

DM Cardiology – Final key

- 1 All are true about T-type calcium channel **except**
 - A) Open at more negative voltage
 - B) Have short burst of opening
 - C) Interact with conventional calcium antagonist drugs**
 - D) Measurable T-type channels are present in neonatal ventricular myocytes

- 2 Enhanced conduction velocity through conduction system is called
 - A) Positive chronotropy
 - B) Positive ionotropy
 - C) Positive lusiotropy
 - D) Positive dromotropy**

- 3 Activation of AT1 receptors lead to
 - A) Aldosterone release**
 - B) Natriuresis
 - C) Bradykinin release
 - D) Vasodilation

- 4 All are true about NO synthase **except**
 - A) All 3 isoforms are present in heart
 - B) NOS 1 is detected in cardiac conduction tissue
 - C) NOS 3 is expressed in coronary endothelium and endocardium
 - D) NOS 2 can be activated by calcium**

- 5 Minimum extracellular fluid required to accumulate to produce clinically detectable edema
 - A) 2 litres
 - B) 3 litres
 - C) 4 litres**
 - D) 5 litres

- 6 All are true regarding levosimendan **except**
 - A) Increases myocardial contractility and produces peripheral vasodilation
 - B) Causes activation of vascular smooth muscle potassium channel
 - C) Has metabolite with half life of 80 hours
 - D) SURVIVE trial showed decreased incidence of atrial fibrillation in levosimendan group**

- 7 Omecamtiv mecarbil is from the family of
 - A) Soluble guanylate cyclase activators
 - B) Cardiac myosin activators**
 - C) Urocontin
 - D) Direct renin inhibitor

- 8 All of the following are major Framingham criteria for congestive heart failure **except**
 - A) Rales
 - B) Cardiomegaly
 - C) Hepatomegaly**
 - D) Hepatojugular reflex

- 9 Diuretic preferred in patient with sulfa-allergy
 - A) Furosemide
 - B) Torsemide
 - C) Bumetanide
 - D) Ethacrynic acid**

- 10 All are true regarding digoxin **except**
- A) Inhibits Na⁺ -K⁺ -ATPase pump
 - B) Decreases vagal tone**
 - C) Blunts renal tubular resorption of sodium
 - D) In DIG trial, mortality was directly related to serum level
- 11 Trial which led to US FDA approval of Cardiac Resynchronization Therapy system
- A) MIRACLE**
 - B) MUSTIC
 - C) COMPANION
 - D) CONTAK CD
- 12 The most common antecedent disease leading to heart failure with preserved ejection fraction(HFpEF) is
- A) Type 2 diabetes mellitus
 - B) Hypertension**
 - C) Coronary artery disease
 - D) Chronickidney disease
- 13 All are true regarding brain natriuretic peptide (BNP) levels in heart failure with preserved ejection fraction **except**
- A) Higher in women
 - B) Higher in obese patients**
 - C) Higher in patients with renal dysfunction
 - D) Higher in patients with concomitant pulmonary diseases
- 14 In Goldman specific activity scale all of the following activities belong to class III **except**
- A) Roller skating**
 - B) Playing Golf
 - C) Strip and make bed
 - D) Walk at a speed of 2.5 mph
- 15 All the following statements regarding Jugular Venous Pressure recording are true **except**
- A) A vertical distance of greater than 3 cm above sternal angleis considered abnormal
 - B) In general, use of the sternal angle as a reference leads to systematic underestimation of venous pressure
 - C) Venous pulsations above clavicle with the patient in the sitting position are clearly abnormal
 - D) In response to inspiration troughs of JVP become less prominent**
- 16 Which of the following statement is wrong with regard to BP measurement
- A) Auscultatory measurement of blood pressure yields lower systolic and higher diastolic values than direct intra-arterial recording
 - B) The use of an inappropriately small cuff can result in over estimation of the true blood pressure
 - C) Auscultatory gap is more likely to occur in older, hypertensive patients with target organ damage
 - D) Normally the BP measured in both the arms differs by less than 10 mm Hg, which is on handedness**
- 17 Causes of paradoxical splitting of S2 are all **except**
- A) RBBB (Right bundle branch block)**
 - B) RV (Right ventricular) pacing
 - C) Severe aortic stenosis
 - D) Myocardial ischemia
- 18 All of the following statements regarding ejection click are true **except**
- A) Coincides in timing with the upstroke of the carotid pulse
 - B) Ejection click accompanying pulmonic valve disease increases in intensity with inspiration**
 - C) They are often better heard at the lower left sternal border than at the base of the heart

