following statements regarding ondansetron is true?

- A. It has an inferior antiemetic activity compared to metoclopramide (as a single agent).
- B. It is classified as an anticholinergic.
- C. Its serious side effects include headache, sedation and transient elevations of liver enzymes.
- D. It needs to be combined with lorazepam to be effective as antiemetic.

Q11. Which of the following statements regarding the treatment of chemotherapy-associated vomiting is true?

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- A. Combination of metoclopramide, dexamethasone and diphenhydramine has equal effectiveness as metoclopramide alone in treating severe emesis.
- B. The combination of dexamethasone and metoclopramide produces excessive sedation.
- C. Patients receiving antiemetic combinations, containing lorazepam are less anxious.
- D. Combination of antiemetics, containing dexamethasone is not recommended in an elderly patient.

Q12. Which of the following drug impairs the absorption of warfarin?

- A. Cholestyramine.
- B. Aspirin.
- C. Vitamin K.
- D. Ampicillin.

Q13. Which of the following statements regarding the treatment of pulmonary embolism is true?

- A. Heparin gives the best result in a patient who is less than 40 years old.
- B. Oral heparin is recommended for out-patient treatment.
- C. Warfarin therapy should be started prior to heparin therapy in a patient who has only mild symptoms.
- D. Patients receiving heparin therapy are at risk of developing thrombocytopenia.

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Q14. Which of the following pathogens frequently causes infections in neutropenic cancer patients?

- A. Gram negative bacilli.
- B. Pneumococcus.
- C. Anaerobes.
- D. *Pneumocystic carinii*.

Q15. Which of the following statements regarding initial empiric antibiotics use in an immunocompromized patient is appropriate?

- A. Duration of treatment in children should be less than a week.
- B. A common combination consists of an aminoglycoside and amphotericin B.
- C. Antibiotics should be started if a patient has a fever and a platelet count of less than $500/\text{mm}^3$.
- D. Antibiotic combinations should be based on sensitivity patterns and synergism.

Q16. Which of the following statements regarding breast cancer is not true?

- A. It is a common disease in female.
- B. Its cause is still unknown.
- C. It affects middle aged female.
- D. It has no genetic influence.

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Q17. Which of the following is not true regarding carcinoma of the breast?

- A. It usually arises from duct epithelium.
- B. It spreads via the lymphatic system.
- C. It never occurs in male.
- D. It spreads to the spine via the blood stream.

Q18. Which of the following drugs is not indicated for breast cancer treatment?

- A. Cyclophosphamide.
- B. Flutamide.
- C. Tamoxifen.
- D. Methotrexate.

Q19. Which of the following statements regarding prostate carcinoma is true?

- A. It is a disease of young male.
- B. It is usually associated with raised serum acid phosphatase.
- C. If obstruction occurs, it is treated by TURP (Transurethral Prostatic Resection).
- D. It causes urinary incontinence.

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Q20. Which of the following is not a treatment for benign prostate enlargement?

- A. Transurethral Prostatic Resection (TURP).
- B. Flutamide.
- C. Prazosin.
- D. Finasteride.

Q21. Which of the following may raise the suspicion for a prostate cancer?

- A. Presence of blood in the urine microscopic examination.
- B. Elevation of PSA (prostatic specific antigen).
- C. Presence of stone in the urinary bladder contains stone.
- D. Ultrasound of the bladder shows homogeneously enlarged prostate.

Q22. Which of the following statements regarding treatment of lung cancer is/are true?

- I. Surgery is the treatment of choice for localized non-small cell cancer.
- II. Small cell carcinoma is highly sensitive to chemotherapy.
- III. Radiotherapy should be used in a patient with superior vena cava obstruction.
- IV. Five year survival of 10% is expected in patients with small cell cancer.

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- A. I and II only.
- B. I, II and III only.
- C. I, II and III only.
- D. I, II, III and IV.

Q23 Which of the following statements is/are true ?

- I. The most common histological type of lung cancer is small cell cancer.
- II. Squamous cell lung cancer is often widely disseminated before the symptoms appear.
- III. Adenocarcinoma lung cancer has the worst prognosis.
- IV. Exposure to asbestos increases the risk for lung cancer.

