

(2½ Hours)

[Total Marks : 75]

N B – Please check whether you have got the right question paper

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

Q 1A) Attempt any one

(5)

- i) Describe Primary Flight Control Devices & their function.
- ii) What is the Function of ground and flight spoilers?

Q 1B) Attempt any one

(10)

- i) Give the Function of Secondary Flight Devices & explain details about Fowler Flap.
- ii) What is Mach Tuck & explain Mach Trimming of a/c.

Q 2A) Attempt any one

(5)

- i) Describe Primary Flight Control Devices & their function.
- ii) What is the Function of ground and flight spoilers?

Q 2B) Attempt any one

(10)

- i) Give the Function of Secondary Flight Devices & explain details about Fowler Flap.
- ii) What is Mach Tuck & explain Mach Trimming of a/c.

Q 3A) Attempt any one

(5)

- i) What are the Functions of speed brakes?
- ii) Explain about Artificial feel & How it is achieved?

Q 3B) Attempt any one

(10)

- i) Explain Defueling of Aircraft & Its precautions.
- ii) Describe Low Speed Ailerons, High Speed Ailerons & their operation.

Q 4) Answer any three of the following (each question carry 5 marks)

(15)

State probable causes, rectification of the following defects observed on aircraft

- | | |
|--|--|
| i) Hydraulic pressure low | ii) Air bubbles noticed in receiver drier. |
| iii) Sudden depressurization of cabin and loud noise | iv) False fire alarm |
| v) Ice formation in oxygen system | vi) Wind shields getting iced |

Q 5) Answer any three of the following (each question carry 5 marks)

(15)

How will you analyses and trouble shoot the following problems

- a. On modern aircraft Digital flight data recorder (DFDR) does not start recording the data automatically in spite of Electrical power being provided for the system
- b. Pilot reports that he is unable to engage the auto-pilot on aircraft
- c. External power is not getting connected to aircraft bus bar
- d. Explain various advantages of circuit breaker over Fuse in all aircraft
- e. Describe the test procedure of Radio Altimeter from indicator and what test indications are given?
- f. What are the precautions to be taken during operational check of weather Radar system?

[Time: 2:30 Hours]

[Marks: 75]

Please check whether you have got the right question paper.

N.B: 1. All questions are compulsory.

Q.1 Attempt either question no. A and B OR C and D.

- a) Explain the operation of built in thermostatic flow control valve with in oil cooler in a lubrication system with a neat diagram. (10)
- b) High oil temperature – mention the causes and remedy. (05)

OR

- c) What are the different types of mineral and synthetic base lubricants, explain their characteristics. (10)
- d) High oil pressure – mention the causes of remedy. (05)

Q.2 Attempt either question no. A and B OR C and D.

- a) Explain the construction and function of idling system of a float type carburetor with a neat diagram. (10)
- b) What do you mean by Octane No. and Performance No. of AVGAS? (05)

OR

- c) Explain the function and construction of mixture control system of a float type carburetor with a neat diagram. (10)
- d) What is detonation and mention the list of factors responsible for that. (05)

Q.3 Attempt either question no. A and B OR C and D.

- a) Explain the construction, function and location of AVM, engine hoses, pipes and engine connectors. (10)
- b) What is the purpose of engine instrument markings and also what are the red, blue arc or line will indicate? (05)

OR

- c) Write a short notes on CHT indicator with a neat diagram. (10)

- d) Name the list of engine block test instruments and also what are the green, (05)
yellow arc or line will indicate?

Q.4 Attempt either question no. A and B OR C and D.

- a) Explain the procedure of propeller pitch check and cruise mixture check while (10)
giving ground run.
- b) Explain the list of inspection carried out connecting rod assembly while engine (05)
overhaul.

OR

- c) Explain the procedure of engine power check of magneto drop check while (10)
giving ground run.
- d) Explain the list of inspection carried out on the crankshaft while engine (05)
overhaul.