- D) Ejection sounds disappear as the culprit valve loses its pliability over time
- 19 Causes of continuous murmurs are all **except**
- A) Patent Ductus Arteriosus
- B) Anomalous left coronary artery
- C) Aneurysm of sinus of Valsalva**
- D) Small Atrial Septal Defect (restrictive) with mitral stenosis
- 20 The following statements about murmurs are true **except**
- A) Right sided murmurs generally increase with inspiration. Left sided murmurs usually are louder during expiration
- B) Transient external compression of both brachial arteries by bilateral cuff inflation to 20 mm Hg greater than peak systolic pressure augments the murmurs of Mitral Regurgitation
- C) Mitral regurgitation murmur increases in intensity during the cardiac cycle after a ventricular premature beat or in the beat after a long cycle length in atrial fibrillation**
- D) After amyl nitrite inhalation initially there is decrease in intensity of mitral regurgitation murmur
- 21 A bifid pulse is seen in all the following conditions **except**
- A) Severe mitral regurgitation**
- B) Severe aortic regurgitation
- C) In normal persons after exercise
- D) Hypertrophic Obstructive Cardiomyopathy
- 22 The following statements about Valsalva maneuver are true **except**
- A) In phase I – Decrease in stroke volume and pulse pressure and reflex tachycardia occurs**
- B) The absent overshoot pattern indicates decreased systolic function
- C) The square-wave response indicates elevated filling pressures
- D) A higher pulse amplitude ratio is consistent with a square-wave response
- 23 When present, each of the following heart sounds occurs shortly after S2 **except**
- A) Opening snap
- B) Ejection click**
- C) Pericardial knock
- D) Tumor plop
- 24 All of the following statements about pulsus paradoxus are true **except**
- A) Pulsus paradoxus is observed frequently in cardiac tamponade
- B) Pulsus paradoxus is observed in patients with pulmonary disease associated with wide swings in intrathoracic pressure
- C) In the presence of aortic regurgitation, pulsus paradoxus is less likely to develop, despite the presence of tamponade
- D) Pulsus paradoxus is typically present in patients with hypertrophic cardiomyopathy**
- 25 Which of the following statement is FALSE regarding measurement of PR interval
- A) PR interval extends from the onset of the P wave to the onset of the QRS complex
- B) The overall PR interval is best determined from the lead with the longest PR intervals**
- C) The normal PR interval measures 120 to 200 milliseconds in duration in adults
- D) The PR segment is the isoelectric region beginning with the end of the P wave and ending with the onset of the QRS complex
- 26 Endocardial ventricular activation begins early at the following sites **except**
- A) The anterior paraseptal wall of the left ventricle
- B) The posterior paraseptal wall of the left ventricle
- C) Posterobasal areas of the left ventricle**
- D) The center of the left side of the septum

