

MCQs FOR ENT

Preparation for the FRCS (ORL-HNS)

Second Edition

Edited by

Stuart Winter | Declan Costello

otology

rhinology

ENT

basic science

head and neck

endocrinology

facial plastics

thyroid

paediatrics

FRCS

otolaryngology

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PREFACE

This book is intended as a revision aid for candidates preparing for the multiple choice question (MCQ) papers of the FRCS (ORL-HNS) examination. The style and format of the questions in the book mirrors the format of the examination questions, and covers all of the relevant topics.

The book is divided into two main sections: Single Best Answers and Extended Matching Questions.

Answers and explanatory notes are provided, along with links to relevant websites and key journal articles. In common with the examination, the book features illustrations and diagrams.

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ABBREVIATIONS

CO ₂	carbon dioxide
ENT	ear, nose, and throat
ABR	auditory brainstem response
ACE	angiotensin-converting enzyme
ADC	apparent diffusion coefficient
AHI	apnoea–hypopnea index
AJCC	American Joint Committee on Cancer
BAHA	bone-anchored hearing aid
BCC	basal cell carcinoma
BMI	body mass index
BPPV	benign paroxysmal positional vertigo
cANCA	cytoplasmic antineutrophil cytoplasmic antibody
CER	cortical evoked response
CNS	central nervous system
CRS	chronic rhinosinusitis
CSF	cerebrospinal fluid
CT	computed tomography
DVLA	Driver and Vehicle Licensing Agency
DWI	diffusion-weighted imaging
ECG	electrocardiogram
ECoG	electrocochleography
FNA	fine needle aspiration
FNAC	fine needle aspiration cytology
FRCS	Fellowship of the Royal Colleges of Surgeons
GnRH	gonadotropin-releasing hormone
GP	general practitioner
GPA	granulomatosis with polyangiitis
HPV	human papillomavirus
IAM	internal auditory meatus
IJV	internal jugular vein
KTP	potassium titanyl phosphate

MDT	multidisciplinary team
MEN	multiple endocrine neoplasia
MLB	microlaryngoscopy and bronchoscopy
MRI	magnetic resonance imaging
MTC	medullary thyroid carcinoma
NF	neurofibromatosis
NHSP	newborn hearing screening programme
NICE	National Institute for Health and Care Excellence
NICU	neonatal intensive care unit
OAE	otoacoustic emission
OPG	orthopantomogram
ROL-HNS	otorhinolaryngology-head and neck surgery
OSA	obstructive sleep apnoea
pANCA	perinuclear antineutrophil cytoplasmic antibody
PET	positron emission tomography
RCT	randomized controlled trial
RDI	respiratory distress index
SCC	squamous cell carcinoma
SDH	succinate dehydrogenase
SNHL	sensorineural hearing loss
TSH	thyroid-stimulating hormone
UK	United Kingdom
US	ultrasound <i>or</i> United States
UV	ultraviolet
VEMP	vestibular evoked myogenic potential

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Section 1

SINGLE BEST ANSWERS

1. **Stimulation of which of the following nerves does not cause referred otalgia?**
 - A. Glossopharyngeal nerve
 - B. Descendens hypoglossi nerve
 - C. Vagus nerve
 - D. Lingual nerve
 - E. Buccal nerve
2. **Parasympathetic innervation to the submandibular gland is carried by the:**
 - A. Lesser petrosal nerve
 - B. Facial nerve
 - C. Glossopharyngeal nerve
 - D. Jacobsen's nerve
 - E. Greater superficial petrosal nerve
3. **Which of the following statements best describes the physiological regulation of saliva?**
 - A. Basal saliva production is predominantly from the parotid gland
 - B. Parasympathetic stimulation decreases salivary flow
 - C. The parotid gland contains largely mucinous cells
 - D. Saliva is produced in two stages and its ionic content is modified by the intercalated duct cells
 - E. Anticholinergic drugs increase the production of saliva
4. **Which of the following statements best describes the physiology of olfaction?**
 - A. The primary neuron cell body for the first cranial nerve is located in the olfactory bulb
 - B. Noxious stimuli from the posterior nasal cavity are detected by the glossopharyngeal nerve
 - C. The vomeronasal organ detects tactile sensation from passing odorants
 - D. Each olfactory receptor expresses only one G protein receptor
 - E. Olfactory receptor neurons do not regenerate

