13. An arterial vasodilator might be expected to have the most beneficial hemodynamic effects in a patient with heart failure due to which one of the following lesions?

(a) Aortic stenosis.

(b) Mitral regurgitation.

(c) Mitral stenosis.

(d) Pulmonary stenosis.

14. In acute severe heart failure, vasodilators should generally be used only in patients with:

(a) A slow heart rate.

(b) A systolic blood pressure of less than 90 mmHg.

(c) A pulmonary capillary wedge pressure greater than 15 mmHg.

(d) A patient with a normal cardiac output.

15. Interventions that reduce myocardial injury after coronary artery occlusion are presumed to act by one of four mechanisms: (1) decreasing myocardial oxygen requirements, (2) increasing myocardial oxygen supply, (3) augmenting anaerobic metabolism or (4) protecting against autolytic and heterolytic processes. Indicate the presumed principal mechanisms of action of each of the following interventions:

(a) Ibuprofen.

(b) Mannitol.

(c) Intra-aortic balloon counterpulsation.

(d) Elevating arterial oxygen tension.

(e) Antilipolytic agents.

(f) Nitroglycerin.

(g) Beta-adrenergic blockade.

16. Each of the following statements should be answered true or false:

(a) In the routine management of acute myocardial infarction, atropine should be administered prophylactically.

(b) Digitalis glycosides should be administered prophylactically.

(c) Heart failure should be treated first with diuretics rather than digitalis.

9. One treadmill protocol should be used in all clinical situations. True or false?

10. Postmyocardial infarcation pericarditis (Dressler's syndrome; *select more than one answer*):

(a) Occurs in 25% of myocardial infarctions.

(b) Occurs only after 1 month or more.

(c) Is usually associated with pain and fever.

(d) Is usually associated with increased sedimentation rate.

(e) Occurs in under 5% of myocardial infarctions.

11. Which one or ones of the following statements is or are true concerning myocardial damage from direct current countershock?

(a) At the same delivered energy levels, myocardial damage is less with larger paddle electrode size.

(b) At the same delivered energy levels, myocardial damage is less when consecutive discharges are delivered at greater time intervals.

(c) The MB fraction of CPK has been shown to increase after elective cardioversion.

(d) The transthoracic impedance to direct current defilbrillator discharge decreases with decreasing electrode size.

12. The interface used between defibrillator paddle electrodes and the chest wall (*select more than one answer*):

(a) Is not very important as long as good contact is made.

(b) Can result in a significant change in the measured impedance to direct current defibrillator discharge.

(c) Is very important as high impedance results in lower delivered peak current by defibrillators delivering the half-sinusoidal waveform.

5. Exercise treadmill stress testing in patients with variant angina may demonstrate marked ST segment elevation with or without accompanying chest pain. Which of the following conditions are known to produce this phenomenon (*select more than one answer*)?

(a) Coronary arterial spasm superimposed on mild, moderate or severe coronary arterial obstruction.

(b) Severe 'critical' stenosis (greater than 95%) of a major coronary artery with marked reduction in coronary arterial blood flow producing an 'injury current' during circumstances of increased myocardial oxygen demand.

(c) Ventricular aneurysm.

6. All of the following cause a hyperkinetic pulse *except*:

(a) Complete heart block.

(b) Tetralogy of Fallot.

(c) Patent ductus arteriosus.

(d) Mitral stenosis.

(e) Cirrhosis of the liver.

7. Which of the following conditions usually is *not* associated with an increase in the arterial pulse pressure?

(a) Generalized atherosclerosis.

(b) Severe bradycardia.

(c) Hypovolemia.

(d) Hyperthyroidism.

(e) Paget's disease of bone.

8. Maximal oxygen consumption is equal to:

(a) Heart rate times blood pressure.

(b) Stroke volume times heart rate.

(c) Coronary blood flow times coronary sinus oxygen content.

(d) Cardiac output times the arteriovenous oxygen difference.

72. Palpation of the peripheral arteries may yield all of the following types of information *except*:

(a) Frequency and regularity of the pulsations.

(b) Arterial blood pressure.

(c) Patency of the peripheral arteries.

(d) Chracteristics of the arterial pressure pulse wave.

(e) Presence or absence of calcification.

73. A dicrotic pulse is:

(a) A double pulse produced by a prominent systolic and diastolic wave.

