เฉลยแบบทดสอบ ENGINE TREND MONITORING

1. Which of the following is the benefit of Engine Trend Monitoring (ETM) ?

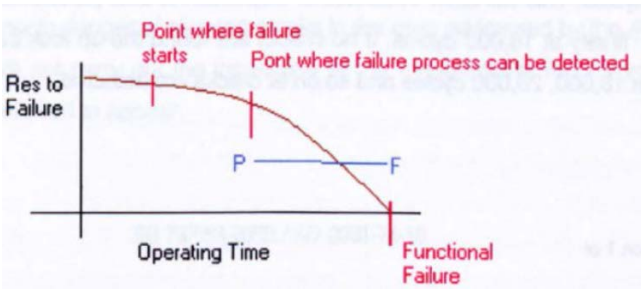
a. Enhanced safety and cost reduction.

b. Extension of engine utilization.

c. Increase aircraft availability.

d. All of the above a, b and c are correct.

2. Regarding Engine Trend Monitoring (ETM) objective concept, which of the following statement is true ?



a. To find point where failure starts and rectify the defect.

b. To find “P” point where failure process can be detected and rectify the defect before reaching point "F" functional failure.

c. To continue using engine and send the engine to overhaul before reaching point “F”.

d. To use engine as OC (On-Condition) until reaching point “F”.

3. Regarding gas turbine engine trend line (trend graph), which of the following statement is correct ?

a. Trend line or trend graph is plotted by using engine raw parameters recorded during flights and change raw parameters to corrected parameters at standard day (ISA).

b. Trend line or trend graph is plotted by using engine raw parameters recorded during flights.

c. Trend line or trend graph is plotted by using flight conditions recorded during flights.

d. Trend line or trend graph is plotted by using dimensional analysis.

4. What are the three basic dimensions in dimension analysis ?

a. Mass (M), Weight (W), Time (T)

b. Mass (M), Speed (V), Time (T)

c. Mass (M), Length (L), Time (T)

d. Mass (M), Acceleration (A), Time (T)

5. In flight, we cannot measure thrust (Fg) of a turbojet or turbofan engine directly, regarding dimensional analysis for engine trend monitoring, which of the following statement is correct ?

a. Plot the value of EPR / δ ; δ = Pressure Ratio = Pressure at flight altitude / Pressure at Sea Level Standard (ISA).

b. Plot the value of N1 / $\sqrt{\theta}$; θ = Temperature Ratio = Temperature at flight altitude ($^{\circ}$ kelvin) / Temperature at Sea Level Standard (ISA) ($^{\circ}$ kelvin).

c. Record the value of EPR or N1 (engine fan speed) at the same Mach No.

d. All of the above a, b and c are correct.

6. What is the probable cause of a sudden or instantaneous engine deterioration ?

a. Dirty compressor

b. Bird strike / FOD / DOD

c. Engine stall

d. Engine flame out

7. The normal engine deterioration rate is ..... ?

a. Constant

b. Linear

c. Non Linear

d. Irregular

8. Data scatter or wild points may be observed in engine trend graphs. What is a probable cause of wild points ?

a. Instrument change without calibration.

b. Parallax error during reading.

c. Data entry (record) error or calculation error.

d. All of the above a, b and c are correct.

9. Custom Baselines UCL (Upper Control Limit) and LCL (Lower Control Limit) can be constructed after 15 flights. The purpose of UCL and LCL is ..... ?

a. To establish and easily see the maximum and minimum values or bandwidth.

b. To calculate engine performance.

c. To change raw parameters to corrected parameters.

d. All of the above a, b and c are correct.

10. Custom Baselines UCL and LCL are needed to renew whenever ..... ?

a. After engine overhaul

b. After Hot Section Inspection

c. After changing major components or components in the engine gas path

d. All of the above a, b and c are correct.

11. What is the best frequency to perform engine trend monitoring ?

a. Every flight or at least every 3 flying hours.

b. Every flight or at least every 5 flying hours.

c. Every flight or at least every 8 flying hours.

d. Every flight or at least every 10 flying hours.

12. Engine gas path problems shall be confirmed when ..... ?

a. Trend graph lies within bandwidth.

b. One engine parameter indicated non normal.

c. Two or more engine parameters indicated non normal.

d. All of the above a, b and c are correct.

13. Engine hot section problems could be indicated by ..... ?

a. High turbine inlet/outlet temperature, high fuel flow and low power.

b. High turbine inlet/outlet temperature, high fuel flow and high power.

c. High turbine inlet/outlet temperature, low fuel flow and low power.

d. High turbine inlet/outlet temperature, steady fuel flow and high power.

14. Dirty engine compressor could be indicated by ..... ?

a. High turbine inlet/outlet temperature, high fuel flow and low RPM.

b. High turbine inlet/outlet temperature, low fuel flow and high RPM.

c. High turbine inlet/outlet temperature, high fuel flow and high RPM.

d. High turbine inlet/outlet temperature, low fuel flow and low RPM.

15. Bad engine thermocouples could be indicated by ..... ?

a. Low turbine inlet/outlet temperature, low fuel flow and normal power.

b. Low turbine inlet/outlet temperature, normal fuel flow and normal power.

c. High turbine inlet/outlet temperature, low fuel flow and normal power.

d. High turbine inlet/outlet temperature, high fuel flow and normal power.

16. In the engine trend monitoring analysis, importance of engine parameters priority from the highest concern are sequenced as follow 1.....; 2 .....; 3 ..... ; 4 ..... ?

a. Engine Power (Torque / EPR) ; EGT (TIT/TOT) ; Fuel Flow ; RPM (N1/N2)

b. EGT (TIT/TOT) ; Fuel Flow ; RPM (N1/N2) ; Engine Power (Torque / EPR)

c. EGT (TIT/TOT) ; RPM (N1/N2) ; Fuel Flow ; Engine Power (Torque / EPR)

d. Engine Power (Torque / EPR) ; EGT (TIT/TOT) ; RPM (N1/N2) ; Fuel Flow

17. Differential Engine Performance Monitoring is an engine trend monitoring for multi - engine aircraft. What is the advantage of “Differential Engine Performance Monitoring” Differential Engine Performance Monitoring” ?

a. It does not required to change engine raw parameters to corrected parameters.

b. It save time to plot trend graph.

c. Records can be made at any stable cruise level flight conditions with the same power setting.

d. All of the above a, b, c and d are correct.

18. What is the principle of Engine Trend Monitoring for reciprocating engine ?

a. To compare engine parameters at stable cruise flight level and flight conditions which have the same engine oil pressure.

b. To compare engine parameters at stable cruise flight level and flight conditions which have the same engine Cylinder Head Temperature (CHT).

c. To compare engine parameters at stable cruise flight level and flight conditions which have the same engine power setting (engine load or torque or RPM).

d. To compare engine parameters at stable cruise flight level and flight conditions which have the same engine fuel flow.

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