Q.5 Answer **any three** questions. (Each question is of five marks.)

- a) Define : 1) Cloud point 2) Pour point (05)
- b) Explain the function of each system of a pressure injection carburetor. (05)
- c) Explain the construction of a fuel discharge nozzle of a fuel injection system. (05)
- d) Explain the location and function of firewalls, engine cowling, acoustic panels, (05)
engine mounts.
- e) Explain the list of inspections carried out on the piston assembly while engine (05)
overhaul.
- f) Explain the list of inspection carried out on the cylinder assembly while engine (05)
overhaul.

[Time: 2:30 Hours]

[Marks:75]

Please check whether you have got the right question paper.

N.B: 1. All questions are compulsory.

- Q.1 Attempt either (a) & (b) OR (c) & (d)
- a) Describe the High Tension Intermittent Duty Cycle AC Ignition system. [10]
 - b) Explain the function of exciter unit. [05]
- OR**
- c) Explain the function of electric starter and its detail. [10]
 - d) Describe the maintenance inspection required on pneumatic starter. [05]
- Q.2 Attempt either (a) & (b) OR (c) & (d)
- a) Name the list of engine ignition system component describe the ignition plug. [10]
 - b) Explain ignition lead cooling. [05]
- OR**
- c) Explain pneumatic start valve and how it is manually operated. [10]
 - d) Explain the construction of turbo shaft engine with free turbine and gear coupled turbine. [05]
- Q.3 Attempt either (a) & (b) OR (c) & (d)
- a) What is On condition monitoring and how it is achieved? [10]
 - b) What is dry motoring and when it is required. [05]
- OR**
- c) Explain the function and construction of APU. [10]
 - d) What do you understand by Trend Monitoring? [05]
- Q.4 Attempt either (a) & (b) OR (c) & (d)
- a) Describe the water injection method in detail. [10]
 - b) Why methanol is added in the water? [05]
- OR**
- c) How FOD inspection is carried out? [10]
 - d) Write short notes on cowling of GTE. [05]
- Q.5 Attempt **any three**
- a) What is Hot start of engine and give reason for it. [05]
 - b) What is wet motoring and when it is carried out? [05]
 - c) List the probable cause for NO RUN of engine. [05]
 - d) Explain fuel temperature indication system [05]
 - e) Explain fuel pressure indication system [05]
 - f) Explain the EPR indication system [05]

[Time: 2 ½ Hours]

[Marks:75]

Please check whether you have got the right question paper.

- N.B:** 1. All questions are compulsory.
2. Figures to the right indicate full marks.

1. Answer any three of the following questions. Each question carry 5 marks: **15**
1. What prevents L/G from collapsing?
 2. What will happen if tyres are under inflated? Will the tyre temperature rise. Why?
 3. Show the crown and shoulder of tyres and when will the wear occur on these?
 4. What reason when the shock strut does not absorb shock? Then how is it rectified? Is it serviced with N2 or O2 and why?
 5. Why the shock strut is also called an OLEO strut. How are these serviced by different methods?
 6. Explain gyroscope effect of tyres and when does this occur?
2. Answer any three of the following questions. Each question carry 5 marks: **15**
1. Explain why all tyres got burst on landing.
 2. Is B/G steerable along with W/G and why?
 3. Where are B/G and W/G located and why aircraft is provided with so many landing gears?
 4. What all is written on a tyre? Enumerate.
 5. Can we do the L/G operation check on ground and how? Do we have to run the engine and waste fuel for hydraulic pressure or an alternate device is available and what is that called?
 6. What can go wrong if the emergency brakes are not working?
3. Answer any three of the following questions. Each question carry 5 marks: **15**
1. What causes hydroplaning explain how is it rectified?
 2. What is the device used for stopping the wheel rotation? What it is?
 3. What is the difference between a squat switch and a proximity switch? Where are these located and what are its function?
 4. Is any speed specified on tyre and why?
 5. How is the balancing of wheels done on tyres or taken care while assembling these.
 6. What are brake liners made of and why?

