

Student name:.....

Part I: Multiple Choice Questions: Choose the best correct answer (30 Marks)

1. Which of the following best describes the effect of propylthiouracil on thyroid hormone production?

- (a) It blocks the release of thyrotropin-releasing hormone..
- (b) It inhibits uptake of iodide by thyroid cells.
- (c) It prevents the release of thyroid hormone from thyroglobulin.
- (d) It blocks iodination and coupling of tyrosines in thyroglobulin to form thyroid hormones.
- (e) It blocks the release of hormones from the thyroid gland.

2. Which of the following hormones is a non-peptide?

- (a) Adrenocorticotrophic hormone
- (b) Growth hormone.
- (c) Gdonatotropin-releasing hormone.
- (d) Thyroxine.
- (e) Corticotropin-releasing hormone.

Pharmacology III
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3. Which of the following agents is INCORRECTLY paired to a clinical use of the drug?

- (a) Desmopressin: treatment of diabetes insipidis.
- (b) Octeotide: treatment of diarrhea associated with vasoactive intestinal peptide tumors..
- (c) Oxytocin: induction of labor.
- (d) hcG: treatment of infertility in men and women.
- (e) Pegvisomant: treatment of short stature in men and women.

4. Young atheletes who abuse androgens should be made aware of side effects of these agents. Which one of the following is, however, not of concern?

- (a) Increased muscle tone..
- (b) Overly aggressive behavior.
- (c) Decreasaed spermatogenesis.
- (d) Stunted growth.
- (e) Anemia due to bone marrow failure.

5. A-70-year old woman is being treated with raloxifene for osteoporosis. There is an increased risk of her developing

- (a) Breast cancer.
- (b) Uterine cancer.

- (c) Vein thrombosis.
- (d) Atrophic vaginitis.
- (e) Hypercholesterolemia.

6. Estrogen replacement therapy in menopausal women

- (a) Restores bone loss accompanying osteoporosis.
- (b) May induce "hot flashes".
- (c) May cause atrophic vaginitis.
- (d) Is most effective if instituted at the first signs of menopause.
- (e) Requires high doses of estrogen than with oral contraceptive therapy.

7. Congenital adrenal hyperplasia can be effectively treated by

- (a) Administering an androgen antagonist.
- (b) Administering ketoconazole to decrease cortisol synthesis.
- (c) Administering a glucocorticoid.
- (d) Removing the adrenal gland surgically.
- (e) Administering adrenocorticotrophic hormone.

8. A child with severe asthma is being treated oral prednisone. Which of the following adverse effects is of particular concern?

- (a) Hypoglycemia.
- (b) Hirsutism.
- (c) Cushing syndrome.
- (d) Growth suppression.
- (e) Cataract formation.

9. All of the following adverse effects commonly occur with glucocorticoid therapy EXCEPT

- (a) Osteoporosis.
- (b) Increased risk of infection.
- (c) Emotional disturbances.
- (d) Hypotension
- (e) Peripheral edema.

10. Which one of the following statements about antiandrogens is FALSE?

- (a) Estrogens can reduce circulating levels of free androgens.
- (b) Exposure of a pregnant woman to finasteride can cause feminization of the external genitalia of her male fetus.
- (c) Flutamide is androgen receptor antagonist.
- (d) Leuprolide indirectly inhibits endogenous androgen synthesis.
- (e) Oxandrolone selectively blocks androgen receptors in bone tissue.

11. Which one of the following statements about hormone replacement therapy regimens in menopause is ACCURATE?

- (a) It has been shown in clinical trials to reduce migraine attacks.
- (b) It includes steroids that induce cytochrome P450.
- (c) It should be avoided in women with a history of diabetes.
- (d) It commonly includes a progestin to reduce the risk of endometrial cancer.

(e) It uses the same effective doses of steroids as those in combined oral contraceptives.

12. The unique property of SERMs is that they

- (a) Activate a unique plasma membrane-bound receptor.
- (b) Have both estrogenic and progestenic agonist activity.
- (c) Inhibits the aromatase system that is required for estrogen synthesis.
- (d) Produce estrogenic effects without binding to estrogen receptors.
- (e) Undergo enterohepatic cycling and excreted primarily through the bile into feces.

13. Which of the following statements concerning adverse effects of antipsychotic drugs is ACCURATE?

- (a) The late-occurring tardive dyskinesia caused by conventional antipsychotic drugs are reduced by antimuscarinic drugs.
- (b) Motor restlessness in patient taking antipsychotic drugs is usually alleviated by increasing the drug dose.
- (c) Retinal pigmentation is a dose-dependent toxic effect of clozapine.
- (d) Acute dystonic reactions occur very frequently with olanzapine.
- (e) Blurring of vision and urinary retention are common side effects of haloperidol.

