



# EAST AFRICAN SCHOOL OF AVIATION EXAMINATION

## FINAL EXAM

### IATA/SAFETY SECTION

### SUBJECT: HUMAN FACTORS

Stream: Flight Dispatch No.21

Duration: 2 Hrs

DATE: Monday: 19/09/2016

TIME: 2.00 – 4.00 PM

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#### INSTRUCTIONS TO CANDIDATE:

1. This paper consists of **EIGHT (8)** Printed pages.
2. This paper consists of **TWO SECTIONS**
3. Answer the questions as per the instructions given
4. Examination rules and regulations shall apply

**PART 1**

1. The part of the retina of a human eye with the highest visual acuity is
  - A. The optical nerve entry point
  - B. The fovea
  - C. The retinal optical focus point
  - D. The rod/cone balance point
  
2. The cabin pressure in a commercial pressurized aircraft is normally maintained at an equivalent atmosphere of
  - A. Always equivalent to sea level
  - B. Normally no exceeding 2,000 to 3000 ft
  - C. Normally no exceeding 6000 to 8000 ft
  - D. Normally no exceeding 10000 to 12000 ft
  
3. Why does excessive cold make a person more susceptible to hypoxia
  - A. The heart beats faster which uses up more oxygen
  - B. More energy is required when shivering therefore more oxygen is used
  - C. It lowers the temperature of the body which makes it less efficient
  - D. It lowers the temperature of the body especially the head which slows down the brain activity
  
4. The “Chokes” are associated with
  - A. NIHL
  - B. Decompression sickness
  - C. Blockage of the alveoli
  - D. Oxygen loss
  
5. How is the rate and depth of breathing controlled by
  - A. the amount of oxy-haemoglobin in the blood and lungs
  - B. the amount of haemoglobin in the blood and lungs
  - C. the amount of carbon dioxide and oxygen in the blood and lungs
  - D. the carbonic acid , water vapor and nitrogen mixture in the blood and lungs
  
6. To be effective in losing weight exercise must be regular and sufficient to
  - A. Raise the resting pulse by 30% for at least 30 minutes 3 times a day
  - B. Raise the resting pulse by 100% for at least 20 minutes 3 times a week
  - C. Raise the resting pulse by 20% for at least 30 minutes 30 times a week
  - D. Raise the resting pulse by 30% for at least 60 minutes 3 times a week
  
7. The function of REM sleep is believed to be
  - A. To refresh the body after exercise
  - B. To refresh body and brain following physical / mental activity
  - C. Assist in organizing the memory and helping to coordinate and assimilate new information
  - D. To exercise the brain so it is prepared for the next day

8. The main factor in the focusing of the human eye is
- The cornea
  - The lens
  - The iris
  - The internal fluid in the eyeball
9. The chemical substance responsible for addiction to tobacco is
- The combination of nicotine ,tar and carbon monoxide
  - Tar
  - Nicotine
  - Carbon monoxide
10. What does the duration of sleep depend on
- The number of hours awake prior to sleep
  - The mental and physical exercise taken prior to sleep
  - Timing i.e. when the temperature is falling
  - The quality and amount of REM sleep
11. Which data compose the ICAO standard atmosphere?
- Density
  - Pressure
  - Temperature
  - Humidity
- 3, 4
  - 1,2, 3
  - 1,2, 4
  - 2,3,4
12. Slow wave sleep is a term used for:
- Stage 1 and 2
  - Stage 2 and 3
  - Stage 3 and 4
  - Stage 4 and REM
13. The function of the Eustachian tube is to:
- Equalize the pressure between the outer and the middle ear
  - Equalize the pressure between the outer and the inner ear
  - Equalize the pressure between the inner and the middle ear
  - Equalize the pressure between the tympanum and the inner ear
14. You have been scuba diving to a depth of 35 feet. When can you next fly?
- After 24 hours
  - After 48 hours
  - After 12 hours
  - After 72 hours

15. The semicircular canal is part of the
- A. Outer ear
  - B. Middle ear
  - C. Ear drum
  - D. Inner ear
16. The factor which most increases risk of coronary disease is
- A. Lack of exercise
  - B. Family history
  - C. Obesity
  - D. Smoking
17. When focusing on distance objects
- A. The pupil gets larger
  - B. The shape of the lens gets more spherical
  - C. The shape of the lens gets flatter
  - D. The cornea gets smaller
18. Strengthening and re organizing the human memory when learning new tasks is believed to occur in
- A. Slow wave sleep
  - B. REM sleep
  - C. Sleep stages 3 and 4
  - D. Stages 1 and 2 stages
19. Concerning the atmosphere which of the following is not true
- A. The mixture of the gases of the atmosphere remains constant
  - B. The gases cover the earth up to 30,000 ft at the poles and 60,000 ft at the equator.
  - C. Within the atmosphere there is a decline in temperature of  $1.98^{\circ}\text{C}/1000\text{ft}$
  - D. In the atmosphere pressure increases with altitude
20. One of the causes of Conductive Deafness is:
- A. Long exposures to levels of noise in excess of 90 db
  - B. Age
  - C. A blow on the head with subsequent damage to the ossicles
  - D. Hypertension
21. The main function of the white blood cells is
- A. To contribute to the immune system of the body
  - B. To transport oxygen
  - C. To help in the process of clotting of blood
  - D. To contribute to good eye sight
22. Body Mass Index (BMI) is your:
- A. Height in metres over your weight in kilos
  - B. Weight in kilos over your height in metres
  - C. Weight in kgs over your height in metres squared
  - D. None of the above