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

1. Draw a L/G actuator and which all places can it leak? What if the leak it's not rectified?
2. Why the wheel is inflated with air?
3. Draw and explain the function of a shock strut.
4. What is anti-skid and how is it achieved.
5. What is the advantage of squat switch proximity switch in a L/G. Where is it located?
6. What is anti-skid and how is it achieved.

5. Answer any three of the following questions. Each question carry 5 marks: 15

1. What is the function of a landing gear. Draw and explain various components of a L/G
2. Explain in brief with what all different methods can L/G be operated
3. Explain different steering system of an aircraft.
4. Draw and name different parts of tyres.
5. Describe inspection and servicing of tyres, why are these serviced with N₂ instead of air.
6. What will happen to the tyre when it is under-inflated or over-inflated?

(2 1/2 Hours)

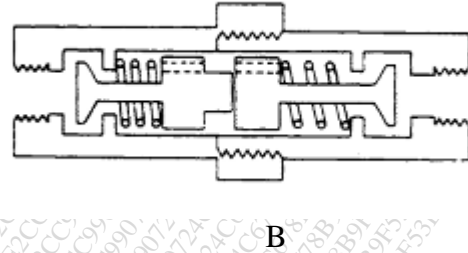
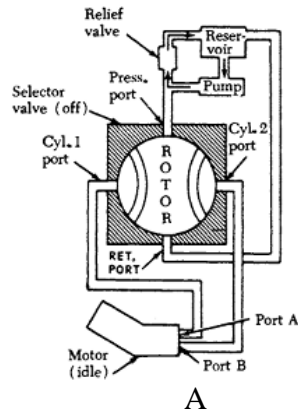
Marks : 75

NB : (1) All questions are compulsory

Q1. Answer the following questions

a) (i) Identify components A and B and explain their operation

[10]



OR

(ii) Draw and explain the working of safe basic hydraulic system

[10]

b) (i) Explain the following terms:

[5]

- A. Viscosity
- B. Flash point
- C. Fire point
- D. Viscosity index
- E. Vapour pressure

OR

(ii) Write a short note on hydraulic reservoir

[5]

Q2. Answer the following questions

a) (i) Write short note on following components of pneumatic deicing system using engine-driven air pump.

Safety valve, Oil separator, Combination unit and solenoid distributor valve.

[10]

OR

(ii) Write a short note on Thermal anti-icing system using a typical heated wing leading edge

[10]

b) (i) Write a short note on inspection of deicer boots

[5]

OR

(ii) How is anti-icing different from De-icing system? Write the most suitable method to control icing problems at the following locations

- A. Flight controls
- B. Carburetors
- C. Window
- D. Radomes

[5]

Q3. Answer the following questions

- a) (i) Write a short note on following emergency equipments: [10]
A. ELT
B. Megaphones
C. Life Raft
D. Medical kit

OR

(ii) Write a short note on oxygen candles [10]

- b) (i) Write a short note on aircraft lights [5]

OR

(ii) Draw the diagram of continuous flow oxygen system. [5]

Q4. Answer the following questions

- a) (i) Explain with the help of diagram the process of creation of medium pressure required for pneumatic system [10]

OR

(ii) Write a short note on charging of high pressure pneumatic air bottle using two stage compressors. [10]

- b) (i) What are restrictors and variable restrictors used in pneumatic system of the aircraft? Explain their uses [5]

OR

(ii) Write a short note on pneumatic system filters [5]

Q5. Answer **any Three** of the following [15]

- a) Write a short note on windshield rain repellent system
b) Write short note on prevention of oxygen fire
c) What is the difference between constant delivery pump and variable delivery pump? Give two examples of each
d) Write down the composition of atmosphere with the help of pie chart. Also explain what happens to the percentage of oxygen as we go to higher altitude.
e) Write down the similarities and differences between hydraulic actuator and pneumatic actuators.
f) Draw and explain the operation of NRV.