- 27 The following statements regarding U wave in ECG are true **except**
- A) Usually less than 0.1 mV in amplitude
 - B) It is largest in the leads avR and avL**
 - C) It may be caused by the late repolarization of the Purkinje fibers
 - D) It may be caused by the long action potential of mid-myocardial M cells
- 28 Following statements regarding QT interval are true **except**
- A) Corresponds to the duration of the ventricular action potential
 - B) When the interval is measured from a single lead, the lead in which the interval is the longest should be used
 - C) QT interval decreases as heart rate increases
 - D) Bezett formula, in general, under corrects the QT interval at high heart rates and over corrects it at low rates**
- 29 Which is the FALSE statement with regard to Ventricular Gradient in ECG
- A) Ventricular gradient is vector created by adding mean activation and mean recovery vectors
 - B) It assesses the variability that exists in regional repolarization properties
 - C) There will be net increase in the ventricular gradient in Left Bundle Branch Block**
 - D) This measurement has possible relevance to the genesis of reentrant arrhythmias
- 30 Which index of left atrial abnormality has highest specificity
- A) Prolonged P wave duration to >120 msec in lead II
 - B) Prominent notching of P wave, usually most obvious in lead II, with the interval between notches of >0.40 msec ("P mitrale")**
 - C) Increased duration and depth of terminal-negative portion of P wave in lead V1 (P terminal force) so that area subtended by it is >0.04 mm-sec
 - D) Ratio between the duration of the P wave in lead II and duration of the PR segment >1.6
- 31 Which of the following statements is FALSE with respect to right atrial abnormality in ECG
- A) Peaked P waves with amplitudes in lead II to >0.25 mV ("P pulmonale") is a diagnostic criteria for right atrial abnormality
 - B) qR pattern in the right precordial leads without evidence of myocardial infarction is suggestive of right atrial abnormality
 - C) Low-amplitude (<6mm at usual gain) QRS complexes in lead V1 with a threefold or greater increase in lead V2 is suggestive of right atrial abnormality
 - D) The ECG features of right atrial abnormality have high sensitivity**
- 32 Following statements about ECG criteria for Left Ventricular Hypertrophy (LVH) are all true **except**
- A) Romhilt Estes point score of more than 5 indicates definite LVH
 - B) Cornell voltage criteria for men, more than or equal to 2.8 mV suggests LVH
 - C) Diagnostic accuracies tend to be higher for the Cornell voltage criteria
 - D) ECG criteria are good tools as screening tests in general population**
- 33 Regarding ECG criteria for right ventricular hypertrophy (RVH) in patients with chronic obstructive pulmonary disease all are true **except**
- A) Right axis deviation more positive than 110 degrees
 - B) Deep S waves in the lateral precordial leads
 - C) An S1Q3T3 pattern
 - D) The ECG evidence of RVH correlates with the assessment of severity of pulmonary hypertension or lung disease**
- 34 Diagnostic criteria for right bundle branch block are all true **except**
- A) Right axis deviation**
 - B) QRS duration ≥ 120 msec

- C) rsr', rsR', or rSR', patterns in leads V1 and V2
D) Normal time to peak R wave in leads V5 and V6 but >50 msec in V1
- 35 Causes of prominent primary T wave inversion are all **except**
A) Cerebrovascular accident associated T wave
B) Cardiac memory T waves
C) After Stokes – Adams syncope
D) After bilateral carotid endarterectomy
- 36 Components of ECG triad of chronic kidney disease are all **except**
A) Peaked T wave
B) Long QT interval
C) Short QT interval
D) LVH (Left Ventricular Hypertrophy)
- 37 ECG congestive heart failure triad include all the following **except**
A) Relatively low limb voltage (<8mm)
B) Relatively prominent QRS voltage in the chest leads
C) Slow R wave progression
D) Left axis deviation
- 38 All of the following ECG features are typical of Left anterior Fascicular Block (LAFB) **except**
A) qR pattern in avL
B) Mean QRS axis between 0 and -30 degrees
C) QRS duration <120 m sec
D) Time to peak R wave in avL >45 msec.
- 39 Each of the following statements regarding altered electrolytes and ECG abnormalities is true **except**
A) Hypocalcemia results in prolongation of the QT interval
B) Hyperkalemia causes QRS widening and diminished P wave amplitude
C) Hypokalemia causes tall T waves
D) Severe hypercalcemia is associated with the presence of a J wave (Osborn wave)
- 40 Dumb bell configuration of inter -atrial septum on 2D Echocardiography is due to
A) Tumor infiltration
B) Benign infiltration
C) Lipomatous hypertrophy
D) Normal anatomical variant
- 41 High temporal resolution for timing cardiac events is by
A) M mode Echocardiography
B) Harmonic imaging
C) 3D imaging
D) TEE (Trans esophageal echocardiography)
- 42 Hamilton Stewart equation is used for calculation of
A) Cardiac output
B) Blood volume
C) Chamber pressure
D) Valve area
- 43 Fluttering EF slope of anterior mitral leaflet on M-mode Echocardiography is seen in
A) Mitral regurgitation
B) Aortic regurgitation
C) Mitral stenosis

