

Feb 2020 module 15

A. T. I. LUCKNOW

1- Which resistor provide in the discharge circuit to dissipate the residual charge on the trigger capacitor

Ans- Bleeder resistor (Treggan 364)

2- Spark plug location in modern GTE -

Ans- Two diametrically opposite combustion liner (Treggan 365)

3- Which capacitor discharge current flow from the main ignition unit

Ans- Tank capacitor (Treggan 368)
Also read storage capacitor

4- When all desiccants should be replaced

Ans- More than 30% relative humidity (12A)

5- The humidity indicator on engines stored in shipping case are inspected every -

Ans- 30 days (12A/390)

6- A humidity indicator should be -

Ans- fasten inside the container with an inspection window provided (12A/390)

7- In thermocouple system thermocouple made of -

Ans- Chromel and constantan (12A/392)

8- Engine vibrates throughout rpm range but indicated amplitude reduces as Rpm is reduced - (12A/491)

Ans- Turbine damage

9- Engine vibrate at high Rpm and fuel flow when compared to constant engine pressure ratio -

Ans- Damage in compressor section (12A/491)

10- Engine fire but will not accelerate to correct speed.

Ans- Insufficient fuel supply to control unit (12A/492)

11- Acceleration temperature during starting too low

Ans- Acceleration cam of fuel control incorrectly adjusted (12A/472)

12 Growth in axial flow compressor-

Ans- Elongation of blade due to excessive heat and centrifugal force (12A-476)

13- Marking materials for combustion section parts -

Ans- lay out dye (lightly applied) or chalk
10 may be used (12A/476)

14- MTCS

a- The control system from the pylon to the engine must be rigged after each engine change and fuel control change

b- Before adjusting the power control at the engine be sure that the power lever free from binding and the control have full through on throttle the

16 console

c- if they do not full through or are binding the airframe system should be checked and the discrepancies repaired

d- All are correct (12A-379)

16- During storage engine fuel system generally filled with -
Ans- Preservative oil (EASA 22.4)

17- In APU centrifugal compressor is used due to

Ans- Larger pressure raise per stage (EASA-18.2)

18- APU generator because the engine are not throttleable and run at

Ans- constant 90-100% RPM (EASA 18.3)

19- In APU Load compressor provide

Ans- Pneumatic air (EASA 18.2)

20- APU Provide electrical power

Ans- 115V AC 3 ϕ

21- In APU EEC control

A- Control the fuel (EASA-18.7)

B- Starter motor

C- Ignition unit

✓ D- All

22- The starter is equipped with an output spline shaft having a shear section that permit the shaft shear if

17 Ans- Torque to the engine during starting cycle is excessive. (Treggan 383)

22- In turboshaft engine having short shaft

a- to correct misalignment

b- to deliver power to transmission

c- Drive shaft consist of a shaft with two rigid coupling attach at each end

18

✓ d- Both a and b is correct (EASA 17.2)

23- In turboshaft about $\frac{2}{3}$ of the energy produced by a helicopter turboshaft engine is used to operate the

Ans- Gas generator (EASA 17.2)

24- In beta range of the throttle quadrant the propeller blade angle is governed by -

Ans- lower lever position (EASA 16.3)

25- MTCS Regarding turbo prop -

a- There are two type of turbo prop fixed turbine and free turbine

b-

26- Mach speed is speed of object in relation to local speed of sound (R.R. 219)

Ans- In engine drive which unit allow autorotation without driving rotor

a- Free wheeling unit

b- over running clutch

✓ c- Both a & b and sprag clutch (17.2 EASA)

28- Oil inlet temperature is also indicate the proper operation of -

Ans- Engine oil cooler (EASA 14.6)

29- In modern turbine engine Ignition system used

✓ a- It is used to ignite the fuel in combustor and then it switched off (I marked as but Plz refer book)

b- Continuous ignition is used

c- Ignition is used till take off (EASA 13.10)

30- Prolonged or repeated contact of turbine oil with skin cause

Ans- Irritation and dermatitis

31- Fire detection system which measure rise in temp compared to reference

Ans- Thermocouple

(12A/392)

32- In turbine engine which type of engine oil used

Ans- Synthetic engine oil (EASA 9.2)

33- Where operating rotor speed approach 45000 RPM which type of bearing used

Ans- Hydrodynamic or slipper type bearing (12A/61)

34- Ball Bearing take loads

Ans- Axial (Thrust) and Radial load (12A/62)

35- Roller bearing present a larger working surface they take

Ans- Radial load (12A/62)

36- Carbon seals are -

a- Usually spring loaded

b- Rest against a surface provide a create seal bearing

c- Prevent oil leakage

d- All

along the shaft (EASA 8.3)

33- In water Injection system
Ans- Increasing the density and mass
of airflow (Treggan 226)

38- Water Injection system penalty
Heavy weight

a- Thermal shock to the engine

b- compressor blade erosion

c- All (Treggan 226)

✓ d- Note - Compressor stall can also be a problem
with water injection

39- Exhaust cone consist of
Ans → outer duct, inner cone, struts and tie
rod (EASA 7.2)

40- While starting Fadec

a - channel A

b - channel B

31 c - Either A or B automatically

41- Highest temp. in in GTE

Ans - Turbin Inlet Nozzle vane (EASA 6.2)

42- Turbine function -

Ans- Kinetic energy of the exhaust into mechanical energy to drive the gas generator compressor and accessories.
(EASA 6.1)

43- Which type of duct is used in high speed, single engine aircraft in which the pilot sits low in fuselage and close to the nose

Ans- Divided - Entrance duct (12A/92)

44- Thrust augmentation depends upon

a- Type of coolant used

b- The proportion of the ingredients

c- Quantity of coolant flow

✓ d- All

(12A/174)

45 Water Injection system designed to function only at

Ans- High engine power (12A/T74)

51- if the fire extinguished once -

Ans- should not attempt for start.

