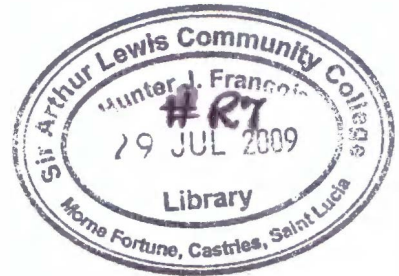


DTEMS PAST PAPERS TECHNICAL

SIR ARTHUR LEWIS COMMUNITY COLLEGE DIVISION OF TECHNICAL EDUCATION AND MANAGEMENT STUDIES

EXAMINATION SESSION	:	April 2009 Examination
COURSE TUTOR	:	Mr. Percival Beausoleil
PROGRAMME TITLE (S)	:	Air Conditioning Systems - Foundations
PROGRAMME CODE (S)	:	3ME-ACF-CE
COURSE TITLE	:	Refrigeration Theory and Practice.
COURSE CODE	:	EGP108
CLASS (ES)	:	
DURATION	:	2 HOURS
DATE	:	Tuesday 28 th April, 2009
COMMENCEMENT TIME	:	1:00 p.m.
ROOM	:	TRT-R1
INVIGILATOR(S)	:	



INSTRUCTIONS

Section 1: Multiple Choice

Two mark for each correct answer. Use the answer sheet provided.

Section 2: Essay Questions.

Two marks for each correct answer.

Section 3: The diagrams of the refrigeration system.

One mark for each correct answer.

LENDING OR BORROWING IS PROHIBITED.

- ◆ Please number your responses accurately.
- ◆ Write your ID Number on *each* answer sheet.
- ◆ All cell phones must be turned off during the Examination.
- ◆ **Note:** Bags, books as well as writing paper not given by the invigilator should be deposited at the front of the examination room or as otherwise indicated.
- ◆ Students must sign IN and OUT on the exam class list.

SECTION I

1. What may cause hermetic motor compressor burnout?
 - A. Moisture in the system
 - B. Dirt in the system
 - C. High temperatures
 - D. All of the above
2. The condensate from an air condition system goes to
 - A. The evaporator
 - B. The condenser
 - C. A drain
 - D. None of the above
3. What is the purpose of an activated carbon air filter?
 - A. To remove odor
 - B. To reduce mold growth
 - C. To prevent contamination.
 - D. All of the above.
4. What may happen if a compressor is shut off and then immediately turned on again?
 - A. It may stall
 - B. The motor compressor may be damaged.
 - C. It may not start.
 - D. All of the above
5. Which of the following is not a refrigerant control commonly used on air conditioning evaporators?
 - A. Capillary tube
 - B. Low pressure Float
 - C. Bypass automatic expansion valve
 - D. Thermostatic expansion valves
6. The A/C system should be discharged slowly. This minimizes:
 - A. Moisture from entering the A/C system.
 - B. Refrigerant oil loss.
 - C. Compressor shaft seal damage.
 - D. Damage to the vacuum pump.
7. Evaporative pressure must be _____ so that the liquid boils at the correct temperature.
 - A. Low enough
 - B. High enough
 - C. Twice the low-side pressure
 - D. None of the above
8. After flushing a contaminated system, it is necessary to:
 - A. Evacuate the system.
 - B. Replace the accumulator or receiver-drier.
 - C. Purge system with refrigerant vapor.
 - D. All of the above.
9. What is the dew point?
 - A. The temperature at which moisture freezes
 - B. The point at which dew forms.
 - C. The temperature at which moisture first starts to condense from the air.
 - D. None of the above
10. The _____ air is used to cool the condenser of an air -conditioner.
 - A. Outside
 - B. Inside
 - C. Recalculated
 - D. None of the above

11. The reduced pressure (vacuum) in the A/C system during evacuation:
 - A. Removes refrigerant oil.
 - B. Removes foreign matter.
 - C. Eliminates the flushing process.
 - D. Causes moisture to vaporize and be drawn off.

12. How can air be dehumidified?
 - A. Chemical absorption
 - B. Filtration
 - C. Cooling
 - D. Both A and B

13. To properly evacuate an A/C system, a vacuum of 25-30in.Hg. must be obtained for:
 - A. 10-15 minutes.
 - B. 15-20 minutes.
 - C. 5-10 minutes.
 - D. 20-30 minutes.

14. The process of evacuation is used to remove:
 - A. Only moisture from the system.
 - B. Only air from the system.
 - C. Air and moisture from the system.
 - D. Debris and metal particles

15. To accurately charge an A/C system, a 30 lb. drum of refrigerant and manifold-gauge set must be used in conjunction with a:
 - A. Weigh scale.
 - B. Pan of warm water.
 - C. Both a and b.
 - D. None of the above.

16. Air leaving the evaporator possesses _____% humidity
 - A. 70
 - B. 20
 - C. 100
 - D. 50

17. What does the sight glass frequently indicate?
 - A. Low refrigerant
 - B. Moisture in the system
 - C. Refrigerant flow
 - D. Both A and B

18. The A/C system should be discharged slowly. This minimizes:
 - A. Moisture from entering the A/C system.
 - B. Refrigerant oil loss.
 - C. Compressor shaft seal damage.
 - D. Both A and B

19. A normal refrigerator temperature is approximately _____ F
 - A. 30
 - B. 35
 - C. 40
 - D. 42

20. Heat may be transferred from one body to another by _____
 - A. Radiation
 - B. Conduction
 - C. Convection
 - D. All of the above

SECTION II
(2 marks for each correct answer)

1. What is refrigeration?
2. Name the two refrigerants, to replace CFC- 12 and HCFC-22
3. What is meant by saturation temperature?
4. Explain the terms superheated vapor and sub cool liquid.
5. Explain the term saturated vapor and saturated liquid.
6. What is meant by the term critical temperature?
7. What is the expected temperature inside of a freezer?
8. What is the expected temperature inside of a refrigerator?
9. What is the expected temperature inside of a air-condition room.
10. Convert 80 F to Celsius
11. Convert 22 C to Fahrenheit.
12. What is an absolute filter?
13. Name two methods by which bacteria may be removed from an air-conditioned space.
14. Distinguish between comfort and process air-conditioning.
15. Explain how air may be dehumidified.
16. Why must humidity be controlled in the printing industry?
17. What is meant by the term ionisation with regard to air molecules?
18. Explain the terms supply air, exhaust air, and return air and outside air.
19. What is meant by cooling load as applied to air-conditioning systems?
20. Explain the function of the air-conditioning filter.

SECTION III

1) Identify the four (4) main parts of the refrigeration system on the diagram shown in Figure A.

- | | |
|-----------|-----------|
| (1) _____ | (3) _____ |
| (2) _____ | (4) _____ |
- (4 marks)*

2) State the condition of the refrigerant at the following areas in Figure A.

- | | |
|-----------|-----------|
| (1) _____ | (5) _____ |
| (2) _____ | (6) _____ |
| (3) _____ | (7) _____ |
| (4) _____ | (8) _____ |
- (8 marks)*

3) What is the pressure and the temperature of the refrigerant at the following areas on the diagram:

- | | |
|-----------|-----------|
| (1) _____ | (5) _____ |
| (2) _____ | (6) _____ |
| (3) _____ | (7) _____ |
| (4) _____ | (8) _____ |

END OF EXAMINATION