

Syllabus	PB_IK_06, PC_IK_12
Topic	Mitral valve surgery

**a)**  
List 2 causes of mitral regurgitation (MR) (2 marks)

1. ....
2. ....

**b)**  
Describe the murmur associated with MR (1 mark)

.....

**c)**  
What is the most common causative organism of infective endocarditis (IE)? (1 mark)

.....

**d)**  
State 2 major and 2 minor criteria (as per modified Duke criteria) that may point to a diagnosis of IE (4 marks)

	Major criteria	Minor criteria
<b>1)</b>	.....	.....
<b>2)</b>	.....	.....

**e)**  
A diagnosis of IE can be confirmed in the presence of what combination of Major and/or Minor criteria (1 mark)

.....

**f)**  
Name 2 situations that reduced the sensitivity of the modified Duke Criteria (2 marks)

1. ....
2. ....

**g)**

What are the intraoperative haemodynamic goals for anaesthetising a patient with mitral regurgitation and why? (6 marks)

	Goal	Reason
1)	..... .....	..... .....
2)	..... .....	..... .....
3)	..... .....	..... .....

**h)**

Give 3 reasons for the perioperative use of a transoesophageal ECHO for mitral valve surgery (3 marks)

1. ....
2. ....
3. ....

Syllabus	PB_IK_06, PC_IK_12
Topic	Mitral valve surgery

Q	Answer	Mark	Guidance
a)	<ul style="list-style-type: none"> <li>• Primary <ul style="list-style-type: none"> <li>○ Myxomatous (non-cancerous tumour or growth) degeneration of mitral valve</li> <li>○ Rheumatic disease</li> <li>○ Endocarditis</li> <li>○ Mitral valve prolapsed</li> </ul> </li> <li>• Secondary <ul style="list-style-type: none"> <li>○ Ischaemia affecting papillary muscles</li> <li>○ Left ventricular or dilated cardiomyopathy</li> </ul> </li> </ul>	Any 2	
b)	<ul style="list-style-type: none"> <li>• Pansystolic murmur at apex radiating to axilla</li> </ul>	1	
c)	<ul style="list-style-type: none"> <li>• Staph. Aureus</li> </ul>	1	
d)	<ul style="list-style-type: none"> <li>• Major: <ul style="list-style-type: none"> <li>○ Positive blood cultures</li> <li>○ Positive echo for IE</li> <li>○ Oscillating intracardiac mass</li> <li>○ Intracardial abscess</li> <li>○ New partial dehiscence of prothetic valve</li> </ul> </li> <li>• Minor: <ul style="list-style-type: none"> <li>○ Predisposition: <ul style="list-style-type: none"> <li>▪ Heart condition</li> <li>▪ IVDU</li> <li>▪ Fever</li> <li>▪ Vascular phenomenon</li> </ul> </li> <li>○ Immunological phenomenon such as: <ul style="list-style-type: none"> <li>▪ Major arterial emboli</li> <li>▪ Septic pulmonary infarcts</li> <li>▪ Mycotic aneurysms</li> <li>▪ Intracranial haemorrhage</li> <li>▪ Conjunctival haemorrhage</li> <li>▪ Janeway lesions.</li> </ul> </li> <li>○ Other: <ul style="list-style-type: none"> <li>▪ Microbial evidence PCR serological tests</li> </ul> </li> </ul> </li> </ul>	4 (any 2 from each section)	

	<ul style="list-style-type: none"> <li>▪ Positive blood culture but does not meet a major criterion</li> </ul>		
e)	<ul style="list-style-type: none"> <li>• 2 Major</li> <li>• 1 Major + 2 minor</li> <li>• 5 Minor</li> </ul>	Any 1	
f)	<ul style="list-style-type: none"> <li>• Negative blood cultures</li> <li>• Infection affects a prosthetic valve</li> <li>• Infection affects a pacing device</li> <li>• When IE affects the right heart</li> </ul>	Any 2	
g)	<ul style="list-style-type: none"> <li>• Maintain pre-load – forward flow</li> <li>• Moderate tachycardia – reduce regurgitant volume in systole</li> <li>• Low SVR – maintain forward flow</li> </ul>	6	Accept avoid bradycardia Accept maintain sinus rhythm
h)	<ul style="list-style-type: none"> <li>• MV lies close to oesophagus so ideal for TOE <ul style="list-style-type: none"> <li>○ Separated by blood filled LA –good acoustic window</li> </ul> </li> <li>• Assess repair/replacement in theatre <ul style="list-style-type: none"> <li>○ Potential for surgery to be suboptimal</li> <li>○ So before protamine given CPB can be restarted if any issues</li> </ul> </li> <li>• TOE offers information on <ul style="list-style-type: none"> <li>○ Anatomy</li> <li>○ Aetiology</li> <li>○ Mechanism of regurgitation – flail, prolapsed, restriction, perforation</li> <li>○ Location and extent of lesion</li> </ul> </li> <li>• Pre-bypass TOE assesses severity of regurgitation and whether valve is repairable <ul style="list-style-type: none"> <li>○ Assessment of LV function and systolic pulmonary pressures helps plan post op care</li> </ul> </li> <li>• Post-bypass TOE <ul style="list-style-type: none"> <li>○ Focuses on adequacy of repair <ul style="list-style-type: none"> <li>▪ Acceptable repair has no or minimal MR</li> <li>▪ More severe MR requires a second bypass run to re-repair or replace the valve</li> </ul> </li> <li>○ Also allows for haemodynamic interpretation</li> </ul> </li> </ul>	Any 3	Mandatory for MV <b>repair</b>  Not for replacement but surgeons may request

	<ul style="list-style-type: none"><li>▪ Looks at LVOT<ul style="list-style-type: none"><li>• Obstruction is a known complication of MR repair</li><li>• Caused by systolic anterior motion of a redundant portion of anterior leaflet</li></ul></li></ul>		
--	---	--	--

References:

- 1) Kneeshaw JD. Transoesophageal echocardiography (TOE) in the operation room. (2006) British Journal of Anaesthesia 97(1)77-84  
<https://academic.oup.com/bja/article/97/1/77/481633#>
- 2) Martinez G, Valchanov K. Infective endocarditis. (2012) CEACCP 12(3)134-139  
<https://academic.oup.com/bjaed/article/12/3/134/258704>
- 3) Looney Y, Quinton P. Mitral valve surgery. (2005) CEACCP 5(6)199-202  
[https://bjaed.org/article/S1743-1816\(17\)30527-9/pdf](https://bjaed.org/article/S1743-1816(17)30527-9/pdf)