52- In Fenwal fire detector -

a- Fenwal fire detector detect only one fault

b- Fenwal detector continuous loop connected in series

c- as in a connected in parallel

d- None of the above

53- Thermal efficiency

a- Turbine

b- Combustor

c- Compressor

54- Fadec consist servo

Ans- Hydromechanical

55- Crossfeed V/V enable

a- RH engine feed from LH Tank & vice versa

b- fuel transfer between tank

(c) Both a & b

56- The difference between full flow system, pressure relief system and total loss system -

Ans- Control of oil flow to the bearing
(Kores and wild/285)

57 MTICS Regarding stall prevention.

a- lower the angle of attack on the front stage so that the high angle at low angle speed.

✓ b- Introduce a bleed v/v in to the front of the compressor and use it to bleed air and ~~inc~~ decrease air flow in the front of the compressor at lower engine speed.

c- Place a variable guide vane at the front of the compressor and variable stator vanes in the front of the first several compressor stage so the angle of attack can be held to low angle.

d- Use a variable area exhaust nozzle to unload the compressor during acceleration
(Treager 176)

58- Aviation fuel is

- a - High heat / pounds
- b - power / weight ratio
- c - power / pound

59- Tail cone

- a - closely fit with the opposite of the last stage turbine disk
- b - Reduces the swiveling motion of the exhaust gas.
- c - Increases the pressure
- ☒ d - All

60- In GTE where large volum expansion and sharp pressure drop.

Ans - (Combustion) Turbine Exhaust ✓

61- In reaction turbine

- a - Speed remain same
- ☒ b - pressure change
- c - velocity remain same

62 In impulse turbine

Ans - Pressure and velocity remain same but change in direction of airflow.

63- In impulse turbine -

Ans- The cross section area same

Q1

64- Compressor stall

65- Turbo fan advantage

a- less vibration

✓ b- less noise

(EASA 1.12)

Q2 c-

Exhaust ~~duct~~ (straighten by

66- Jet Nozzle (straighten by

a) tail pipe

b- tail cone

Q3 c- Reinforced tailpipe

67- Ignition unit output

a- fixed

✓ b- variable according to requirement

c- variable according to apply input

68- Function of inlet

a- Turbulance free air

b- High Ram pressure

c- both

69- Ram Recovery and Total pressure recovery definition

70- Outer tube in Inter connector tube function
12A - 49

80- Convergent - Divergent exhaust nozzle function

81- Integrated EPR.

Ans- Integrated average of fan and gas generator exhaust pressure divided by the Inlet total pressure.
(Tregear 439)

82- The Engine thrust depend up.
⇒ mass of airflow

83- Ques related to Full Flow, Pressure ~~ref~~ relief flow

84- Interconnector tubes are used in which arrangement of combustor

85- Turbine case colling
⇒ Acc

86- Painted surface should be cleaned with
⇒ mineral base oil

Mod 15 Feb 17/2/2020

1) Bearing on rotor can take 45000 rpm

- hydrodynamic
- plain
- carbon
- All

2) What all parameters fcu required

3) Ignition unit output

- Fixed
- variable according to requirement
- variable according to apply input

4) what is integrated EPR

5) resistor used in trigger capacitor

6) carbon seal

7) Transpiration cooling

8) Full flow system, pressure relief valve system and total loss system difference

9) types of turbine in turboprop

- fixed
- free turbine

10) humidity indicator should be checked

- After 30 days

11) Humidity should not be more than

-30/-

12) Interconnecting tube function in combustion chamber

- 13) Position of ignitor plugs
 - Two diametrically opposite in combustion chamber
- 14) over running or freewheeling function
- 15) fade channels
- 16) If the turboprop engine fires, but not accelerating to idle rpm
 - defective fuel nozzle
 - fuel cut off valve Close
 - FMU is sticking.....
- 17) Engine oil
- 18) Aviation fuel is
 - high heat/ pounds
 - power/weight ratio
 - power/pounds
- 19) C-D exhaust nozzle function
- 20) Inlet used in supersonic
- 21) Exhaust duct contains
- 22) High temperatures area in engine
 - Nozzle guide vanes
- 23) Fenwal spot detectors
- 24) Apu EEC function
- 25) If the fire is extinguished in engine
 - Rotate engine again
 - rotate engine after 10 min
 - No attempt to start engine again

- 26) Component of engine fuel system
- 27) Thrust is depend
 - on mass of airflow
- 29) impulse type turbine
 - inlet area and exhaust area is same
- 30)why do we use centrifugal compressor in Apu
 - high pressure rise per stage
- 31)Apu load compressor
 - Pneumatic source
- 32) Function of inlet
 - Turbulance free air
 - High ram press
 - both
- 33)Divided entrance duct question
- 34)By pass air engine function
 - Reduce noise
- 35) Markings on combustion chamber
 - Layout die or chalk
- 36)oil temperature is a indication of
 - oil cooler
- 38)Engine mounting function
- 39) Engine trimming 2 questions
- 40) Ball bearing loads
- 41) roller bearing loads
- 42) compressor stall Mtcs
- 43) if impulse turbine speed increases
 - Temperature at turbine increases
 - impulse force increase

44) Reason for increase in length of the blade

- heat and centrifugal force

45) humidity indicator

- Placed inside and has inspection window

46) Short shaft in turboshaft

47) Beta range throttle quadrant

- propeller governor

- propeller control lever

- power lever position

48) power augmentation 2 easy questions

49) outer tube on Interconnecting tube

- support tube

50) air outlet in centrifugal compressor function