(b) A regular coupling of two beats.

(c) Two waves palpated during each cardiac cycle, the additional wave occurring during either systole or diastole.

(d) A twice-beating pulse during systole.

(e) A pulse that peaks at constant intervals but alternates in force.

74. A parameter not influencing maximal oxygen consumption is:

(a) Genetic endowments.

(b) Bed rest.

(c) Mechanical efficiency.

(d) Age and sex.

75. When comparing different progressive treadmill protocols, the same time performed means that the same workload has been performed. True or false?

76. The ST segment response to exercise is not known to be influenced by which of the following?

(a) Oxygen consumption.

(b) Heart rate.

(c) Lead system.

(d) Sex.

67. A 54-year-old man has consulted you for evaluation and treatment of hypertension. He has had an elevated arterial pressure for many years, for which he has not been evaluated or treated. His mother, father and two brothers had hypertension. His father died at 48 years of age of a myocardial infarction: his mother had a stroke at 56 years of age. Both brothers had severe coronary arterial disease: one died at 51 years of age of a stroke. On physical examination, blood pressure is 224/116 mmHg and heart rate is 88 beats per minute. Funduscopic examination reveals grade 2 generalized and focal constriction, arteriovenous nicking, but no hemorrhages or exudates. Cardiac examination reveals a sinus rate and rhythm, left ventricular lift, a fourth heart sound and a grade 1 precordial ejection-type systolic murmur. There were no arterial bruits heard. What should the immediate office evaluation include (*select more than one answer*)?

(a) Hemogram.

(b) Blood chemistries, including serum potassium, uric acid, sugar, creatinine and lipids.

(c) Chest xray.

(d) ECG.

(e) Intravenous pyelogram.

68. Outpatient treatment of the above patient might include:

(a) Hydrochlorothiazide 50 mg daily in the morning, with instructions to return in 1 month's time.

(b) Reserpine 0.25 mg b.i.d., with instructions to return in 1 week.

(c) Hydrochlorothiazide 50 mg and methyldopa 250 mg, each taken twice daily, with instructions to return in 1 week.

(d) Diazoxide 300 mg rapidly by vein and methyldopa 250 mg q.i.d. by mouth, with instructions to return in 1 week.

(e) ß-Blocker, e.g. atenolol.

(f) None of the above.

60. Sipple's syndrome (MEA Type II) is composed of (*select more than one answer*):

(a) Medullary carcinoma of thyroid.

(b) Pheochromocytoma.

(c) Pancreatic carcinoma.

(d) Parathyroid hyperplasia.

61. Which of the following are responsible for the functional impairment in patients with symptomatic coronary artery disease (*select more than one answer*)?

(a) Decreasing stroke volume.

(b) Increasing pulmonary artery pressure.

(c) Decreasing cardiac output.

62. Patients who are prone to develop infective endocarditis include those who have (*select more than one answer*):

(a) Coronary artery disease.

(b) Floppy mitral valve.

(c) 'Innocent' aortic sclerosis in the elderly.

(d) Mitral stenosis.

63. Highly virulent pathogens (e.g. pneumococci and staphylococci) tend to produce dramatic clinical forms of infective endocarditis. True or false?

64. Although the amount of subepicardial adipose tissue may vary with bodyweight, it generally is increased in patients who have undergone therapy with _____.

65. The pericardia respond to acute injury by exuding _____, _____ or _____, or a combination of these three.

66. The eight primary morphologic types of pericardial response are _____.

21. In patients with single ventricle, the characteristic of the single ventricle is usually that of:

(a) A right ventricle.

(b) A left ventricle.

(c) An undifferentiated ventricle (neither right nor left).

(d) The right and left ventricles separated by a small rudimentary ventricular septum.

22. A useful method for distinguishing a fourth heart sound from an ejection sound is isometric handgrip exercise. True or false?

23. Match each of the following heart sounds with the stethoscope technique best suited to detect it.

(1) Left-sided third and fourth heart sounds.

(2) Ejection sound along the left sternal border.

(3) Murmur of mitral regurgitation due to papillary muscle dysfunction.

(a) Light pressure with the bell of the stethoscope.

(b) Diaphragm of the stethoscope.

(c) Both.

(d) Neither.

