

MODÜL 9. İNSAN FAKTÖRLERİ

		A	B1	Seviye B2
9.1	Genel 2		1	2
	<ul style="list-style-type: none">İnsan faktörünü göz önüne alma gereği; insan faktörüne bağlantılı olaylar / insan hatası;'Mörfi' kanunu.			
9.2	İnsan Performansı ve Tahditler 2		1	2
	<ul style="list-style-type: none">Görme;İşitme;Bilgi işleme;Dikkat ve algılama;Hafıza;Kapalı yer fobisi ve fiziksel erişim.			
9.3	Sosyal Psikoloji 1		1	1
	<ul style="list-style-type: none">Sorumluluk: bireysel ve grup;Motivasyon ve motivasyonsuzluk;Yoğun baskı;Kültür sorunları;Ekip çalışması;İdare, yöneticilik ve liderlik.			
9.4	Performansı Etkileyen Hususlar 2		2	2
	<ul style="list-style-type: none">Sağlıklılık-canlılık / sıhhat;Stres: şahsi ve işle ilgili;Zamana bağlı baskı ve son bitirme zamanları;İş yükü: aşırı iş ve az iş yüklenmeleri;Uyku ve yorgunluk, vardiyalı çalışma;Alkol, ilaç, uyuşturucu kullanma.			
9.5	Fiziksel Çevre 1		1	1
	<ul style="list-style-type: none">Gürültü ve duman;Aydınlatma;İklim ve hararet;Hareket ve sarsıntı;İş çevresi.			
9.6	Görevler 1		1	1
	<ul style="list-style-type: none">Fiziksel iş;Tekrarlanan görevler;Göz kontrolleri;Karmaşık sistemler.			
9.7	İletişim 2		2	2
	<ul style="list-style-type: none">Dahili ve çalışma grupları (timler) arası;İşlem yazma ve kayıt tutma;Güncellik, süreklilik;Bilgileri dışarı yayma.			
9.8	İnsan Hatası 2		1	2
	<ul style="list-style-type: none">Hata modelleri ve yöntemleri;			

- Bakım işlemlerindeki hata tipleri;
- Hatalara bulaşma (örneğin: kazalar)
- Hatalardan kaçınma ve yönetme.

9.9 İşyerindeki Tehlikeler

1

2

- Tehlikelerin tanınması ve önlenmesi;
- Acil durumların yönetimi.

Module 9, Q1 - 50

1. Accidents and engineering faults are

- insignificant and increasing
- insignificant and decreasing
- significant and increasing

2. Information on drugs and alcohol can be found in

- AWN 3
- AWN 47
- BCARs

3. 70 – 80% of the total focusing ability of the eye is carried out by the

- iris
- lens
- cornea

4. What distance should a person without hearing difficulties be able to hear an average conversational voice in a quiet room

- 1 metre (3 feet)
- 2 metres (6 feet)
- 3 metres (9 feet)

5. If you have been prescribed new medicine by your doctor you should

- continue with your normal shift pattern
- give the new medication a 24 hour trial
- take 3 days off work to try out the new medication

6. After a general anaesthetic you should

- return to work as soon as possible
- take at least 7 days off work
- not return to work for at least 24 to 48 hours (depending on the individual)

7. Your doctor has prescribed you tranquillizers as you are suffering from depression. You should

- tell your employer and carry on work as normal
- not work at all when taking the tranquillizers
- not tell your employer and carry on work as normal

8. The use of 'pep' pills by an aircraft engineer

- is recommended only when working late or on night shift as they stimulate the senses and make you less prone to accidents

- b) can only be used if prescribed by your doctor
- c) should never be done (except for coffee)

9. You are taking SUDAFED to relief nasal congestion. You should

- a) continue to take them at work because SUDAFED has no side effects
- b) stay away from work until you no longer require the SUDAFED
- c) avoid making engineering decisions or performing licensed duties

10. A perforated ear drum could occur if

- a) you were subjected to continuous noise below 8kHz
- b) you blew your nose excessively
- c) you were subjected to intermittent noise above 25kHz

11. How long is the short term memory good for remembering 7 items?

- a) up to 30 seconds
- b) 30 to 60 seconds
- c) above 60 seconds

12. What is peer group pressure?

- a) The influence the House of Lords have over the House of Commons
- b) Our behaviour influenced by our friends and colleagues
- c) The influence an individual has over a group of people

13. What is white finger?

- a) A disorder of the finger which may occur through continuous use of pneumatic tools because of reduced blood flow
- b) A reaction when the white blood cells die and contaminate the fingers
- c) A skin disorder caused by extensive contact with oils and solvents

14. What is slow wave sleep?

- a) Stage 2 – 4 sleep
- b) REM
- c) Paradoxical sleep

15. What constitutes a good work handover?

- a) A written documentation of the work done
- b) A verbal account of the work done
- c) A written and verbal account of the work done

16. Environmental stresses are

- a) caused by noise, fumes, heat and vibration
- b) not normally cumulative
- c) tolerated by everyone equally

17. A regular behaviour of an individual is known as

- a) the norm
- b) habit
- c) culture

18. Phase 3/4 sleep

- a) can be induced by alcohol
- b) occurs only once per sleep cycle
- c) is most beneficial for the body's restoration

19. Human error can be caused by

- a) high body temperature
- b) low body temperature
- c) normal body temperature

20. In a discussion, the person who is most likely to be agreed with is

- a) the person with the highest status
- b) the most argumentative person
- c) the person who repeats the point most times

21. What meal is most recommended after a long shift?

- a) High carbohydrates
- b) Low carbohydrates
- c) High protein

22. Long shift work will

- a) always increase your diagnostic and maintenance ability
- b) always decrease your diagnostic and maintenance ability
- c) initially decrease your diagnostic and maintenance ability but eventually increase your diagnostic and maintenance ability as you get used to it

23. When someone is working in an enclosed space (such a fuel tank), another person should be outside the space in constant communication to

- a) ensure compliance with the maintenance manual
- b) provide instructions to the tradesman
- c) for safety reasons