- D) Aortic stenosis
- 44 Echocardiographic findings in Ebstein's anomaly: septal leaflet displacement of tricuspid valve (when normalized for body surface area) is indicative of Ebstein's anomaly if
- A) $>2 \text{ mm/m}^2$ body surface area
- B) $>5 \text{ mm/m}^2$ body surface area
- C) $>8 \text{ mm/m}^2$ body surface area**
- D) $>10 \text{ mm/m}^2$ body surface area
- 45 Increased E-point to septal separation (EPSS) is an M- Mode Echocardiographic finding seen in
- A) Dilated cardiomyopathy**
- B) Restrictive cardiomyopathy
- C) Hypertrophic Cardiomyopathy
- D) Chronic constrictive pericarditis
- 46 B bump on mitral valve M-mode echocardiogram is seen in
- A) Elevated EDP (left ventricular end diastolic pressure)**
- B) Elevated ESP (left ventricular end systolic pressure)
- C) Elevated EDV (left ventricular end diastolic volume)
- D) Elevated ESV (left ventricular end systolic volume)
- 47 All the following are M-mode findings in mitral stenosis **except**
- A) Decreased EF slope
- B) Paradoxical movement of posterior mitral leaflet
- C) Paradoxical septal motion**
- D) Reduced separation of anterior and posterior leaflets
- 48 The most common site for cardiac fibroma
- A) Left atrium
- B) Left ventricle**
- C) Right atrium
- D) Right ventricle
- 49 All are echocardiographic features of hypertrophic obstructive cardiomyopathy **except**
- A) Systolic anterior motion of mitral valve
- B) Mid systolic closure of aortic valve
- C) Aortic valvular regurgitation**
- D) Septal to posterior wall thickness of 1.3:1
- 50 Which of the following echocardiographic findings suggests that aortic regurgitation is severe
- A) Holodiastolic flow reversal in the descending thoracic aorta**
- B) Premature closure of the aortic valve
- C) Pressure half time of the aortic regurgitation Doppler spectrum of 500 m sec
- D) Color regurgitation jet extends to the tip of the papillary muscles
- 51 Percentage of people with rib notching in CoA (Coarctation of Aorta)
- A) 25%
- B) 50%**
- C) 75%
- D) 100%
- 52 The normal transverse diameter of right descending pulmonary artery is ____ in males
- A) 10-15 mm**
- B) 18-20 mm
- C) 16-18 mm
- D) 20-25 mm

- 53 Snow man appearance in chest X-ray is seen in
- A) Transposition of great arteries
 - B) Total anomalous pulmonary venous connection**
 - C) Ebstein's anomaly
 - D) Patent Ductus Arteriosus
- 54 Radiological shadow that resembles "Turkish Sword" is seen in
- A) Partial anomalous pulmonary venous connection**
 - B) Total anomalous pulmonary venous connection
 - C) Transposition of great arteries
 - D) Double outlet right ventricle
- 55 Right sided "Water fall" appearance in Chest X-ray is seen in
- A) TGA (Transposition of great arteries)
 - B) Congenitally corrected TGA**
 - C) PAPVC (Partial anomalous pulmonary venous connection)
 - D) TAPVC (Total anomalous pulmonary venous connection)
- 56 Regarding rib notching in Coarctation of Aorta all are true **except**
- A) Typically rib notching is seen from 2nd rib to 9th rib
 - B) It is seen at one year after birth**
 - C) It can be seen either unilaterally or bilaterally
 - D) It is noted at the undersurface of posterior part of rib
- 57 Egg on side appearance in chest X-ray is seen in
- A) Ebstein's anomaly
 - B) Complete TGA (Transposition of great arteries)**
 - C) TAPVC (Total anomalous pulmonary venous connection)
 - D) TOF (Tetralogy of Fallot)
- 58 Coronary artery calcification is best seen by
- A) Chest x-ray
 - B) Fluoroscopy (dual energy subtraction)
 - C) Multi detector CT**
 - D) MRI
- 59 ST segment elevation in acute pericarditis is not seen in
- A) Lead III
 - B) Lead aVR**
 - C) Lead aVL
 - D) Lead aVF
- 60 Duration of colchicine treatment for recurrent pericarditis is
- A) Life long
 - B) 3 months
 - C) 6-12 months**
 - D) 1 month
- 61 Beck's triad does not include which of the following
- A) Muffled heart sounds
 - B) Elevated JVP
 - C) Hypotension
 - D) Non-palpable apical impulse**