24. Digoxin absorption occurs:

(a) Only in the duodenum.

(b) Only in the jejunum.

(c) Only in the ileum.

(d) In the small and most of the large intestines.

25. Bioavailability of digoxin given orally as compared with an intravenous dose is variable, but in the normal subject averages:

(a) 20%.

(b) 50%.

(c) 70%.

(d) 90%.

26. Congestive heart failure, marked cardiac enlargement and atrial fibrillation occur more frequently in patients who have suffered coronary, pulmonary or systemic emboli. True or false?

27. List the following prognostic factors after an attack of myocardia infarction, in order of decreasing importance:

(a) Left bundle branch block.

(b) Complex premature ventricular contraction.

(c) 3 and 4+ cardiomegaly.

(d) Atrial fibrillation.

28. When atrioventricular dissociation without heart block occurs, there may be a significant drop in blood pressure and cardiac output. This should be treated with (*select more than one answer*):

(a) Atropine sulfate intravenously.

(b) Temporary ventricular pacing to increase the heart rate.

(c) Isoproterenol (Isuprel; isoprenaline; saventrine) intravenously to increase the heart rate.

(d) Temporary atrial pacing.

29. Pacemaker sounds:

(a) Are generated only when cardiac perforation by the pacing electrode occurs.

(b) Always indicate the need for electrode repositioning.

(c) Are generated by the left hemidiaphragm or intercostal muscle adjacent to the electrode tip.

(d) Are usually associated with failure of cardiac sensing and pacing.

30. Predominant effects of β_1-adrenergic stimulation include (*select more than one answer*):

(a) Cardiac stimulation.

(b) Vasodilatation.

(c) Bronchodilatation.

(d) Lipolysis.

17. The postpericardiotomy syndrome (PPS) is characterized by (*select more than one answer*):

(a) Persistent postoperative fever.

(b) Splenomegaly.

(c) Atypical lymphocytosis.

(d) Pericardial friction rub.

18. The usual onset of the signs and symptoms of the postpericardiotomy syndrome occurs:

(a) Late postoperatively.

(b) 1–2 weeks after sugery.

(c) The day of surgery.

19. The postpericardiotomy syndrome follows cardiac surgery such as (*select more than one answer*):

(a) Repair of coarctation of aorta.

(b) Closure of atrial septal defect.

(c) Replacement of mitral valve.

(d) Ligation of patent ductus arteriosus.

20. It is well known that patients with corrected transposition have left atrioventricular (AV) valve (tricuspid valve) incompetence. The cause is usually:

(a) Displacement of the valve below the AV valve annulus (Ebstein's malformation).

(b) A cleft in the septal leaflet.

(c) Dilatation of the valve annulus.

(d) Intrinsic deformity of the valve such as thickening of the leaflets, short chordae and other structures.

69. In addition to the above historical features, the patient presents a history of decreased exercise tolerance, ankle edema at the end of the day, an awareness of skipped heartbeats and recent appearance of nocturia. Physical examination, in addition to the above findings, includes four to five ectopic beats per minute, a third heart sound, a pulsus alternans, but clear lung fields. Which antihypertensive drugs are not indicated to reduce pressure—at least immediately?

(a) Thiazide diuretic.

(b) Hydralazine.

(c) Diazoxide.

(d) Methyldopa.

(e) Propranolol.

70. Instead of the conditions described in the preceding question, this man presents to the emergency room with severe chest and back pain, some shortness of breath and a rapid heart rate (112 beats per minute) with frequent ectopic beats. Blood pressure is 224/126 mmHg. ECG revealed ST segment deviation, urinalysis microscopic hematuria, and the chest xray has not been reported. Which drugs might be useful for immediate use under these circumstances?

(a) Propranolol, 5 mg (I.V.).

(b) Methyldopa, 500 mg (p.o.).

(c) Roserpine, 1.0 mg (I.M.).

(d) Sodium nitroprusside (I.V. infusion).

(e) Trimethaphan camsylate (trimetaphan camsylate) (I.V. infusion).

71. If a patient with variant angina and recurrent complete heart block with syncope is found to have no significant coronary arterial obstruction, which one of the following is the most appropriate treatment?

(a) Inderal.

(b) Coronary artery bypass graft to the distal right coronary artery.

(c) Implantation of a permanent pacemaker.