

( 2½ Hours )

[Total Marks : 75]

Please check whether you have got the right question paper.

- N.B.:**
- 1) All questions are compulsory.
  - 2) All questions carry equal marks.

**1. A) Attempt any one :-**

**(05)**

- i) Define following terms
  - a) Cabin altitude
  - b) cabin differential pressure
  - c) Fail safe structure
  - d) Design economic Life of Aircraft
  - e) Cabin rate of climb
- ii) What is the composition of air in the atmosphere? How does the atmospheric temperature vary with altitude?

**B) Attempt any one :-**

**(10)**

- i) What are the effects of low oxygen on human body? How much low oxygen can human body sustain?
- ii) What type of structure is required for pressurized Aircraft?

**2. A) Attempt any one :-**

**(05)**

- i) Explain different modes of pressurization.
- ii) What are the sources of air to pressurized Turbine Engine aircraft?

**B) Attempt any one :-**

**(10)**

- i) Why modern aircraft are pressurized? Explain pressurization system of any modern jet aircraft.
- ii) Explain the statement Cabin pressure safety valve is similar to the out flow valve and function as a backup for the out flow valve.

**3. A) Attempt any one :-**

**(05)**

- i) How moisture is removed from the refrigerant and why?
- ii) What is refrigerant? What are the salient characteristics of a good refrigerant?

**B) Attempt any one :-**

**(10)**

- i) Name the different components of vapor cycle air conditioning system write their functions in brief.
- ii) How is the atmospheric air cooled by evaporator in vapor cycle system?

4. A) Attempt any one :-

(05)

- i) Explain in brief the different aircraft air conditioning system.
- ii) Draw a neat diagram of air cycle air conditioning system.

B) Attempt any one :-

(10)

- i) Describe in detail working of air cycle air conditioning system.
- ii) Explain the construction and working of Turbine Refrigerant unit.

5. Attempt any three only :- (Each question carry 5 Marks)

(15)

- a) Write in detail classes of fire
- b) Explain cargo compartment fire detection system in brief
- c) Describe Fenwal fire detection system in brief
- d) Explain what is isobaric mode operation?
- e) Explain the principle use for achieve cooling in vapor cycle system
- f) Explain what is constant differential mode operation?

( 2½ Hours )

(Total Marks : 75)

Please check whether you have got the right question paper.

- N.B.:**
- 1) All question are compulsory.
  - 2) Answer any three. Each carries five marks.

1. How will you analyse and trouble shoot the following reported snags?
  1. Pilot reports that he is unable to align the INS (Inertial navigation system) on a modern aircraft. **05**
  2. Pilot reports – his capacitance type of fuel quantity Indicator is under reading all the time. **05**
  3. What precautions will you take when handling ESDS (Electrostatic discharge sensitive) items? **05**
  4. Pilot reports that the colored CRT'S (cathode ray tubes) of the cockpit show disturbed/ mixed colours after aircraft has passed through a thunderstorm. **05**
  5. Aircraft after an accident has fallen in sea. The search/rescue party is unable to located the flight recorders – how will you analyse this problem? **05**
  6. What is Decision height (DH)? On which indicator of the EFIS system is it displayed? How can you set the DH on the Indicator? **05**
2. How will you analyse and trouble shoot the following reported snags?
  1. Pilot reports that his Engine N<sub>1</sub> indications are unreliable. **05**
  2. How will you interpret a high engine oil temperate. **05**
  3. How will you check pito-static system of aircraft for leakages and calibration of Instruments when the aircraft is in hanger? **05**
  4. Describe briefly how will you handle artificial horizon during its replacement on aircraft? **05**
  5. Write down five main advantages of CB over fuse in an aeroplane. **05**
  6. What is shielding of a wire? Write purpose of shielding and how to check shielding of a wire? **05**

3. Give defect analysis and rectification of the following defects on aircraft.
  1. It was found that External power of GPU is not getting connected to the aircraft Bus bar Isolate defeat. **05**
  2. Flight Book snag reported bottom Beacon light not working. **05**
  3. During ground maintenance check-found NAV light U/S. CB popping out. **05**
  4. Flight crew reports – LH Alternator not developing required voltage after Engine start. **05**
  5. Taxi light of an aircraft reported to be faulty. **05**
  6. During maintenance ground Run, RH engine in not rotating. **05**
  
4.
  1. What are the different advantages of proximity sensors over limit switches? **05**
  2. If frequent water is to be added to aircraft Battery then what are the causes of corrective action for the fault. **05**
  3. Explain what is “Squitter”. **05**
  4. What are the reasons for flag showing in VOR RMI? **05**
  5. List some of the uses of Radio Altimeter in flight. **05**
  6. ADF control panel has OFF, ANT, ADF positions. What happens in each position. **05**
  
5. How will you analyse an trouble shoot the following reported snags:-
  1. ADF indication not ok, with selected NDB **05**
  2. VOR No-1 flag on captain and F/O’s indicators. **05**
  3. Indication does not show (Warning Light) when passing over marker, however audio tone is normal. **05**
  4. What are the inputs to GPWS computer? **05**
  5. Weather radar returns weak or incorrect colours. **05**
  6. Locallizer and G/S pointers out of view and no flag for localizer and G/S on indicator. **05**

[Time: 2:30 Hours]

[ Marks:75]

Please check whether you have got the right question paper.