24. An engineer who has developed his own way of performing a task

- a) is in regular violation
- b) should be commended for his resourcefulness
- c) is improving maintenance efficiency

25. The circadian cycle body temperature

- a) varies by 1.5°F
- b) varies by 1.5°C
- c) does not vary

26. The aim of human factors programs within an organizations is

- a) to reduce costs by increasing efficiency, safety and quality and decreasing waste through human error
- b) to optimize the relationship between maintenance personnel and systems with a view to improving safety, efficiency and well-being
- c) to safeguard the health and safety of maintenance personnel by reducing accidents in the workplace

27. The scientific study of measurements of the human body is known as

- a) anthropometrics
- b) ergonomics
- c) physiology

28. The SHEL model of human factors takes into account

- a) Software, hardware, efficiency and liveware
- b) Software, hardware, environment and liveware
- c) Software, hardware, environment and location

29. How long can the aural reflex protect the ear from loud noise?

- a) 15 seconds
- b) 15 minutes
- c) 5 seconds

30. Acute stress is

- a) typically intense but of short duration
- b) a frequently reoccurring stress or of long duration
- c) intense stress of long duration

31. What part of the SHEL model would the writing and interpretation of maintenance manuals fit into?

- a) Software
- b) Hardware
- c) Environment

32. The "error chain" theory refers to

- a) a company is only as good as its weakest employee or employees, and removal of that/those employee from the chain should prevent errors
- b) errors are caused by a chain of linked events, and the breaking of one link in the chain will prevent the error
- c) a chain of errors within an organizations can be investigated, and similar errors prevented by determining a common link between them

33. Murphy's law is perpetuated mainly by

- a) poor aircraft design
- b) violations
- c) complacency

34. What part of the eye controls the amount of light that is allowed to enter the eye?

- a) The cornea
- b) The iris
- c) The pupil

35. Learning of a routine by repeated practice is known as

- a) episodic memory
- b) motor programming
- c) cognitive learning

36. An aircraft engineer who has 'responsibility'

- a) must be licensed on the particular type of aircraft

b) is in a management position within their company hierarchy
c) are liable to be called to account as being in charge or control of, or answerable for something

37. The ear is used to detect

- a) acceleration
- b) speed
- c) neither acceleration or speed

38. Chronic stress is

- a) typically intense but of short duration
- b) a frequently reoccurring stress or of long duration
- c) intense stress of long duration

39. Smoking cannabis

- a) subtly impairs performance for up to 24 hours
- b) has only a short term affect upon performance
- c) has a noticeable affect on a persons behaviour and performance for up to 24 hours

40. Employers must provide their employees with personal ear protectors if the noise level reaches

- a) 60 dB
- b) 70 dB
- c) 85 dB

41. The impact of human factors and human error is most important to

- a) technicians and engineers
- b) planners and managers
- c) It is equally important to technicians, engineers, planners and managers

42. What part of the SHELL model would the aircraft design fit into?

- a) Environment
- b) Hardware
- c) Liveware

43. Murphy's law can be regarded as the notion

- a) "If something can go wrong it will"
- b) "If something goes wrong I am certain to get the blame"
- c) "It can never happen to me"

44. Light enters the eye through the

- a) cornea
- b) retina
- c) visual cortex

45. To focus on a near object, the lens of the eye must

- a) be flattened
- b) be thickened
- c) be widened

46. Which type of memory is most susceptible to interference from external influences

- a) ultra short term
- b) short term
- c) long term

47. Where are the responsibilities of Licensed Aircraft Engineers laid down?

- a) The Air Navigation Order
- b) CAP 715
- c) AWN 3

48. Performance is

- a) directly proportional to the individual's state of arousal
- b) inversely proportional to the individual's state of arousal
- c) greatest only at one optimum level of arousal but diminishes as arousal decreases or increases

49. Missing a break in an effort to get a job done within a certain time frame

- a) can be done by those actually doing the job providing the supervisors take regular breaks
- b) can be done providing adequate rest period is available at the end of the shift
- c) can be counterproductive, as fatigue diminishes motor skills, perception, awareness and standards.

50. The maximum allowable noise dose is

- a) 85 dB
- b) any combination of noise and time which exceeds 90 dB TWA
- c) 90 dB for 24 hours

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51. Tiredness causes visual acuity to

- a) increase
- b) decrease
- c) Visual acuity is not affected by tiredness

52. Peripheral vision is detected by the

- a) cones
- b) rods
- c) fovea

53. Extreme discomfort experienced by a maintenance engineer due to working in a confined space is known as

- a) claustrophobia
- b) agoraphobia
- c) acrophobia

54. Diffusion of responsibility may occur

- a) to an individual working alone
- b) to an individual working as a member of a team
- c) with certain people whether they are working in a team or alone

55. Which part of the SHEL model is most difficult to protect from errors by 'designing out' or to 'work around'

- a) Software
- b) Environment
- c) Liveware

56. Narrowing of attention occurs at

- a) high levels of arousal
- b) low levels of arousal
- c) both high and low levels of arousal

57. A good shift handover should include details of

- a) tasks that have been completed; tasks in progress, their status, any problems encountered etc.; tasks to be carried out and general company and technical information.
- b) tasks that have been completed; persons who carried out the tasks; tasks to be carried out and general company and technical information.
- c) tasks that have been completed; tasks in progress, their status, any problems encountered etc.; tasks to be carried out and tools required to carry out the tasks.