- A. I and II only.
- B. I, II and III only.
- C. IV only.
- D. I, II, III and IV.

Q24. Which of the following statements is/are true regarding lung cancer ?

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- I. Chest pain is the commonest symptom.
- II. Esophagitis is a complication of radiotherapy.
- III. Single agent chemotherapy is the treatment of choice in small cell carcinoma.
- IV. Syndrome of inappropriate secretion of antidiuretic hormone is a known complication.

- A. I and II only.
- B. I, and III only.
- C. II and IV only.
- D. IV only.

Q25. Which of the following statements is/are true?

- I. Myeloma is derived from the monoclonal proliferation of T-cells.
- II. Waldensnom's macroglobulinemia is a benign disease.
- III. The excess immunoglobulin produced in myeloma helps to combat infection better.
- IV. Chronic liver disease causes polyclonal increase in immunoglobulin.

- A. I and II only.
- B. I, II and III only.
- C. II and IV only.
- D. IV only.

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Q26. Which of the following is/are feature(s) of multiple myeloma ?

- I. It causes the collapse of vertebrae and spontaneous fractures.
- II. It causes nephrocalcinosis.
- III. It causes hypocalcemia.
- IV. It affects mainly young patients.

- A. I and II only.
- B. I, II and III only.
- C. II and IV only.
- D. IV only.

Q27. Which of the following combination of features is/are diagnostic of multiple myeloma ?.

- I. Osteolytic bony lesions.
- II. Bone marrow showing more than 15% plasma cell.
- III. Positive monoclonal band in serum electrophoresis.
- IV. High ESR of more than 100mm/hr.

- A. I and II only.
- B. I, II and III only.
- C. II and IV only.
- D. IV only.

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Q28. Which of the following statements regarding lymphoma is/are true?

- I. It is the commonest malignancy in female.
- II. It is more common in male than female.
- III. It causes swelling of the lymph nodes but not the spleen.
- IV. It has a peak incidence in young adults and elderly.

- A. I and II only.
- B. I, II and III only.
- C. II and IV only.
- D. IV only.

Q29. Which of the following statements about Hodgkin's lymphoma is/are true ?.

- I. Four basic types are recognized.
- II. Enlargement of the nodes commonly occur in the back and the axillae.
- III. Its constitutional symptoms make the prognosis worse.
- IV. High ESR is one of the bad prognostic indicators.

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- A. I and II only.
- B. I, II and III only.
- C. II and IV only.
- D. IV only.

Q30. Which of the following statements is/are true?

- I. Hodgkin disease has a better prognosis than Non-Hodgkin lymphoma.
 - II. AIHA (Auto immune hemolytic anemia) is more common in Non-Hodgkin lymphoma than Hodgkin disease.
 - III. Non-Hodgkin disease frequently involves extranodal lymphoid tissue.
 - IV. Non-Hodgkin disease is common before the age of 40.
-
- A. I and II only.
 - B. I, II and III only.
 - C. II and IV only.
 - D. IV only.

Q31. Which of the following premedications is/are used with cis-platinum therapy?

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- I. Antiemetic.
- II. Prehydration.
- III. Antihistamine.
- IV. Steroid.

- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q32. Which of the following is/are characteristic(s) of drugs used in combination chemotherapy ?

- I. Each drug should possess activity against the tumor.
- II. The drugs should not have similar mechanism of action.
- III. Major dose-limiting toxicity of each drug should be different.
- IV. The drugs should not have similar metabolic pathways.

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- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q33. Which of the following is a specific adverse drug reaction of cyclophosphamide?

- A. Pulmonary fibrosis.
- B. Nephrotoxicity.
- C. Hepatotoxicity.
- D. Haemorrhagic cystitis

Q34. Which of the following steps should be taken to prevent the development of fever in a patient receiving bleomycine and cytosine arabinoside?

- I. Administer each drug separately at interval of 12 hours apart.
- II. Premedicate patient with steroid.
- III. Add metoclopramide to the cytosine arabinoside.
- IV. Add metoclopramide and antihistamine to both bleomycine and cytosine arabinoside.