N.B: 1. All question are compulsory.

**Q.1 Answer any three of the following questions. Each question carry 5 marks: [15]**

- i) What is conventional gear and why is it called so? What are its merits and demerits over a tricycle type L/G.?
- ii) Why is L/G called gear when there is no gear in it? What is the use of a retractable/fixed L/G and why?
- iii) Draw and explain the function of a shock strut.
- iv) Draw and explain different parts of a L/G.
- v) How is the L/G operated when the normal hydraulic system fails?
- vi) Which all things are operated by a pneumatic system and what is the source of pressure.

**Q.2 Answer any three of the following questions. Each question carry 5 marks: [15]**

- i) Explain the reason for all tyres getting burst on landing.
- ii) What is Hydroplaning and how is it taken care?
- iii) What is powered brake?
- iv) What is boosted brake?
- v) What is brake shuttle valve? Where is it located and what is its function?
- vi) What are the probable reasons for brakes not getting applied?

**Q.3 Answer any three of the following questions. Each question carry 5 marks : [15]**

- i) What are segmented brakes and what are its advantages.
- ii) What is differential braking and for what is it used?
- iii) State how wheels and tyres cause vibrations or aircraft?
- iv) What are the probable causes of leaking split wheel and how is it taken care?
- v) How are tyres inspected?
- vi) What is brake bleeding and when is it required.

**Q.4 Answer any three of the following questions. Each question carry 5 marks: [15]**

- i) What precautions are required to be taken when assembling a tyre on a wheel?
- ii) Draw and explain different parts of a tyre.
- iii) What precaution are necessary while inflating a tyre?
- iv) How are tubes and tyres stored?
- v) How is an aircraft steered?
- vi) What is a tiller and how does it function.

**Q.5 Answer any three of the following questions. Each question carry 5 marks : [15]**

- i) What is a wheel well and where is it located? What aligns the wheels before it enters the wheel well.
- ii) What is a shimmy damper?
- iii) How are tubes inspected?
- iv) Which all places can a tube leak and how is it taken care.
- v) How are tyres specified?
- vi) Why a flat spot comes on the tyre and how is it removed?

\*\*\*\*\*

[2½ Hours]

[ Marks:75]

Please check whether you have got the right question paper.

N.B: 1. All diagrams should be schematic diagrams only.

1. Answer the following questions. **10**
  - (a) i. Draw and explain the working of safe basic hydraulic system. **10**  
**OR**
  - ii. Draw and explain the working of double action actuating cylinder. **10**
  - (b) i. Draw and explain the working of NRV. **5**  
**OR**
  - ii. Draw and explain the working of filters. **5**
  
2. Answer the following questions.
  - (a) i. With the help of the diagram. Explain the working of de-icer boots. Also mention the safety precautions you will observe when carrying out maintenance of these boots. **10**  
**OR**
  - ii. Draw and explain antiicing of wings leading edge using thermal air. Also explain why ice formation takes place mostly on wing leading edge. **10**
  - (b) i. Write short note on chemical anti-icing system. **5**  
**OR**
  - ii. Write a short note on how antiicing of pilot tube is done. **5**
  
3. Answer the following questions.
  - (a) i. Write short note on different types of oxygen cylinders. **10**  
**OR**
  - ii. Draw and explain the working of continuous flow oxygen system and pressure demand oxygen system. **10**
  - (b) i. What are the precautions to be taken to prevent oxygen fires? **5**  
**OR**
  - ii. Write a short note on working of oxygen candle. **5**
  
4. Answer the following questions.
  - (a) i. Draw and explain the charging of pneumatic cylinders using two stage compressors. **10**  
**OR**
  - ii. Draw and explain the working of pneumatic control valve. **10**
  - (b) i. Write short note on vane a type pump. **5**  
**OR**
  - ii. Write a short note on how medium pressure is obtained in aircraft. **5**
  
5. Answer the following questions.
  - (a) i. Draw and explain the working of hydraulic reservoir. **10**  
**OR**
  - ii. Write a short note on refilling of aircraft oxygen system from refill cart. **10**
  - (b) i. Draw and explain the operation of pneumatic pressure relief valve. **5**  
**OR**
  - ii. Define fire point, flash point, viscosity, viscosity index, melting point. **5**