58. The blood/alcohol limit is

- a) 20 milligrams of alcohol per 100 millilitres of blood for commercial aircrew, air traffic controllers and 80 milligrams of alcohol per 100 millilitres of blood for maintenance engineers
- b) 40 milligrams of alcohol per 100 millilitres of blood
- c) 20 milligrams of alcohol per 100 millilitres of blood for commercial aircrew, air traffic controllers and maintenance engineers

59. A company's safety policy should be defined in

- a) the Maintenance Organization Exposition
- b) the Maintenance Schedule
- c) in CAP 716

60. Which of the following is least associated with the study of human factors?

- a) Ergonomics
- b) Health and Safety
- c) Human error

61. What part of the eye is colour sensitive?

- a) The cones
- b) The rods
- c) The iris

62. 'Risky shift' is

- a) the tendency for a group of workers to arrive at a course of action which is riskier than that which any individual member might pursue
- b) the probability of being assigned to a work task which involves some element of risk or physical danger
- c) the name given to an inadequate shift handover

63. Paradoxical sleep is also known as

- a) Stage 3 sleep
- b) Stage 4 sleep
- c) REM sleep

64. Technical communication between two engineers can go wrong if

- a) the recipient makes an assumption of the meaning of the information being transmitted
- b) the sender uses a sketch to augment the information transmittal
- c) the recipient uses body language to provide feedback to the sender

65. What type of lens is used to overcome short sightedness?

- a) Convex
- b) Concave
- c) Bi-focal

66. To ensure that a technician remains reasonably current on the aircraft types to which they hold authorizations, they are required that

- a) they are involved in at least 6 months of actual aircraft maintenance experience in any 2 year period only.
- b) they have appropriate continuation/refreshers training only.
- c) they are involved in at least 6 months of actual aircraft maintenance experience in any 2 year period and they have appropriate continuation/refreshers training.

67. When taking medicine for the first time

- a) take the first dose at least 24 hours before any duty to ensure that it does not have any adverse effects
- b) consult a doctor if you need to carry out any duties
- c) absent yourself from work for the duration of use of the medicine

68. For a man to maintain his fitness and health the conducive maximum recommended alcohol intake is

- a) 3 - 4 units per week
- b) 28 units per week
- c) 28 units per day

69. The type of memory which is most easily influenced by a person's expectations of what should have happened is the

- a) semantic memory
- b) episodic memory
- c) long term memory

70. The inability for the eyes to accommodate sufficiently is known as

- a) myopia
- b) Hypermetropia
- c) Presbyopia

71. An aircraft maintenance engineer who wears glasses or contact lenses should

- a) have their duties restricted accordingly.
- b) should not require their duties to be restricted providing they have frequent checks to ensure the adequacy of their glasses/contact lenses.
- c) should not require their duties to be restricted providing they wear their glasses/contact

lenses at all times they carry out their duties

72. The difference between what a person 'can' do and what he 'will' do is largely determined by his

- a) physical and mental health
- b) motivation
- c) education and training

73. Human Circadian rhythms cycle on a

- a) 24 hour time scale
- b) 25 hour timescale
- c) 8 hour timescale

74. Whose responsibility is it that an engineer remains current on new technology and procedures?

- a) The engineer's
- b) The organization's
- c) The CAA's

75. When inspecting an airframe structure for small cracks, to avoid a crack being missed you should

- a) constantly move the eye across and around the area of interest to avoid the crack falling into the eye's natural blind spot
- b) hold the vision stationary for several seconds on each area to allow the eye to focus correctly.
- c) not use a mirror as mirrors absorb and refract light and may obscure a crack

76. A good practice for a shift handover is for shifts to be specifically rostered so there is an overlap of

- a) 5 - 10 minutes
- b) 20 - 30 minutes
- c) 2 - 3 hours

77. Ultra short term memory has a duration of about

- a) 2 seconds
- b) 10 to 20 seconds
- c) 80 - 100 milliseconds

78. What type of lens is used to correct long sightedness?

- a) Convex
- b) Concave
- c) Bi-focal

79. A violation in an aircraft maintenance procedure

- a) is always considered an act of vandalism or sabotage
- b) is usually carried out with the best intentions from a genuine desire to 'get the job done'
- c) is always carried out to satisfy some personal need, often unrelated to the actual task

80. Removal of alcohol from the blood stream

- a) can be speeded up by drinking strong coffee

- b) can be speeded up by sleeping
- c) cannot be speeded up

81. Visual Acuity is the ability

- a) to differentiate between different colours
- b) to detect objects in the peripheral vision
- c) of the eye to discriminate sharp detail at varying distances

82. According to Maslow, safety needs (protection from potentially dangerous objects or situations)

- a) is the most primal need of humans
- b) is second only to physiological needs (food drink, oxygen etc.)
- c) is the last need of human after all other needs have been satisfied.

83. For a person with normal Circadian rhythms, the body temperature will be lowest

- a) at midday
- b) upon waking
- c) between 4 and 6 o'clock in the morning

84. Which type of human error is easiest to correct?

- a) Variable error
- b) Constant error
- c) Reversible error

85. If a maintenance engineer has a cold or flu he should

- a) only absent himself from duty if his work contract includes sickness pay
- b) only absent himself from duty if there are no staff shortages at his workplace or within his work team
- c) absent himself from duty until fully recovered, regardless of other factors

86. 'Environmental capture' is a type of error possible when an engineer does the same job repeatedly

- a) on the same type of aircraft
- b) but on different types of aircraft
- c) in a short timescale

87. Consumption of alcohol

- a) increases mental and physical reaction times
- b) decreases mental and physical reaction times
- c) has no affect upon mental and physical reaction times

88. 'Asynchronous' communication includes

- a) technical manuals, memos, Advisory Circulars and Airworthiness Directives
- b) face-to-face communications
- c) immediate voice communication by radio link

89. The "working memory" is

- a) ultra short term memory
- b) short term memory
- c) long term memory

90. Colour defective vision affects

- a) almost 1 in 10 of men
- b) almost 1 in 10 of women
- c) more women than men

91. At lower light levels, the visual sensing is performed mainly by the

- a) cones
- b) rods
- c) fovea

92. The symptoms of de-motivation are very similar to the symptoms of

- a) stress
- b) tiredness
- c) mental illness

93. Alertness and performance is reduced when the body temperature is

- a) below normal
- b) above normal
- c) either above or below normal

94. In the 'slips, lapses and mistakes' definition of errors, forgetting to replace an engine cowling would be considered a