- 5. What is the single most common cause of an incorrect blood transfusion being administered?**
- A. Laboratory error
 - B. Error in blood donor centre
 - C. Minor antigen reaction
 - D. Clerical error by doctor
 - E. Failure in pre-transfusion bedside checking
- 6. Concerning the development of the ossicular chain, which statement best describes the first branchial arch derivatives?**
- A. The stapes develops from the first branchial arch
 - B. The malleus and incus develop from the first branchial arch
 - C. The head and neck of the malleus, and the body and short process of the incus develop from the first branchial arch
 - D. The manubrium of the malleus and the long process of the incus develop from the first branchial arch
 - E. The head of the malleus and the long process of the incus develop from the first branchial arch
- 7. Concerning the pharmacokinetics of local anaesthetics, which of the following statements is false?**
- A. Lidocaine acts to reversibly block sodium channels in the nerve fibre
 - B. Lidocaine acts to cause vasoconstriction when injected subcutaneously
 - C. Alcoholic cirrhosis can reduce the metabolism of bupivacaine
 - D. Local anaesthetics with a low pKa have a faster onset of action
 - E. 8.4% sodium bicarbonate added to 2% cocaine speeds up the onset of action
- 8. Which nerves pass through the superior orbital fissure?**
- A. II, III, IV, and VI
 - B. III, IV, V2, and VI
 - C. III, IV, V1, and VI
 - D. II, IV, V2, and VI
 - E. III, IV, V1, and V2
- 9. Which of the following muscles do not have an attachment to the mastoid process?**
- A. Digastric
 - B. Splenius capitis
 - C. Longissimus capitis
 - D. Temporalis
 - E. Anterior auricular

10. Concerning lasers in ENT, which if any of the following statements is false?

- A. The 'E' in the LASER acronym stands for 'emission'
- B. The carbon dioxide (CO₂) laser emits light in the far infrared spectrum and has a wave length of 10,600 nm
- C. The light generated by a laser is characterized by being monochromatic, collimated, and coherent
- D. The effects of the argon laser are due to heat generated locally
- E. The potassium titanyl phosphate (KTP) laser can be used in middle ear surgery and directed into small recesses by bending the laser light with a prism

11. Concerning the hyoid bone, which of the following statements is false?

- A. The lesser cornu of the hyoid is derived from the second branchial arch
- B. The hyoid bone is incompletely ossified at birth
- C. The hyoglossus and middle constrictor muscles attach to the greater cornu
- D. The intermediate tendon of the digastric muscle passes between the bifurcated tendon of the stylohyoid
- E. The geniohyoid muscle acts to depress the larynx during swallowing

12. Concerning immunoglobulins, which of the following statements is false?

- A. IgG crosses the placenta
- B. IgG forms the largest subclass of immunoglobulins
- C. Immunoglobulins are composed of heavy and light chains
- D. IgA is secreted into the saliva
- E. The antibody binding site is found on the heavy chain

13. Which of the following statements is true?

- A. *Clostridium* are Gram-negative anaerobes
- B. Some species of *Clostridium* produce an exotoxin that inhibits the sympathetic nervous system
- C. *Staphylococcus aureus* are Gram-positive cocci that are arranged in clusters
- D. Lancefield group C streptococci include *Streptococcus pyogenes*
- E. *Treponema pallidum* is a Gram-positive spirochaete bacterium

14. In designing a trial comparing primary surgery against primary chemoradiotherapy for head and neck cancer, which of the following statements concerning randomization is true?

