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OPHTHALMIC BASIC SCIENCE EXAMINATIONS Clinical Ophthalmic Pharmacology & Emergency Medicine 16 March 2010

Duration of Paper:	1.5hours	Total Marks: 90
Total No. of questions:	41	

- ◆ Candidates must attempt all questions
- ◆ Write your answers in the answer pad using CLEAR and LEGIBLE writing, use diagrams and point form where appropriate
- ◆ Start a new page for each question, do not write on the reverse of any answer page. Make sure to put your candidate number on each page
- ◆ If you cross out an area of your own writing, it will not be considered by the examiners

Question 1

For a drug to be effective it must reach its site of action in sufficient concentration. Name four factors that may affect the concentration of a drug at its site of action in the body. (4 marks)

Question 2

What is the role of surfactants in eye drops? (2 marks)

Question 3

Many eye medications are alkaloids. Explain what benefit this confers and name one of these eye drops. (3 marks)

Question 4

What is the *residence time* of an eye drop? (1 mark)

Question 5

There are two recently developed preservatives that are used in eye drops and have a minimally toxic effect on the cornea. Name these substances and their breakdown products. (4 marks)

Question 6

You are called to a patient in the waiting room who is a known epileptic and has been seizing for 30 minutes. Outline your management. (4 marks)

Question 7

Explain the difference between antibiotics that are bacteriocidal and bacteriostatic and name an example of each. (3 marks)

Question 8

Name two topical collagenase inhibitors which may be used in treating corneal melt. (2 marks)

Question 9

Propamidine eye drops are commonly sold "over the counter". For which ophthalmic conditions are they indicated? (2 marks)

Question 10

Cyclosporine eye drops can be used to treat severe dry eye. What is its proposed mechanism of action in this condition? (2 marks)

Question 11

Taking oral acetazolamide and salicylates concurrently can cause toxicity to the body by both drugs. Explain the mechanisms by which this may occur. (2 marks)

Question 12

List 3 potential long term ocular side effects of topical pilocarpine. (3 marks)

Question 13

In what ocular conditions would the use of prostaglandin analogues be relatively contraindicated and why? (3 marks)

Question 14

Which glaucoma drug is the most safe to use in pregnancy? (1 mark)

Question 15

You have decided to give oral glycerine 50% to a patient with acute angle closure crisis. The weight of the patient is 80kg and you want to give a loading dose of 2g/kg. What amount will you administer? (answer in mL) (1 mark)

Question 16

Why would you not give oral glycerine to a person with diabetes? (2 marks)

Question 17

Name the contraindications for topical beta-blocker use. (2 marks)

Question 18

a) What is the mechanism of action of methotrexate, used to treat various types of uveitis? (2 marks)

b) Why is it given once weekly? (1 mark)

c) How long does it take to reach full effect? (1 mark)
(TOT: 4 marks)

Question 19

a) "Biologics" or biologic response modifiers are being increasingly used in the treatment of uveitis. What are "biologics"? (2 marks)

b) Give one example and its mechanism of action. (2 marks)
(TOT: 4 marks)

Question 20

Why does topically administered fluorometholone cause less IOP elevation and penetrate aqueous humor less than prednisolone or dexamethasone? (1 mark)

Question 21

What approximate proportion of the general population develops elevated IOP when treated with topical ophthalmic steroids? (1 mark)

Question 22

List these topical corticosteroid drugs in order of potency (most to least): dexamethasone, fluorometholone, prednisolone. (1 mark)

Question 23

What are the side effects of topical nonsteroidal anti-inflammatory drugs? (3 marks)

Question 24

A child requires treatment for toxoplasma chorioretinitis. What possible treatments would you consider prescribing? (4 marks)

Question 25

What feature of foscarnet makes it more useful than ganciclovir in treating HIV patients with CMV retinitis already on zidovudine therapy? (1 mark)

Question 26

What is foscarnet's main dose-limiting side effect? (1 mark)

Question 27

How do topical anaesthetics result in increased corneal permeability to subsequently administered agents e.g. dilating drops? (1 mark)

Question 28

a) Which local anaesthetic is used for intracameral anaesthesia? (1 mark)

b) What specific formulation characteristic is required? (1 mark)

(TOT: 2 marks)

Question 29

a) Why are topical local anaesthetics not suitable for long-term use? (1 mark)

b) What effects may occur if inadvertent long-term use occurs? (1 mark)

(TOT: 2 marks)

Question 30

What is the maximum safe dose of 2% lignocaine for local injection in an adult of average weight and why? (2 marks)

Question 31

What is the duration of action of infiltrated 1% lignocaine with and without adrenaline? (1 mark)

Question 32

What is the mechanism of action of lignocaine when it is used as a local anaesthetic? (1 mark)

Question 33

a) What are the differences between a cohesive and a dispersive viscoelastic substance? (2 marks)

b) Why is this useful? (1 mark)

c) Name an example of each type. (1 mark)

(TOT: 4 marks)

Question 34

Why is indocyanine green better than fluorescein in imaging the choroidal circulation? (2 marks)

Question 35

How is indocyanine green metabolised and excreted? (2 marks)

Question 36

List three relative contraindications to indocyanine green angiography. (3 marks)

Question 37

What is the mechanism action of topical atropine and how does this result in pupillary dilatation? (2 marks)

Question 38

What cumulative dose of tamoxifen is usually required to cause retinopathy? (1 mark)

Question 39

List 4 ocular adverse effects of ethambutol treatment of tuberculosis. (4 marks)

Question 40

What is the main cause of reduced vision in patients treated with amiodarone? (1 mark)

Question 41

The ocular adverse effects of sildenafil and other PDE5 inhibitors are uncommon, dosage dependent and fully reversible except for possibly one. Which patients should not take PDE5 inhibitors? (1 mark)

END OF PAPER