- a) slip
- b) lapse
- c) mistake

95. If an image formed on the retina of the eye is inverted relative to the viewers normal perception of the image, the viewer will

- a) become disoriented and dizzy
- b) behave and feel normal
- c) consciously mentally revert the image so as to make sense of his/her surroundings

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96. People with colour defective vision usually have difficulty differentiating between

- a) blue and yellow
- b) red and green
- c) blue and green

97. The "cocktail party effect" is descriptive of

- a) selective attention
- b) divided attention
- c) focused attention

98. Hypermetropia is the medical name for

- a) long sightedness
- b) short sightedness
- c) deafness

99. What range of sound is usually impaired first with the onset of presbycusis

- a) high pitch sound
- b) mid range sound
- c) low pitch sound

100. In the UK, an airside ramp vehicle driver is most likely to go deaf in

- a) the right ear
- b) the left ear
- c) both ears

101. The amount of light which is allowed to enter the eye can vary by a factor of

- a) 5:1
- b) 50:1
- c) 500:1

102. The desire of an individual to 'conform' to a group by allowing one's opinions, attitudes and actions to be affected by prevailing conditions is known as

- a) culture issues
- b) esteem needs
- c) peer pressure

103. A good rule of thumb for an adequate amount of sleep is

- a) two hours of high quality sleep is good for one hour of activity
- b) one hour of high quality sleep is good for one hour of activity
- c) one hour of high quality sleep is good for two hours of activity

104. In the 'slips, lapses and mistakes' definition of errors, a mistake would typically occur at the

- a) execution stage
- b) storage (memory) stage
- c) planning stage

105. Presbyopia often effects the eyes of people after the age of

- a) 40
- b) 55
- c) 70

106. When a person moves from a poorly lit area to a well lit area, what is the minimum time they should allow for the eyes to adapt?

- a) 7 minutes
- b) 7 seconds
- c) 30 seconds

107. From what age does hearing ability normally begin to decline?

- a) 30
- b) 40
- c) 50

108. 'Confirmation bias' is

- a) The subconscious attention to evidence which confirms an engineer's beliefs, and inattention to evidence which contradicts his beliefs

- b) An inspection of work carried out by an independent inspector or supervisor
- c) Error in work carried out by a supervisor who has also inspected and signed for his own work

109. Finding that familiar tasks (such as programming the video recorder) seems more complicated than usual, could be an early indication of

- a) Acute stress
- b) Chronic fatigue
- c) A cold or flu

110. Up to what proximity to an aircraft with engines running is the use of ear protection recommended for maintenance personnel?

- a) 20 - 30 metres
- b) 200 - 300 metres
- c) 2 - 3 metres

111. A person with 20/40 vision has

- a) better eyesight than a person with 20/20 vision
- b) worse eyesight as a person with 20/20 vision
- c) the same eyesight as a person with 20/20 vision

112. A person with low self-esteem is

- a) more likely to conform to peer pressure
- b) less likely to conform to peer pressure
- c) Conformity to peer pressure is not affected by level of self-esteem

113. Long term memory capacity is usually

- a) 4 - 8 years
- b) 12 months
- c) unlimited

114. The inability for the eyes to accommodate sufficiently is known as

- a) myopia
- b) hypermetropia
- c) presbyopia

115. Ultra short term memory has a duration of about

- a) 2 seconds
- b) 10 to 20 seconds
- c) 80 - 100 milliseconds

116. The only permitted stimulant is

- a) caffeine
- b) bromine
- c) amphetamine

117. The incident where a 737 lost oil from both engines is a direct result of

- a) engine vibration
- b) human factors
- c) human error

118. Motivation is

- a) the thing that drives someone to do something
- b) a reward or punishment designed to reduce errors
- c) a reward or punishment designed to increase work rate

119. On a task that is complex, an engineer uses his own procedures due to pressure. This is legally termed

- a) violation
- b) initiative
- c) modification

120. Large amounts of caffeine can

- a) cause anxiety, headaches and stress
- b) improve alertness and increase awareness
- c) reduce anxiety and stress

121. The symptoms of stress are

- a) indications of improved work performance
- b) violence, sickness, absence from work, drug and alcohol abuse
- c) irritability, forgetfulness, sickness, absence from work, drug and alcohol abuse

122. Sleeping tablets can

- a) help REM sleep and realign circadian rhythms
- b) slow reaction time and dull the senses
- c) increase alertness after waking the following morning

123. Peer pressure is

- a) typified by the expression "the way we do it around here"
- b) the perceived pressure to carry out a task in the same way your colleagues would
- c) the perceived pressure to conform to what you believe your colleagues expect of you.

124. Studies have shown that working outside in a temperature of 55°F will have what effect on hand dexterity?

- a) None
- b) Very slight
- c) Around 50%

125. When working with bright lights consideration should be given to

- a) glare
- b) shadows
- c) blurred image

126. Visual inspection by an 'experienced' maintenance engineer is

- a) knowledge and rule base behaviour
- b) skill and knowledge based behaviour
- c) skill and rule based behaviour

127. Information for certifying staff when medically unfit is found in

- a) ANO

- b) AWN 3
- c) AWN 47

128. The eyesight of an engineer is the responsibility of

- a) the optician
- b) the engineer
- c) the Quality Manager

129. What effect would the consumption of 3 - 5 units of alcohol?

- a) Loss of quality of sleep
- b) Low REM sleep
- c) A drop in body temperature

130. The best type of handover is

- a) the use of handover logs and a brief by the shift supervisor
- b) when each individual gets a personal handover of the job
- c) when written instructions are given by the engineer finishing his shift to the engineer just beginning a shift.