- A. The number of patients in each arm will be the same
- B. The clinician can favour one treatment over another if the patient expresses choice
- C. The clinician will not be aware of which treatment the patient has received
- D. The patients in each arm should have similar prognostic factors
- E. Randomization ensures that there is no bias between the groups

- 15. A new screening test for a squamous cell carcinoma is developed. In total, 150 people were tested. Within the whole study, 50 patients were known to have the disease. When testing was started, 40 patients who tested positive had the disease, while ten patients who tested positive did not have the disease. Which of the following statements is correct?**
- A. The specificity of the test is 80%
 - B. The sensitivity of the test is 80%
 - C. The positive predictive value of the test is 90%
 - D. The negative predictive value of the test is 80%
 - E. The prevalence of squamous cell carcinoma in this study is 40%
- 16. Concerning the p-value, which of the following statements is true?**
- A. A p-value of 0.001 with a significance level set at 0.05 indicates that the null hypothesis is wrong
 - B. For a p-value to be significant it must be a value less than 0.05
 - C. A type I error is to reject the null hypothesis when it is true
 - D. A p-value of 0.0001 indicates a highly significant clinical finding
 - E. The null hypothesis should be rejected if the p-value is 0.1 when the significance level has been set at less than 0.05
- 17. Concerning statistical testing, which of the following statements is false?**
- A. Parametric tests make an assumption about the population distribution
 - B. Standard error of a population is calculated as the standard deviation divided by the square root of the population size
 - C. Specificity relates to the number of true positives in a test
 - D. A type 1 error is to reject the null hypothesis when it is true
 - E. A type 2 error is to accept the null hypothesis when it is false
- 18. A 73-year-old woman with a history of metastatic hypopharyngeal squamous cell carcinoma presents with lethargy, vomiting, hypotension, and tachycardia. A corrected serum calcium is found to be 3.14 mmol/L (2.12–2.62). Which of the following electrocardiogram (ECG) abnormalities is most likely to be found?**
- A. QRS interval shortening
 - B. QT interval prolongation
 - C. QT interval shortening
 - D. Peaked T waves
 - E. Poor R-wave progression

19. Which of the following statements concerning botulinum toxin is false?

- A. It is produced by *Clostridium botulinum*, a Gram-positive anaerobe
- B. Botulinum toxin acts at presynaptic cholinergic neuromuscular end plates by inhibiting the release of acetylcholine
- C. Strains of *Clostridium botulinum* produce different antigenic toxins
- D. Recovery after administration occurs as the botulinum toxin is degraded by the anticholinesterase enzyme
- E. Following repeated administration, antibodies may develop that bind to the botulinum toxin inactivating it

20. Trousseau and Chvostek signs are observed in hypocalcaemia and also:

- A. Hypokalaemia
- B. Hyperkalaemia
- C. Hypomagnesaemia
- D. Hypermagnesaemia
- E. Low zinc levels

21. Concerning anticancer clinical drug trials, which of the following statements is correct?

- A. Phase 1 clinical trials usually involve large numbers of patients to test for anticancer properties
- B. Phase 2 trials will aim to ascertain the response of the cancer to the treatment
- C. A Phase 3 trial testing a new cancer drug will assess its cost-effectiveness
- D. All cancer patients should be included in clinical trials
- E. Patient consent is not required for the inclusion of patients with advanced cancer into phase 1 trials only

22. Which of the following statements concerning DNA (deoxyribonucleic acid) is false?

- A. The base cytosine binds with guanine in DNA
- B. Large parts of the human DNA sequence do not code for proteins
- C. In DNA replication, DNA polymerase copies the DNA sequence in a 5' to 3' direction
- D. Each gene's DNA sequence codes for one protein
- E. RNA interference is a naturally occurring system that selectively silences individual genes

23. The optic canal is formed by which bones?

- A. Frontal bone
- B. Greater wing of the sphenoid
- C. Lesser wing of the sphenoid
- D. Temporal bone
- E. Ethmoid bone

24. Parathyroid hormone has all of the following effects except:

- A. Increases osteoclastic activity
- B. Increases absorption of calcium from the gastrointestinal tract
- C. Increases renal excretion of phosphate
- D. Increases renal absorption of calcium
- E. Reduces 1,25-hydroxyvitamin D₃

25. In the Gell and Coombs classification, how is allergic rhinitis classified?

- A. Type 1—immediate
- B. Type 2—antibody dependent
- C. Type 3—immune complex
- D. Type 4—cell mediated
- E. Type 5—seasonal

26. You are asked by the haematologists to perform a local anaesthetic biopsy of a cervical lymph node. The patient, a 45-year-old woman, has had a suspected relapse of her non-Hodgkin's lymphoma. Following her recent treatment, she is known to be thrombocytopenic. What is the LOWEST platelet count (in platelets $\times 10^9/L$) that you would consider it acceptable to proceed with the operation?