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- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q35. Which of the following are the main reasons for cyclic chemotherapy?

- I. To reduce the risk of adverse drug reactions.
- II. To allow regrowing of the cancer cells so that it will be more sensitive to chemotherapy.
- III. To allow adequate recovery time for the host tissue.
- IV. To prevent the development of resistance.

- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q36. Which of the following group of chemotherapeutic agents is not cyclic chemotherapy important?

- A. Hormonal agents
- B. Cell-cycle non-phase specific agents.
- C. Phase-specific agents.
- D. Non cell-cycle specific agents.

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Q37. Which of the following is/are useful in the prevention of haemorrhagic cystitis?

- I. Administration of Mesna.
- II. Adequate hydration.
- III. Alkalinization of the urine.
- IV. Ice pack plus sodium thiosulphate 1N

- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q38. Which of the following anticancer drugs is/are cardiotoxic ?

- I. Doxorubicin.
- II. Epirubicin.
- III. Cytosine arabinose.
- IV. 6- Mercaptopurine.

- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

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Q39. Which of the following anticancer drugs vesicants?

- I. Doxorubicin.
 - II. Vincristine.
 - III. Mitramycin.
 - IV. Vinblastine.
-
- A. I and II only.
 - B. I, II and III only.
 - C. I, II, III and IV.
 - D. II and IV only.

Q40. Which of the following statements regarding the administration of cytotoxic drugs are true ?

- I. All IV cytotoxic drugs should be administered as a bolus injection.
- II. Only a single puncture should be used to insert the catheter.
- III. The drugs should not be administered using the piggybag system.
- IV. Frequent withdrawal of small quantities of blood into the syringe during administration should be done.

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- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q41. Which of the following drugs is most frequently associated with pulmonary fibrosis?

- A. Cytosine arabinose.
- B. Asparaginase.
- C. Bleomycin.
- D. Busulphan.

Q42. Which of the following anticancer drugs is associated with a delayed nadir?

- A. Mitomycin C.
- B. Procarbazine.
- C. Vinblastin.
- D. Methotrexate.

Q43. Which of the following statements regarding cancer of the colon are true?

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- I. It may be associated with polyposis of the colon.
- II. It is rarely diagnosed in the early thirties.
- III. It is common in western societies.
- IV. It is believed to be due to high protein and fat intake.

- A. I and II only.
- B. I, II and III only.
- C. I, II, III and IV.
- D. II and IV only.

Q44. Which of the following is/are true regarding the use of folinic acid and fluorouracil in colon cancer?

- I. Folinic acid acts by stabilising ternary complex of FdUMP.
- II. Folinic acid prolongs the inhibition of dTMP-synthase.
- III. Folinic acid reduces the adverse effect of fluorouracil.
- IV. Folinic acid strongly binds to the receptor and prevents fluorouracil metabolism.

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- A. I and II only.
- B. I, II and III only.
- C. I,II, III and IV.
- D. II and IV only.

Q45. Which of the following is not used in the management of thalassemia major?

- A. Folic acid.
- B. Iron.
- C. Splenectomy.
- D. Blood transfusion.

Q46. Which of the following statements about iron absorption is/are true?

- I. Iron absorbed in the diet serves to replenish daily iron losses.
- II. Dietary iron content is not linked to caloric intake.
- III. Heme iron is absorbed more efficiently than non-heme iron.
- IV. It occurs by passive diffusion in the small intestine.

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- A. (i) and (iii) only.
- B. (ii) and (iv) only.
- C. (i), (ii) and (iii) only.
- D. (iv) only.

Q47. Which of the following statements are true regarding normal hemopoiesis?

- I. All the cells in circulation are derived from pluripotent stem cells.
 - II. Megakaryocytes are platelet precursors.
 - III. The bone marrow is the main site of hemopoiesis in utero.
 - IV. The development of myelocytes to mature polymorphs takes one month.
- A. I and II only.
 - B. I II and III only.
 - C. I, II, III and IV.
 - D. II and IV only.

Q48. Which of the following statements regarding hemolytic anemia is true?