131. Long shift work

- a) decreases the ability to recognize defects
- b) increases the ability to recognize defects
- c) has no effect on the ability to recognize defects

132. A good team is one where every member has

- a) an opinion
- b) an input
- c) a job

133. The memory can be aided by

- a) memory checking
- b) mind logging
- c) a checklist

134. In AWN 47 what is the recommended hearing test?

- a) The ability to hear an average conversation voice at a distance of 10 feet
- b) The ability to hear a certain noise at 8 feet
- c) The ability to hear an average conversation voice at a distance of 6 feet

135. The most effective form of communication is

- a) written communication
- b) explicit communication
- c) verbal communication

136. Circadian Rhythms control

- a) urine output
- b) body temperature
- c) sleeping patterns

137. Cycles of sleep repeat

- a) approximately each 4 hours
- b) approximately each 90 minutes
- c) approximately 20 minutes

138. Iconic memory

- a) stores visual information and lasts up to ½ second
- b) stores sounds and lasts up to 2 seconds
- c) stores visual information and lasts up to 2 seconds

139. The first stage in information processing is

- a) perception
- b) memorizing
- c) decision

140. Information, if not rehe****d is lost in

- a) 10 - 20 seconds
- b) 1 minute
- c) 30 - 40 seconds

141. In AWN 47, what is the standard hearing test?

- a) The ability to hear a conversation in a quiet room at 2 metres
- b) The ability to hear a conversation in a quiet room at 10 metres
- c) The ability to hear a conversation in a noisy room at 2 metres

142. Which of the following is true?

- a) Noise does not affect a person's standard of work
- b) Noise does affect the standard of work with certain people
- c) Noise affects the standard of work proportionately with the level of the noise

143. AWN 47 states that the engineer

- a) is responsible for the work he has signed for
- b) is responsible for health and safety
- c) does not report for work if unfit

144. Information in the short term memory not rehe****d will be lost in

- a) 1 - 3 months
- b) 2 - 3 weeks
- c) 10 - 20 seconds

145. The effect on an engineer of environmental noise is

- a) it improves concentration and quality of work
- b) it decreases concentration and quality of work
- c) it has no affect on concentration or quality of work

146. If a 737 had both engines serviced and lost oil from both engines in flight, this

- a) can be considered an acceptable probability
- b) can be expected to happen statistically due to the number of aircraft in service
- c) would be a direct result of human error

147. Excess noise in a working environment can

- a) not affect performance
- b) lower resistance to other stresses
- c) raise resistance to other stresses

148. What do you do when someone is hypothermic?

- a) Warm them up
- b) Give them a drink because of dehydration
- c) Feed them sweet things because of their diabetes

149. An effective group work is when

- a) everyone discusses ideas and opinions
- b) everyone has a job to do
- c) everyone contributes in some way

150. A stimulant allowed to be taken without a doctor's prescription is

- a) bromine
- b) caffeine
- c) antihistamine

Module 9, Q151 - 200

151. The conditions laid down in AWN 47 are applicable to aircraft engineers

- a) who sign for work completed
- b) for their safety at work
- c) when under the influence of drink or drugs

152. Which of the following defines a peer pressure situation?

- a) Your girlfriend telling you to go out with her
- b) Your supervising manager pressuring you to complete the current task on time
- c) Your colleagues pressuring you to work faster so they can go home

153. If the temperature is -15°C and you are working on the line, you should

- a) stop all maintenance until the weather improves
- b) carry on regardless of the weather to keep the aircraft flying
- c) rotate engineers regularly and have a supervisor keep an eye on them

154. What is the CAA standard for vision?

- a) Acceptable uncorrected vision
- b) Acceptable corrected vision
- c) 18/20 vision

155. Trouble shooting is

- a) rule based
- b) skill based
- c) knowledge based

156. A violation is

- a) a deliberate departure from the rules
- b) an unintentional error
- c) an intentional act of sabotage

157. A mistake is

- a) a deliberate departure from the rules
- b) an unintentional error
- c) an intentional act of sabotage

158. Consumption of 3 - 4 units of alcohol before sleep can

- a) lower the body temperature
- b) increase the quality of sleep
- c) increase REM sleep

159. The cycles of body temperature, sleep requirement and alertness are called

- a) earth cycles
- b) ecto - meridian cycles
- c) circadian rhythms

160. Studies have shown that working outside in a temperature of 55°F will have what effect on hand dexterity?

- a) None
- b) Very slight reduction
- c) Around 50% reduction

161. The percentage of accidents attributable to aircraft maintenance and inspection causes is

- a) significant and rising
- b) now less significant due to more advanced maintenance practices
- c) now less significant due to the introduction of more sophisticated aircraft

162. Whilst working on an aircraft a spanner placed on the wing surface is kicked off and subsequently falls into an open engine cowl, breaking off a sensor connector. This is an example of

- a) a skill based error
- b) a punishable occurrence
- c) Murphy's law

163. In the human eye most of the refraction required to bring an image into focus on the retina is accomplished by the

- a) cornea
- b) iris
- c) lens

164. The average capacity of the working memory is about

- a) 4 chunks of information
- b) 12 chunks of information
- c) 7 chunks of information

165. Itemized checklists should be dealt with

- a) as memorized
- b) item by item, in order, to cover every step diligently
- c) in any order, provided all steps are completed

166. Successful working teams have the following attributes:-

- a) Members participate in team activities but retain their own individual requirements
- b) All the team members work in isolation and therefore provide highly individual solutions to the same problems
- c) All the members participate in team activities and discussions

167. Good aircraft maintenance supervisory judgment is usually based upon

- a) knowledge and experience and reference to course notes
- b) the evidence available and forceful management ability
- c) knowledge and experience and reference to approved data

168. The intake of caffeine in moderate quantities can result in

- a) lack of sleep and subsequent disruption to the circadian rhythms
- b) a temporary increase in the ability to sustain vigilance and increased alertness
- c) anxiety, headaches and negative mood states

169. Cold stress can be influenced by

- a) the wind chill factor
- b) insufficient vitamins in the diet
- c) a drop in body temperature

170. Working excessively long shifts during unsociable hours can lead to

- a) decreased ability to detect defects during aircraft maintenance
- b) increased ability to detect defects during aircraft maintenance
- c) an increased immunity to stress

171. To establish a reliable means of communication between teams

- a) a detailed written handover is the most effective method
- b) change-over logs and verbal communication are essential
- c) detailed verbal communication is the most effective method