- A. 20
- B. 50
- C. 100
- D. 150
- E. 300

27. Which of the following statements can be considered false with regard to the prion protein and diseases caused by it?

- A. The prion protein is expressed normally in the human brain
- B. Prion diseases can be inherited, occur sporadically, or be infectious
- C. An example of a human prion disease is Gerstmann–Sträussler–Scheinker disease
- D. There is currently no effective treatment for prion diseases
- E. In the UK, several thousand deaths have been caused by new variant Creutzfeldt–Jakob disease (nvCJD) in the last decade

28. A patient with HIV is placed on the waiting list for a parotidectomy. You are keen to warn the operating department staff of his infection risk. When the operating list is printed, which of the following is generally acceptable to use to highlight his status?

- A. HIV positive
- B. High-risk
- C. AIDS
- D. Special
- E. None of the above—it is not ethical to highlight his status on a circulated list

29. Which answer best describes the content of the cavernous sinus?

- A. Internal carotid artery, oculomotor, trochlear, abducent, and ophthalmic and maxillary divisions of the trigeminal nerve
- B. Internal carotid artery, oculomotor, trochlear, abducent, and ophthalmic and mandibular divisions of the trigeminal nerve
- C. Internal carotid artery, superior ophthalmic vein, optic, abducent, and ophthalmic and maxillary divisions of the trigeminal nerve
- D. Common carotid artery, oculomotor, trochlear, abducent, and ophthalmic and maxillary divisions of the trigeminal nerve
- E. Superior ophthalmic vein, oculomotor, trochlear, abducent, and ophthalmic and maxillary divisions of the trigeminal nerve

30. In the UK, in 2017 under the current Department of Health rules, when a patient is referred with suspected cancer, what is the maximum number of days (from the date of referral by the general practitioner (GP)) that a patient may wait for their definitive treatment?

- A. 14 days
- B. 28 days
- C. 31 days
- D. 42 days
- E. 62 days

31. Which of the following is not a recognized side effect of carbimazole?

- A. Agranulocytosis
- B. Jaundice
- C. Alteration in sense of smell
- D. Rash
- E. Gastrointestinal symptoms

32. The junior doctor on your team receives a complaint alleging that he was rude to a patient's daughter. What is the correct course of action?

- A. The doctor should write a polite letter of apology
- B. You, as the doctor's senior and supervisor, should write an apology on his behalf
- C. Pass the letter to the lead clinician in your department
- D. Pass the letter to the hospital's complaints department
- E. Ask the nursing staff for a written statement about your conduct

33. Which of the following elements of blood clotting are inhibited by the administration of warfarin?

- A. Factors II, VII, IX, and X
- B. Factors IIa, IXa, Xa, and XIa
- C. Platelet aggregation
- D. Von Willebrand factor
- E. Factors II, VIII, and X

- 34. If a mother and a father are both carriers of an autosomal recessive gene, which of the following statements is true?**
- A. All of their children will have the disease
 - B. Half of their children will have the disease
 - C. One-quarter of the children will have the disease
 - D. All the males will have the disease
 - E. None of the children will have the disease
- 35. A 44-year-old man presents with a depressed left nasal bone following an alleged assault. He is noted to have reduced sensation to the nasal tip. Which nerve is likely to have been affected?**
- A. External nasal branch of the anterior ethmoidal nerve
 - B. Supratrochlear branch of the ophthalmic nerve
 - C. Infratrochlear branch of the ophthalmic nerve
 - D. Superior labial branch of the facial nerve
 - E. Infraorbital nerve
- 36. Which intrinsic laryngeal muscle is responsible for vocal cord opening?**
- A. Cricothyroid muscle
 - B. Posterior cricoarytenoid muscle
 - C. Lateral cricoarytenoid muscle
 - D. Thyroarytenoid muscle
 - E. Thyrohyoid muscle
- 37. A patient is taking warfarin for paroxysmal atrial fibrillation (PAF). Under what circumstances would it be reasonable to stop the warfarin and administer fresh frozen plasma (FFP) (or factor concentrate) and vitamin K?**
- A. Epistaxis controlled with anterior nasal packing
 - B. Epistaxis controlled only with posterior and anterior nasal packing
 - C. Elective admission for endoscopic sinus surgery
 - D. Pharyngoscopy for globus pharyngeus symptoms
 - E. Excision of a lipoma
- 38. A randomized controlled trial is conducted to evaluate a novel therapy. What level of evidence does this represent?**
- A. 1a
 - B. 1b
 - C. 2a
 - D. 2b
 - E. 3