- 62 Thickness of normal pericardium on CT is less than
A) 2mm
B) 4mm
C) 6mm
D) 8mm
- 63 Which of the following is not a feature of constrictive pericarditis
A) Septal bounce
B) Prominent "y" descent on JVP
C) PASP (Pulmonary artery systolic pressure) > 60mm Hg
D) Paradoxical pulse
- 64 Most common pericardial infection is
A) Viral
B) Bacterial
C) Tubercular
D) Fungal
- 65 Early post MI pericarditis: Which of the following is not true
A) Occurs less than 1 week after index event
B) Associated with large MI
C) Non Aspirin NSAID can be used
D) Heparin can be administered
- 66 The following statements regarding post pericardiotomy syndrome are true **except**
A) Female sex is an independent risk factor
B) Pleural effusion can be seen
C) Corticosteroids are first line of treatment
D) Leucocytosis can be seen
- 67 World Heart Federation minimum criteria for diagnosis of pathologic mitral regurgitation secondary to rheumatic carditis includes all **except**
A) Mitral regurgitation seen on 2 views
B) Pansystolic jet in at least 2 envelopes
C) Peak velocity >3m/s
D) Jet length >2cm on 1 view
- 68 Dosage of oral penicillin V for secondary prevention of rheumatic fever in adults is
A) 250mg Bid
B) 500md Bid
C) 250mg od
D) 500mg od
- 69 Criteria required for diagnosis of recurrent attack of rheumatic fever with established Rheumatic heart Disease
A) 2 minor + preceding evidence of group A streptococcal infection
B) 2 major + evidence of preceding group A streptococcal infection
C) 1 major + evidence of preceding group A streptococcal infection
D) 1 major + 2 minor + evidence of preceding group A streptococcal infection
- 70 INR target for mechanical mitral valve is
A) 2
B) 2.5
C) 3.5
D) 3

- 71 Class I indication for ascending aorta replacement in Bicuspid Aortic Valve is if ascending aorta diameter is
- A) >5cm
 - B) >5.5cm**
 - C) >4.5cm
 - D) >6cm
- 72 Commonest cause of tricuspid stenosis is
- A) Rheumatic**
 - B) Carcinoid
 - C) Congenital
 - D) Mucopolysaccharidosis
- 73 Regarding Sydenham's Chorea, FALSE statement is
- A) May be only manifestation of rheumatic fever
 - B) Common in females
 - C) Can be unilateral
 - D) Latency period is 6-8 months**
- 74 Vena contracta in severe aortic regurgitation is
- A) >5mm
 - B) >6mm**
 - C) >7mm
 - D) >8mm
- 75 In symptomatic, severe aortic stenosis severe high gradient is classified as state ___ according to 2014 AHA/ACC guidelines for the management of patients valvular heart diseases
- A) C1
 - B) C2
 - C) D1**
 - D) D2
- 76 Tricuspid valve involvement in rheumatic fever is seen in approximately
- A) 2%
 - B) 3%
 - C) 4%
 - D) 6%**
- 77 Aschoff bodies in autopsied bodies of chronic valve disease are seen in
- A) 0.2%
 - B) 2%**
 - C) 20%
 - D) 50%
- 78 Drug used in ONTARGET trial was
- A) Telmisartan**
 - B) Olmesartan
 - C) Candesartan
 - D) Irbesartan
- 79 SIMPLICITY trial is related to
- A) Carotid baroreceptor activation
 - B) Renal denervation**
 - C) Alpha blockers in HTN
 - D) Spironolactone in HTN