14. Which one of the following statements about second-generation antipsychotics is ACCURATE?

- (a) Clozapine has high affinity for D₁, D₄, 5-HT₂, muscarinic, α-adrenergic receptors as well as weak dopamine D₂-receptor antagonist.
- (b) Risperidone and olanzapine block 5-HT_{2A} receptors than D₂ receptors.
- (c) Quetiapine blocks 5-HT_{2A} receptors more potent than D₂ receptors.
- (d) Aripiprazole is a partial agonist at D₂ and 5-HT_{1A}, but antagonist at 5-HT_{2A} receptor.
- (e) All of the above are correct statements.

15. Fluphenazine has been prescribed for a 20-year-old male patient. His schizophrenic symptoms have improved enough for him to live in a house in the community. He visits his physician with a list of complaints about his medication. Which one of the following is NOT LIKELY to be on his list?

- (a) Constipation.
- (b) Dizziness if he stands up very quickly.
- (c) He salivates excessively.
- (d) He has become disinterested in sex.
- (e) Newspaper print is hard to see.

16. Which of the following statements about tardive dyskinesias is most ACCURATE?

- (a) Their severity can be reduced by muscarinic receptor blocking drugs.
- (b) They occur during the first few weeks of treatment with antipsychotic drugs.
- (c) Clozapine is likely to exacerbate the symptoms.
- (d) They are parkinsonism-like movement disorders.
- (e) Symptoms may be temporarily alleviated by raising antipsychotic drug dosage.

17. A 24-year-old schizophrenic man has been treated for several years with haloperidol but, since parkinsonism-like effects are worsening, the drug is discontinued and treatment is started with olanzapine. Which one of the following statements about the new medication is FALSE?

- (a) Its antipsychotic effects may take several weeks to develop.
- (b) It alleviates some of the negative symptoms of schizophrenia.
- (c) It has a greater affinity for serotonin receptors than for dopamine receptors in the CNS.
- (d) It has less effect on pituitary function than haloperidol.
- (e) It causes agranulocytosis.

18. A 24-year-old man with a history of partial seizures has been treated with standard anticonvulsants for several years. He is currently taking valproic acid which is not fully effective and his neurologist prescribes a new drug approved for use in partial seizures. Unfortunately, the patient develops a toxic rash. The new drug prescribed was

- (a) Gabapentin.
- (b) Vigabatrin
- (c) Lamotrigine.
- (d) Ethosuximide.
- (e) Felbamate.

19. A young woman suffering from myoclonic seizures was receiving effective single-drug therapy with valproic acid. Since she was planning pregnancy, her physician switched her to an alternative medication with less potential for teratogenicity. Which one of the following drugs is effective in myoclonic seizures but often makes the patient extremely drowsy at the dose level required for effective seizure control?

- (a) Carbamazepine.
- (b) Ethosuximide.
- (c) Lamotrigine.
- (d) Clonazepam.
- (e) Topiramate.

20. Which one of the following statements about adverse effects of antiepileptic drugs is FALSE?

- (a) Carbamazepine causes hyponatremia in some patients, which could indicate a need for change of therapy.
- (b) Phenytoin causes nystagmus and ataxia.
- (c) Pregabalin can cause drowsiness, blurred vision, weight gain and peripheral edema.
- (d) Topiramate causes renal stones, glaucoma, oligohidrosis, and hyperthermia.
- (e) Ethosuximide causes aplastic anemia and hepatic failure.

21. Which one of the following statements about therapeutic uses of antiepileptic drugs is FALSE?

- (a) Carbamazepine is effective for treatment of partial seizures and, secondarily, generalized tonic-clonic seizures.
- (b) Diazepam is most often used as an adjunctive therapy for myoclonic as well as for partial and generalized tonic-clonic seizure.
- (c) Pregabalin has proven effects on partial onset seizures.
- (d) Topiramate is effective and approved for use in partial and primary generalized epilepsy.
- (e) Felbamate is effective in treating only primary generalized absence seizures.

22. Which one of the following statements about antiepileptic drugs is FALSE?

- (a) Use of ethosuximide is limited because of its very narrow spectrum of activity.
- (b) Felbamate is reserved for use in Lennox-Gastaut syndrome.
- (c) Gabapentin exhibit nonlinear pharmacokinetics due to its uptake by a saturable transport system from the gut.
- (d) Phenobarbital should be used primarily in the treatment of status epilepticus.
- (e) Fosphenytoin should never be given IM because it can cause tissue damage and necrosis.