39. The CO₂ laser is in which class?

- A. Class 1
- B. Class 1M
- C. Class 3B
- D. Class 4
- E. Class 2

40. New oral anticoagulants are increasingly used for treatment and thromboprophylaxis prevention. Rivaroxaban inhibits which of the following?

- A. Factor II
- B. Factor X
- C. Factor Xa
- D. Factor XI
- E. Factor Xia

41. A sickle cell crisis may be precipitated by which of the following conditions?

- A. Hypovolaemia
- B. Hypothermia
- C. Hypoxia
- D. Acidosis
- E. All of the above

42. In regard to *Clostridium* species, which of the following statements is false?

- A. *Clostridium tetani* produces a spastic paralysis
- B. *Clostridium botulinum* produces a spastic paralysis
- C. *Clostridium botulinum* is an obligate anaerobe
- D. In spasmodic dysphonia, type A toxin is injected into thyroarytenoid muscle
- E. *Clostridium botulinum* acts on the presynaptic nerve terminals preventing acetylcholine release

43. Regarding the cell cycle, which of the following statements is true?

- A. The cell cycle has five stages—G1, S, G2, M, and G0
- B. Alkylating agents work in all phases of the cell cycle by directly damaging DNA
- C. Antimetabolites work by interfering with DNA and RNA synthesis during the S phase
- D. Topoisomerase inhibitors are active through the S phase
- E. Mitotic inhibitors such as plant alkaloids prevent the S phase

44. Regarding surgical homeostasis, which of the following statements regarding surgical homeostasis is false?

- A. Monopolar electrocautery, the circuit is from the generator, to the active electrode through the target tissue back to the return pad which is placed on the patients
- B. Monopolar diathermy is unable to be used if a patient has a cochlear implant
- C. There are two electrodes in bipolar diathermy which forms a circuit with the return pad on the patients
- D. The harmonic scalp cuts and coagulates through high-frequency vibrations at 55,000 Hz
- E. Coblation is the process whereby bipolar energy and saline form stable plasma around the electrode

45. Which of the following statement concerning thyroid hormone synthesis is false?

- A. Thyroid peroxidase is produced within the thyroid gland and acts to oxidize iodine and facilitate the attachment of iodine to active tyrosine units in thyroglobulin
- B. Pendrin is a potassium–chloride symporter present in the follicular cells of the thyroid gland
- C. Thyroid-stimulating hormone (TSH) is produced by the anterior pituitary gland in response to thyroid-releasing hormone from the hypothalamus
- D. TSH causes reabsorption of thyroglobulin from the follicular space
- E. Thyroid hormones triiodothyronine (T3) and thyroxine (T4) are essential for normal development

46. Silver nitrate cautery: which of the following statements is false?

- A. Medical silver nitrate sticks are usually purchased in combination with potassium nitrate
- B. When the applicator is combined with water, nitric acid and potassium hydroxide are produced
- C. The silver hydroxide is insoluble and produces the brownish discolouration seen with nasal cautery
- D. Any spillage on to the upper lip/facial skin should be cleaned immediately with water
- E. Uses for silver nitrate cautery include nasal cautery for epistaxis and to remove granulations around tracheal stomas

47. Mechanism of action of antibiotics: which of these statement regarding antibiotics is false?

- A. Human cells do not have cell walls while bacterial cells contain cell walls hence can be targeted by certain antibiotics
- B. Quinolones interfere with cell wall synthesis
- C. Sulfonamides disrupt folic acid synthesis which is an important step in the process of DNA synthesis
- D. Clavulanic acid is a beta-lactamase inhibitor which may cause a rash when administered to patients with infectious mononucleosis
- E. Vancomycin inhibits cell wall synthesis