172. In theory, human error is most likely to occur

- a) when the body temperature is stable
- b) during very hot weather
- c) when the body temperature is at its lowest

173. What happened to contribute towards the incident in 1995 where a Boeing 737 lost oil pressure and had to divert?

- a) The boroscope inspection had been inadequate
- b) The HP rotor drive covers of both engines had not been refitted after a boroscope inspection
- c) Both warning indications were faulty, due to crossed connections

174. What is the most common cause of in-flight engine shutdown?

- a) Foreign object damage
- b) Improper fault isolation, inspection or test
- c) Incomplete installation

175. Organizational culture (whether good or bad) is best described as

- a) "the way we do things around here"

- b) written procedures
- c) team resource management

176. The main disadvantage of carrying out critical inspections under very bright artificial light is

- a) shadows
- b) glare
- c) filtered light

177. An individual suffering from stress when confronted with a task within his capability is likely to think the task is

- a) too demanding
- b) someone else's responsibility
- c) not demanding enough

178. Trouble shooting is

- a) skill based
- b) knowledge based
- c) rule based

179. An experienced engineer fits the wrong seal during a routine component change, this is

- a) skill based
- b) knowledge based
- c) rule based

180. An engineer is working on a wing and kicks a spanner off into an engine cowl and breaks a sensor, this is

- a) skill based error
- b) knowledge based error
- c) rule based error

181. Awn 47 does not mention

- a) sudafed
- b) pep's
- c) melatonin

182. The incident in 1995 where a Boeing 737 lost oil pressure and had to divert was

- a) a typical human factors related error
- b) to be expected due to the number of flights each day
- c) due to Murphy's law

183. 3 – 4 units of alcohol taken before sleep reduces

- a) quality of sleep
- b) quantity of sleep
- c) both

184. The retina is situated

- a) in front of the cornea
- b) behind the cornea with the lens
- c) at the back of the eye with the optic nerve

185. An effective shift handover will comprise of

- a) the outgoing and incoming personnel individually handing over ongoing tasks
- b) the shift supervisor informing personnel of all ongoing work
- c) handing over ongoing tasks in a designated area

186. Which is important in sleep?

- a) Quality
- b) Quantity
- c) Both

187. The difference between a mistake and a violation is

- a) a mistake is less serious than a violation
- b) a violation is not deliberate
- c) a mistake is unintentional and a violation is deliberate

188. Stressors in the environment of noise and heat will cause

- a) a total loss of attention
- b) a loss of attention and a distraction
- c) no loss of attention

189. When going from day shift to night shift, efficiency

- a) stays the same
- b) will drop off in the first four weeks
- c) will drop off after the first four weeks

190. An engineer finds his own method of doing a repetitive job.

- a) He should be commended for his resourcefulness
- b) He should hand it on to his junior colleagues
- c) He is in regular violation

191. When working on aircraft, the consumption of alcohol

- a) a certain amount is permissible
- b) is permissible providing the drink drive limit is not exceeded
- c) you cannot work on aircraft even 8 hours after consuming large quantities of alcohol

192. An experienced engineer is fitting a valve. A required seal is not fitted. What type of error is this?

- a) Rule based
- b) Skill based
- c) Knowledge based

193. Most engineering related incidents are due to

- a) installing dirty components
- b) installing components incorrectly
- c) installing worn or old components

194. What is the most important means of communication in aircraft maintenance engineering?

- a) Written

- b) Implicit
- c) Verbal

195. Drinking 3 – 4 units of alcohol before sleeping results in

- a) a drop in body temperature
- b) loss of quality sleep
- c) loss of non-REM sleep

196. Environmental stresses in an extreme high temperature and noisy environment causes

- a) no loss of attention or distraction
- b) total loss of attention
- c) attention to be disturbed and distributed

197. In an organization which practices human factors there is

- a) a no blame culture
- b) no blame unless there is a deliberate violation
- c) punishment for all violations

198. What effect does alcohol have on sleep?

- a) Decreases quantity of sleep
- b) Decreases quality of sleep
- c) Both

199. The most effective form of communication is

- a) written communication
- b) implicit communication
- c) verbal communication

200. The hub of the SHEL model of human factors is

- a) liveware
- b) hardware
- c) environment

Module 9, Q201 - 250

201. Motor programme refers to

- a) a task that has been carried out so many times that it becomes automatic
- b) motivational computer software
- c) a task that becomes programmed into short term memory

202. Memory which can be influenced by a persons expectations of what should have happened is

- a) episodic
- b) semantic
- c) echoic

203. Little black books are

- a) not to be used as information stored may be out of date
- b) a good time saving device for an engineer
- c) ok as long as the information stored is from an approved source

204. A person can be said to be motivated if

- a) they are taking action to achieve something
- b) they cut corners to get the job done quickly
- c) they are on a productivity bonus

205. Group polarisation can result in

- a) a group making a more cautious or extreme decision
- b) a group making a better decision than the individual
- c) members of the group not talking to one another

206. Narrowing of attention occurs in states of

- a) low arousal
- b) high arousal
- c) optimum arousal

207. If you are given a task that you are unsure of you should

- a) ask someone that's done it before
- b) consult the appropriate approved data
- c) consult type course notes

208. A type 1 visual inspection error occurs when

- a) a good item is incorrectly identified as faulty
- b) a faulty item is missed
- c) a duplicate inspection is not carried out

209. Hypoxia can

- a) impair the sensitivity of the rods and hence have a detrimental effect on eyesight
- b) improve the night vision of the cones of the eyes
- c) cause a person to slip into a coma if they are not quickly warmed up again

210. You are taking prescribed drugs.

- a) Carry on working, as long as you know the primary and secondary side effects
- b) Do not carry out aircraft maintenance
- c) Carry on as normal

211. Information in the long term memory

- a) is easily lost
- b) is easily transferred to the short term memory
- c) is only available under hypnosis

212. How many things can be stored in the short-term memory?

- a) 0 – 5
- b) 9 – 15
- c) No limit

213. Which of the following is an acceptable substance, with regard to aircraft maintenance?

- a) Caffeine
- b) Penicillin
- c) Beta Blockers

214. Which of the following environments is best suited to aircraft maintenance?

- a) Working outside, at night, in the rain
- b) Working outside, in the direct midday sun
- c) Working inside in a well lit, comfortable hanger

215. What is the difference between error and violation?

- a) Error is deliberate, violation is not.
- b) Violation is deliberate, error is not.
- c) No difference.