23. Which one of the following actions of opioid analgesics is mediated via activation of kappa (K) receptors?

- (a) Cerebral vascular dilation.
- (b) Decreased uterine tone.
- (c) Euphoria.
- (d) Physical dependence.
- (e) sedation.

24. A patient (weight 50 kg) with moderate pain was given a high dose (60 mg) of pentazocine intramuscularly at 10 AM. At 10:15 AM, the pain intensified and continued to get worse. At 10:30 AM, 10 mg of morphine was given intramuscularly. Unfortunately, the addition of morphine provided very little additional analgesia for a further period of 90 minutes. The most accepted explanation of this drug interaction is that pentozocine is

- (a) An agonist at kappa receptors.
- (b) An inhibitor of bioactivation of morphine.
- (c) An inducer of hepatic cytochrome P450.
- (d) An antagonist at mu and delta receptors.
- (e) Interfering with the systemic absorption of morphine.

Items 25-26: A heroin addict comes to the emergency room in an anxious and agitated state. He complains of chills, muscle aches, diarrhea and vomiting. His symptoms include hyperventilation and hyperthermia. He claims to have an intravenous injection of heroin approximately 12 hours ago. The attending physician notes that pupil size is greater than normal.

25. What is the most likely cause of these signs and symptoms

- (a) The patient has overdosed with heroin.
- (b) In addition to heroin, the patient has been taking paracetamol.
- (c) The patient has hepatitis B.
- (d) The signs and symptoms are those of the abstinence syndrome.

26. Which one of the following will be most effective in alleviating the symptoms experienced by this patient?

- (a) Dextromethorphan.
- (b) Codeine.
- (c) Naltrexone.
- (d) Diazepam.
- (e) Buprenorphine.

27. Which one of the following statements about opioids is FALSE?

- (a) Butorphanol plays a limited role in treatment of chronic pain.
- (b) The oral analgesic effect of oxycodone is approximately twice that of morphine.
- (c) Oral hydromorphone is approximately eight to ten times more potent than oral morphine as an analgesic and is used to treat severe pain.
- (d) Hydrocodone is often combined with acetaminophen or ibuprofen to treat moderate to severe pain.
- (e) Sufentanil is less potent than fentanyl.

28. Which one of the following statements about progestins is ACCURATE?

- (a) Progesterone is rapidly absorbed following oral administration.
- (b) In the liver, progesterone is metabolized to pregnanediol and conjugated with glucuronic acid.
- (c) Significant amounts of progestins and their metabolites are excreted in the urine.
- (d) Oral medroxyprogesterone acetate has a half-life of 30 days.
- (e) All of the above.

29. Which one of the following statements about Mifepristone is FALSE?

- (a) It is a progesterone antagonist with partial agonist activity.
- (b) It is devoid of antiglucocorticoid activity.
- (c) When administered to females early in pregnancy results in abortion of the fetus.
- (d) It is often combined with misoprostol.
- (e) All of the above.

30. Which one of the following statements about glucocorticoids is ACCURATE?

- (a) Cortisol is synthesized from cholesterol.
- (b) ACTH governs cortisol secretion.
- (c) The half-life of adrenal steroids may increase dramatically in individuals with hepatic dysfunction.
- (d) Glucocorticoids serve as a feedback inhibitors of ACTH and CRH.
- (e) All of the above.

Part II: Answer the following Questions: (40 Marks)/2= 20 Marks

Question 1: Explain the following statements:

1. Although the half-life of methadone ranges from 12-24 hours, it provides analgesia of duration of 4-8 hours?

2. Methadone has less neurotoxic effects than what is seen with morphine?

3. Although meperidine has analgesic effect, it is not recommended for long-term use as analgesic.

4. In most non-prescription cough preparations, codeine has been replaced by dextromethorphan.

5. Although second-generation antipsychotic drugs offer the advantage of having lower extrapyramidal symptoms than the first-generation ones, patient non-compliance to the second-generation antipsychotics have been reported.

6. Extrapyramidal symptoms are observed more commonly with haloperidol than with thioridazine.

Question 2: Answer the following:

1. Give the advantages of buprenorphine over methadone when used in opiate detoxification?

2. Comment on the use of anticholinergic drugs in treating extrapyramidal symptoms of antipsychotic drugs?

3. As a pharmacist, what advice and precautions would you provide a patient using carbamazepine?

4. Give the differences between hMG, hCG? What is the role of each in the treatment of infertility in women?

5. Explain the regulation of secretion of thyroid hormones?

6. Comment on the use of estrogens in men and women with liver dysfunction?

7. In what circumstances clomiphene is not effective in the treatment of infertility in women?

Goodluck!!!

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