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- A. There is a shortened red blood cell survival but erythropoiesis is normal.
- B. There is a shortened red blood cell survival and ineffective erythropoiesis.
- C. There is a shortened red blood cell survival and decreased erythropoiesis.
- D. There is a shortened red blood cell survival and increased erythropoiesis.

Q49. Which of the following deficiency occurs with long term megadoses of folic acid?

- A. Magnesium.
- B. Zinc.
- C. Calcium.
- D. Phosphorus.

Q50. Which of the following statements are true concerning childhood leukemias?

- I. Acute lymphoblastic leukaemia (ALL) is the most common.
- II. Leukemia subtype is characterised by nuclear morphology.
- III. It is the most common cause of death in children less than 15 years.
- IV. The finding of common ALL antigen carries a poor prognosis.

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- A. I and II only.
- B. I II and III only.
- C. I, II, III and IV.
- D. II and IV only.

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Section B

Question 1

A. MT came to the hospital with the complain of progressive weakness and weight lost for the last 3 months.

Patient Biodata: Sex = male, Age = 50 years, weight = 65kg

Past medical history : Was involved in a motor vehicle accident a year ago and had undergone 80% resection of the small bowel.

Gastritis since two years ago.

Past medication history : Antacid prn X 2 years

Laboratory results :
Hgb = 9 gm%
Hct = 27%
Ferritin = 12ng/ml
Serum iron = 34ug/dl
TIBC = 418 ug/dl
Blood smear = microcytic and hypochromic red cells.

Diagnosis : Iron Deficiency Anemia.

Treatment : Ferrous fumarate 200mg t.d.s. X 2 months.

One month later MT, returned to the hospital complaining of severe epigastric pain. Laboratory studies revealed reticulocyte count of 0.5% and hemoglobin was still 9gm%. The doctor intended to start MT on parenteral iron.

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- I. Discuss the appropriateness of parenteral iron for MT
(4 Marks)
- II. Calculate the total dose of parenteral iron needed to restore MT's hemoglobin to normal and also to replenish his iron store.
(2 Marks)
- III. The doctor wanted to administer the entire dose calculated in (ii) as an infusion. Describe how this should be done and the precautions that should be taken.
(6 Marks)
- IV. Discuss how MT should be monitored and the response expected.
(4 Marks)
- B. SK, a 55 year old male admitted with gas gangrene of the right leg which was amputated. He was started on penicillin G 4,000,000 unit 4 hourly and gentamicin 120mg 8 hourly. His condition improved but on the 10th day the following were noted:
- hematocrit = 30% (4 days before = 41%)
reticulocyte count = 8%
indirect bilirubin = elevated
direct Coomb's test = positive
sign of bleeding = nil

I. Explain what is direct Coomb's test and discuss the significance of this test in SK.

(4 Marks)

II. The high dose penicillin was suspected to be the cause of SK's anemia, If so, explain the mechanism by which this could happen.

(5 Marks)

Question 2

S.C. is a 57 year-old man with an advanced and inoperable throat cancer. He has been receiving 60mg of morphine solution PO Q 3 hrs for pain. He has been relatively pain free for about a month, but he now returns to the clinic complaining of excessive morning sedation. Other patient's information obtained in clinic is as follows:-

Vital sign : B.P: 140/80 mm Hg; R.R: 20/minute, pulse: 80 beats/minutes

Other medical problem : Asthma which was well controlled with salbutamol inhaler.

Laboratory values : WBC: 5,000/mm³; Hgb: 13 gm/dl;
Na+: 135 mmol/L; Potassium: 3.8 mmol/L
Cl-: 98 mmol/L;
BUN: 10 mmol/L
ALT: 50 U/L
AST: 80 U/L

A. Discuss the etiology of cancer pain in a patient such as S.C.

(3 marks)

B. Why is morphine chosen instead of meperidine in the management of chronic pain.

(4 marks)

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- C. Discuss the desired therapeutic outcomes when morphine is used in treating S.C.'s cancer pain.

(6 marks)

- D. Discuss the possible adverse effects of morphine in a patient such as S.C.

(7 marks)

- E. Explain the therapeutic intervention that can be utilized to alleviate S.C.'s problem of excessive morning sedation.

(5 marks)