216. Circadian Rhythms have a cycle of

- a) 23 hours
- b) 24 hours
- c) 25 hours

217. Which of the following statements is true regarding human performance?

- a) Human performance is better with less stress, and in the morning
- b) Human performance is better with less stress, and in the afternoon
- c) Human performance is better with less stress, irrespective of the time of day

218. What causes the most aircraft accidents?

- a) Technical Fault
- b) Communication
- c) Misunderstanding between ATC and pilot on approach

219. What is a latent failure?

- a) A mistake that has already been made, but has not yet caused an accident
- b) Receiving bad instruction from a manager who is out of touch with maintenance
- c) A failure which could not have been predicted

220. What happens when you break the “chain of error”?

- a) Accident does not happen
- b) Accident happens
- c) Pilot submits report within 72 hours

221. Engineers often work on raised platforms, ladders etc. What dangers can this contribute to?

- a) Staging may be made of wood
- b) Ladders may slip and man falls
- c) Two workers may be carrying out maintenance on the same lift

222. Intense or loud noise may lead to

- a) fatigue
- b) deafness
- c) no effects

223. After drinking alcohol, absorption is dependant on

- a) weight
- b) age
- c) time

224. Who is most likely to deviate from standard procedure?

- a) Old tired man
- b) Over confident, young man
- c) Young, inexperienced man

225. Risk assessment and management is

- a) the investigation of risks and totally removing them and the monitoring of new work practices
- b) reduction of risks to a tolerable standard and monitoring the situation
- c) choosing a cheaper supplier or manufacturer for parts

226. When carrying out a risk assessment

- a) a hard hat should be worn
- b) it is necessary to identify where equipment/procedures might fail
- c) an investigation is made to determine what caused an accident or incident

227. A shift hand-over is where

- a) each individual person hands over their work
- b) a shift supervisor hands the work over to a complete shift
- c) the work done is written down by a company organisation

228. In the eye, the cones are used mainly in

- a) low light levels and they give poor colour vision
- b) bright light levels and they give poor colour vision
- c) bright light to give fine detail

229. A person suffering from presbyopia would normally

- a) wear spectacles when reading or carrying out close detail work
- b) be short sighted and need to wear spectacles to see objects more than 30cm away
- c) have defective colour vision and not be allowed to carry out maintenance work on cable looms

230. Noise signals are carried to the brain by the

- a) Eustachian nerve
- b) Auditory nerve
- c) Sensory nerve

231. Poking sharp objects into the ear should be avoided as it is likely to result in

- a) tinnitus ringing
- b) tympanic membrane perforation
- c) conductive hearing loss

232. An engineer has a body mass index of 28. This would normally be classed as

- a) a healthy weight with no real risk of developing health problems
- b) underweight with no real risk of developing health problems
- c) overweight and at a risk of developing health problems

233. One unit of alcohol is equivalent to

- a) half a pint of beer

- b) one pint of beer
- c) two pints of beer

234. If an average adult has consumed the equivalent of four units of alcohol, how long will it take for this level to drop to two units?

- a) two hours
- b) four hours
- c) eight hours

235. Facility lighting in a hanger should be

- a) provided by fixed light units giving light to shadow ratio of 3:1
- b) portable so that individual tasks may be well lit
- c) no brighter than 10 lux

236. When tasks are being designed, the maximum mass an engineer should lift is

- a) 50kg
- b) 32kg
- c) 23kg

237. When carrying out a visual inspection, an engineer is likely to make a parallax error when

- a) inspecting a component using a 5× or 10× magnifying glass
- b) using precision measuring instruments such as a vernier gauge or AVO meter
- c) viewing internal details with a borescope

238. When describing tasks, the term 'complex system' refers to a task

- a) involving fault finding
- b) which may be broken down into many steps
- c) which involves decision making rather than practical work

239. If an engineer forgets to fit a seal to an engine drain plug, he or she has

- a) committed a violation
- b) made an error of omission
- c) made an error of commission

240. Sensing and perception errors are most likely to result from

- a) poor lighting or noise
- b) lack of adequate training
- c) distraction of other engineers

241. An engineer is performing a task in less than ideal conditions in order to meet an operational deadline is

- a) making a rule based slip
- b) committed a routine error
- c) committing a situation violation

242. An engineer who has developed his or her own method of performing a complex task

- a) should be commended for his/her resourcefulness
- b) is violating on a regular basis
- c) is performing a rule based behaviour

243. Error tolerance in maintenance progress refers to
a) performance of tasks specifically designed to identify errors during a maintenance task
b) process of eliminating the contributing factors to error
c) ability of a system to remain functional after a maintenance error

244. Task lighting in a hanger is mainly
a) provided by fluorescent tubes
b) portable so that individual tasks may be well lit
c) provided by fixed lighting

245. "Attention Getters" are used
a) to get the operators full attention
b) to gain the operators attention whilst allowing them to continue with the task in hand
c) to make the operator focus his/her attention fully on the task in hand

246. At what frequency does the human ear hear?
a) 16 – 20kHz
b) 20kHz
c) 16kHz

247. How many stages of sleep are there?
a) 4
b) 3
c) 5

248. REM sleep can also be referred to as
a) slow wave sleep
b) paradoxical sleep
c) paranormal sleep

249. The presence of something damaging to ones health would be an example of a
a) physical stressor
b) psychological stressor
c) reactive stressor

250. Aircraft engineers can take common sense steps to maintain their fitness and health. These are known as
a) self-improvement measures
b) positive measures
c) positive self-improvement