- 80 As per JNC 8 guidelines SBP goal of <150mm Hg is the goal for age
A) >60 years
B) >65 years
C) >70 years
D) >75 years
- 81 Night time normal values on ambulatory BP monitoring is
A) <120/70 mm Hg
B) <130/80 mm Hg
C) <135/85 mm Hg
D) <140/90 mm Hg
- 82 Osler's maneuver is used to detect
A) White coat hypertension
B) Masked hypertension
C) Isolated systolic hypertension in young
D) Pseudohypertension
- 83 All are seen in Takotsubo disease **except**
A) ST elevation
B) Catecholamine surge
C) Coronary obstruction
D) Akinesia of distal LV
- 84 Fibrofatty replacement of myocardium is seen in
A) ARVC (Arrhythmogenic right ventricular cardiomyopathy)
B) Alcoholic cardiomyopathy
C) Hypertrophic cardiomyopathy
D) Peripartum cardiomyopathy
- 85 a wave of jugular venous pulse is caused by
A) Atrial systole
B) Ventricular systole
C) Atrial diastole
D) Ventricular diastole
- 86 Most common clinical feature of cardiac sarcoidosis is
A) Biventricular failure
B) High grade AV block
C) Atrial arrhythmias
D) Sudden cardiac death
- 87 True about endomyocardial fibrosis are all **except**
A) Bimodal peaks in age distribution
B) Causes restrictive cardiomyopathy
C) Always associated with eosinophilia
D) Both right ventricular and left ventricular apices can be involved
- 88 Family screening of hypertrophic cardiomyopathy is recommended up to age of
A) 12 years
B) 21 years
C) 30 years
D) 45 years

(Question is deleted)

- 89 Dallas criteria is used for diagnosis of
A) Myocarditis
B) Peripartum cardiomyopathy
C) Restrictive cardiomyopathy
D) Hypertrophic cardiomyopathy
- 90 Beta blocker with beta 1 selectivity and intrinsic partial agonist activity is
A) Pindolol
B) Nadolol
C) Acebutalol
D) Esmolol
- 91 When blood pressure elevation during pregnancy is noted at 12-16 weeks of gestation, one must suspect
A) Gestational hypertension
B) Chronic essential hypertension
C) Pre-eclampsia
D) Eclampsia
- 92 Which of the following is not a risk factor for aortic dissection
A) Diabetes mellitus
B) Pregnancy
C) Coarctation of aorta
D) Bicuspid aortic valve
- 93 Treatment for NSTEMI includes all **except**
A) Thrombolysis
B) Anti platelets
C) Beta blockers
D) Anti coagulants
- 94 All of the following are known to worsen hyperkalemia in a patient with renal failure **except**
A) Spironolactone
B) ACE inhibitor
C) Furosemide
D) Amiloride
- 95 Major criteria for diagnosis for Marfan's syndrome include all of the following **except**
A) Dural ectasia
B) Ectopia lentis
C) Mitral valve prolapse
D) Family history of Marfan's syndrome
- 96 The opening snap occurs
A) Simultaneously with onset of mitral valve(MV) opening
B) At the time of maximal mitral valve opening
C) At the time of maximal aortic valve opening
D) During isovolumetric contraction phase
- 97 Mitral valve stenosis can be caused by each of the following **except**
A) Rheumatic heart disease
B) Congenital abnormality
C) Active infective endocarditis
D) Massive mitral annular calcification

- 98 Target heart rate can be calculated as
- A) $220 - \text{age}$
 - B) $180 - \text{age}$
 - C) $100 + \text{age}$
 - D) $85\% \text{ of } 200 - \text{age}$

(Question is deleted)

- 99 Heart rate is slowed by the following **except**
- A) Expiration
 - B) Fear
 - C) Increased intra – cranial pressure
 - D) Hypoxia

(Question is deleted)

- 100 Hypokalemia worsens toxicity of
- A) Insulin
 - B) Digoxin**
 - C) Warfarin
 - D) ACE-inhibitors

Note: This is the final key. No further queries or objections from the candidates will be entertained under any circumstances.