23. Required oxygen for an individual experiencing a moderate workload at 37,000 ft can be provided by
- 100% oxygen under pressure
  - An oxygen / Air pressure
  - 100% oxygen
  - A mixture of oxygen and helium to balance the partial pressure
24. Noise induced hearing loss is influenced by
- The duration and intensity of a noise
  - The duration of a noise but not its intensity
  - The suddenness of onset of a noise
  - The intensity of the noise but not its duration
25. The Systolic blood pressure is higher than Diastolic pressure and the normal reading for a healthy person is 120/80. Hypertension can lead to strokes.
- Is false as the Diastolic pressure is normally higher than the Systolic pressure
  - Is false as the normal blood pressure is 180/90
  - Is false because high blood pressure normally leads to heart attacks
  - True
26. Two factors affecting long term memory are
- Expectation and suggestion
  - Repetition and echoism
  - Amnesia and Anxiety
  - Anxiety and concentration
27. The best method for losing weight is
- The use of appetite suppressants
  - To eat less
  - To take plenty of exercise
  - To go on a crash diet
28. What is the effect of stress on performance?
- It always reduces performance.
  - Excessive stress weakens performance
  - Optimum performance is obtained with optimum stress.
  - Insufficient stress weakens performance.
- 1,3,4 is true
  - 1,3 is false
  - 2,3, is false
  - 2, 3,4 is true

29. What are the main limitations of short term memory? It is
1. Very sensitive to interruptions and interference
  2. Difficult to access
  3. Limited in size
  4. subject to loss of memory
- A. 2,4  
B. 1,3,4  
C. 1,2,3  
D. 2,3
30. Referring to the BMI a man weighing 81 kgs and is 1.75 cm tall would be
- A. Considered within the normal weight range  
B. Considered to be over weight  
C. Considered to be obese  
D. Considered to be underweight
31. Which measure(s) will help to compensate hypoxia?
1. Descend below 10 000ft
  2. Breathe 100% oxygen
  3. Climb to or above 10 000ft
  4. Reduce physical activities.
- A. 1 and 2 are correct, 3 and 4 are false  
B. 1, 2 and 4 are correct  
C. 1, 2 and 3 are correct  
D. Only 1 is correct
32. "Slow Wave" sleep occurs
- A. During low voltage / high frequency brain wave activity  
B. Sleep stages 3 and 4  
C. As an individual first starts to fall asleep  
D. During the dreaming stage of REM sleep
33. Situational insomnia is
- A. Inability to sleep in normal favorable conditions  
B. A condition caused by taking too many short naps during the day  
C. Inability to sleep due to circadian dysrhythmia  
D. Inability to sleep due to environmental noise
34. The earth's atmosphere consists of different gases of various concentrations. Match the following
- |                   |           |
|-------------------|-----------|
| 1. Nitrogen       | A. 0.03%  |
| 2. Oxygen         | B. 0.92%  |
| 3. Carbon Dioxide | C. 20.95% |
| 4. Rare gases     | D. 78.10% |

- A. 1D 2C 3A 4B
  - B. 1B 2A 3D 4C
  - C. 1C 2B 3A 4D
  - D. 1D 2C 3B 4A
35. If information in the short term memory (working memory) if not rehearsed will be lost in
- A. 1 to 2 seconds
  - B. 8 to 12 seconds
  - C. 5 to 10 seconds
  - D. 10 to 20 seconds
36. The maximum number of unrelated items that can be stored in the working memory is
- A. Unlimited
  - B. About 7 items
  - C. Very limited about 3 items
  - D. About 30 items
37. One of the substances present in the smoke of cigarettes can make it significantly more difficult for the red blood cells to transport oxygen as a consequence contributes to hypoxia. Which substance are we referring to?
- A. Carbonic anhydride
  - B. Tar
  - C. Carbon dioxide
  - D. Carbon monoxide
38. Glaucoma is a disease which is caused by:
- A. Color blindness
  - B. High pressure of the liquid of the eye
  - C. Cataracts
  - D. Double vision
39. The ability of the lens to change its shape is called
- A. Binocular vision
  - B. Depth of perception
  - C. Adaption
  - D. Accommodation
40. The retina allows for the acquisition of colors as a result of
- A. Rods located in its peripheral zone
  - B. Cones located in its central part
  - C. Rods located in its central zone
  - D. The pupil and the Iris located at the optic nerve

**PART 2****Answer any FIVE questions**

1. (a) Explain at least two ways through which the body might be deprived of sufficient oxygen  
(4 marks)  
(b) List and explain at least **four** important factors that determine the severity and susceptibility to hypoxic hypoxia  
(8 marks)
2. (a) Mention the **three** components that are the result of tobacco smoking.  
Explain the harmful effects of these components to the human body  
(9 marks)  
(b) What causes hyperventilation and how can the condition be treated  
(4 marks)
4. Mention the two parts of an eye that acts as focusing devices and explain how they achieve the focusing  
(8 marks)
5. (a) Explain the main differences between the long term memory and the short term (working) memory  
(10 marks)  
(b) Differentiate between “**Slow wave**” and the “**REM**” types of sleep  
(8 marks)
6. Explain what cause decompression sicknesses and explain the four symptoms associated with these sicknesses  
(9 marks)