Module 9, Q251 - 271 & Ans

251. Motor programmes
a) are stored as working rules in long term memory
b) are behaviour subroutines
c) require conscious thought to engage

252. The pupil of the eye grows smaller
a) in condition of reduced light

- b) in condition of increased light
- c) to focus the fovea

253. Conductive deafness can be caused by damage to the

- a) otoliths
- b) cochlea
- c) semi circular canals

254. Detail is best sensed by the _____ and movement best sensed by the _____

- a) the periphery and fovea
- b) the fovea and periphery
- c) the periphery and the periphery

255. A major source of error using checklists is

- a) they may be responded to automatically
- b) they may be miss-read
- c) interruptions from outside sources

256. A good scan is best achieved by

- a) quartering the area
- b) frequent and small eye movement
- c) a steady sweep of the eyes

257. If a person is colour blind, which colours would be most difficult to see?

- a) Yellow and red
- b) Blue and red
- c) Red and green

258. The alerting system for an important system failure should be

- a) a dolls-eye indicator
- b) an aural warning
- c) a flashing visual signal, preferably red

259. The amount of stress experienced with a particular task is dependent on

- a) the actual demand and actual ability
- b) the perceived demand and perceived ability
- c) the perceived demand and actual ability

260. During visual scanning the eye movement should be

- a) small and frequent
- b) large and frequent
- c) small and infrequent

261. To minimise the chances of heart disease, it is recommended that a minimum amount of exercise should be

- a) once a day for thirty minutes
- b) 3 times a week with the heart rate doubling the normal rate for at least 20 minutes
- c) 5 times a week with the heart rate doubling the normal rate for at least 20 minutes

262. Long shift work will

- a) increase your diagnostic and maintenance ability
- b) initially decrease your diagnostic and maintenance ability but then you will get used to it
- c) decrease your diagnostic and maintenance ability

263. Myopia is ____ and a ____ lens is needed to correct it

- a) long sightedness and concave
- b) short sightedness and convex
- c) short sightedness and concave

264. Phase 3 and 4 sleep is

- a) induced by alcohol
- b) most beneficial for the bodies recovery
- c) occurs only once per sleep cycle

265. The ideal behaviour of a professional aircraft engineer

- a) neither person or goal directed
- b) goal directed rather than person directed
- c) both person and goal directed

266. The Otoliths detect

- a) angular acceleration
- b) linear acceleration
- c) both angular and linear acceleration

267. Clinical insomnia can be caused by

- a) jet lag
- b) a change of environment
- c) caffeine

268. The normal recovery for Circadian dysrhythmia is

- a) at a rate 2 hours a day
- b) at a rate 1.5 hours a day
- c) at a rate 2.5 hours a day

269. The nose

- a) filters the air into the lungs
- b) filters, warms and moistens the air into the lungs
- c) filters the air into the lungs same as answer a) ????

270. The most common cause of myopia is

- a) an elongated eyeball
- b) a shortened eyeball
- c) weak accommodation

271. When comparing noise levels on Human Performance

- a) an individual can find noise levels annoying but still perform well indefinitely
- b) noise has no effect on the number of error or the speed of performance of an individual
- c) noise is directly proportional to the number of errors and the speed of performance of an individual

1 c 49 c 97 a 145 b 193 b 241 c
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3 c 51 b 99 a 147 b 195 b 243 c
4 b 52 b 100 a 148 a 196 c 244 b
5 b 53 a 101 a 149 c 197 b 245 a
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8 c 56 a 104 c 152 c 200 a 248 b
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33 c 81 c 129 a 177 b 225 b 273
34 b 82 b 130 a 178 c 226 b 274
35 b 83 c 131 a 179 c 227 b 275
36 c 84 b 132 b 180 a 228 c 276
37 a 85 c 133 c 181 c 229 a 277
38 b 86 a 134 c 182 a 230 b 278
39 a 87 a 135 b 183 c 231 b 279
40 c 88 a 136 b 184 c 232 c 280
41 c 89 b 137 b 185 c 233 a 281

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44 a 92 a 140 a 188 b 236 c 284
45 b 93 a 141 a 189 b 237 b 285
46 b 94 b 142 b 190 c 238 b 286
47 c 95 b 143 c 191 c 239 b 287
48 c 96 b 144 c 192 a 240 a 288

Module 9

Possible and recent Essay Questions

1. Describe in detail the effects of stress on an engineer and how environmental factors affect stress. Discuss how these affects can be minimised.
2. With regard to circadian rhythms, expand on the following:
 - What does 'circadian' mean?
 - What is a 'circadian rhythm'?
 - How is the body affected after a long flight over several time zones?
 - Ref. above - how can the effects be minimised?
 - What is meant by 'post lunch low'?
 - With respect to circadian rhythms, what is meant by 'acrophase'?
3. You are a shift leader carrying out a major airframe repair that will not be completed during your shift. How are you going to communicate this to the incoming shift with regards to outstanding work, data and spares?
4. If a major skin repair was being carried out on an aircraft and you were the team leader, and the repair was not going to be completed within your shift period, how would you write a shift handover for the next shift?
5. What are the different types of stress encountered at the workplace, and as an employer, what are the ways to relieve stress of your employees?
6. What is the impact of human factors on:
 - a) Maintenance scheduling, and
 - b) Environmental factors
7. What are the human factors effecting the maintenance?
8. Describe 'Maintenance Error Decision Aid' (MEDA) and how is it utilised for accident prevention.

9. Describe in detail the effects of stress on an engineer and how environmental factors affect stress. Discuss how these affects can be minimised.

10. If a major skin repair was being carried out on an aircraft and you were the team leader, and the repair was not going to be completed within your shift period, how would you do a shift handover for the next shift?

11. Describe human error in aircraft maintenance and the inspection environment, and describe how it can be minimised.

12. There are many different types of maintenance error reporting schemes. Maintenance Error Decision Aid (MEDA) is one. Explain its implementation and how this is achieved within a company?

13. Name two pressures the engineer is subjected to, how they originate and how to prevent them