



EAST AFRICAN SCHOOL OF AVIATION SUPPLEMENTARY EXAMINATION

SUBJECT: AIRCRAFT

Duration: 2 HRS

DATE:

TIME: 0900 -1100hrs

INSTRUCTIONS TO ALL CANDIDATES

1. Answer all questions.

1. The structural limitations and the _____ restrictions of an aircraft have a direct impact on the movement of cargo.
 - A. Volume
 - B. Weight
 - C. Dimensions
 - D. Both A and C
2. Each aircraft has a finite _____ capacity which cannot be increased.
 - A. Volume
 - B. Weight
 - C. Dimensions
 - D. Both A and C
3. Structurally, modern passenger and cargo aircraft are categorized as _____ and _____ aircraft.
 - A. Narrow-bodied and high structure
 - B. Wide structure and Narrow-bodied
 - C. High capacity and conventional
 - D. Both B and C
4. The high-capacity aircraft are further divided into "all cargo", passenger and _____ aircraft.
 - A. Cargo
 - B. Combi
 - C. Convertible
 - D. Both A and B
5. Structurally, the usable space on the modern aircraft is divided between _____ and _____ with some aircraft also having an _____ deck.
 - A. Upper, main, lower
 - B. Lower, upper, main
 - C. Main, lower, upper
 - D. Lower, main upper
6. On the main deck of the _____ aircraft, there is a portion of the aircraft that is used to transport cargo.
 - A. Passenger
 - B. Freighter
 - C. Combi
 - D. Convertible
7. Subject to special arrangement with airline cargo can be carried on _____.
 - A. Pallets
 - B. Holds
 - C. Seats
 - D. Both A and C
8. In the lower deck of all wide body passenger/combi/freighter, cargo is carried in _____ and _____ compartments.
 - A. Pallets
 - B. Rooms
 - C. Holds
 - D. Decks
9. The main deck of a _____ aircraft is dedicated to transporting cargo.
 - A. Passenger
 - B. Freighter
 - C. Combi
 - D. Both A and C
10. In most cases, cargo holds in the lower deck of a wide-bodied aircraft can be used can only carry _____ cargo.
 - A. Palletized

- B. Heavy
- C. Loose
- D. ULD

11. In a wide-bodied aircraft, the main cargo holds in the lower deck are equipped with a cargo _____ system to carry palletized and containerized cargo
- A. Lock
 - B. Restraint
 - C. Loading
 - D. storage
12. These aircraft have a fuselage width of approximately 3-4 m between the passenger seats.
- A. Conventional
 - B. High capacity
 - C. Narrow body
 - D. Both A and C
13. All but one of the following aircraft configurations have an upper deck.
- A. Boeing 757
 - B. Airbus industrie A380
 - C. Airbus Industrie A320
 - D. Boeing 747
14. All but one of the following aircraft configurations are narrow-bodied.
- A. A319
 - B. B737
 - C. A319
 - D. B747
15. All but one of the following aircraft configurations are designed to carry ULDs in the lower deck
- A. B737
 - B. A320
 - C. A321
 - D. Both B and C
16. These aircraft have an internal cabin sufficient for normal passenger seating to be divided into three axial groups by 2 aisles
- A. High capacity
 - B. Wide-body
 - C. Conventional
 - D. Both A and B
17. The main cargo holds in the lower deck of a wide-body aircraft are equipped to carry cargo in
- A. Containers
 - B. Pallets
 - C. Boxes
 - D. Both A and B
18. On a wide-body aircraft, loose cargo is loaded in _____ cargo hold
- A. FWD
 - B. AFT
 - C. Bulk
 - D. Both A and B
19. In a wide-body aircraft, the FWD and AFT cargo holds are located in the _____ deck
- A. Upper
 - B. Main
 - C. Lower

- D. Both B and C
20. MD-11 is an all-cargo aircraft developed for _____ routes
- Short-haul
 - Long-haul
 - Medium-haul
 - Both B and C
21. All but one of the following aircraft configurations are wide-bodied.
- A380
 - A300
 - B767
 - B757
22. The additional numbers that may be seen after an aircraft type identify a _____ which differ structurally from another
- Category
 - Series
 - Configuration
 - Version
23. Narrow-body and wide-body aircraft are further divided into all but one of the following categories.
- All cargo
 - Passenger
 - Combi
 - Ilyushin
24. _____ aircraft carry cargo and mail on the main and lower decks.
- Freighter
 - All cargo
 - Passenger
 - Both A and B
25. _____ aircraft carry passengers on the main deck, cargo and mail is also carried in the lower deck.
- Freighter
 - Passenger
 - Combi
 - Convertible
26. To improve the handling of greater volumes of cargo, it is necessary to group items into _____.
- Smaller units
 - Large units
 - Medium units
 - Both A and B
27. An aircraft ULD _____ directly with aircraft loading and restraint system.
- Fits
 - Interfaces
 - Gets loaded
 - Both B and C
28. Determined by the manufacturer, the _____ is the maximum structural weight limit of an aircraft at take-off.
- Maximum landing weight
 - Maximum take-off weight
 - Maximum loading weight
 - Both A and B
29. _____ is the maximum weight of the aircraft, plus the total load, excluding fuel.
- Maximum landing weight
 - Maximum take-off weight
 - Maximum zero fuel weight
 - Both A and B
30. _____ - is the weight with which the aircraft may land safely, as determined by the manufacturer or other operational conditions.
- Maximum landing weight
 - Maximum take-off weight
 - Maximum zero fuel weight
 - Both A and B
31. The total amount of fuel on board an aircraft before departure is referred to as _____.

- A. Ramp fuel
 - B. Taxi fuel
 - C. Trip fuel
 - D. Take-off fuel
32. _____ is the amount of fuel at take-off.
- A. Ramp fuel
 - B. Taxi fuel
 - C. Trip fuel
 - D. Take-off fuel

33. The fuel used before the take-off run is referred to as _____.
- A. Ramp fuel
 - B. Taxi fuel
 - C. Trip fuel
 - D. Take-off fuel

34. _____ is the amount of fuel planned to be used from take-off to the first intended landing.
- A. Ramp fuel
 - B. Taxi fuel
 - C. Trip fuel
 - D. Take-off fuel

35. The remaining fuel is referred to as _____
- A. Ramp fuel
 - B. Taxi fuel
 - C. Trip fuel
 - D. Take-off fuel

1. Answer the following questions appropriately (10)

36. _____ is the total weight of passengers cargo and mail on board an aircraft.
- A. Operating weight
 - B. Dry operation weight
 - C. Payload
 - D. Both A and B

37. _____ is the dry operating weight plus the take-off fuel.
- A. Operating weight
 - B. Dry operation weight
 - C. Payload
 - D. Both A and B

38. Manufacturers determine the maximum _____ that can be carried under optimal conditions.
- A. Operating weight
 - B. Dry operation weight
 - C. Payload
 - D. Both A and B

39. Cargo doors give access to _____.
- A. Lower decks
 - B. Upper deck
 - C. Main deck
 - D. Holds

40. What is the payload of a B747 with the following weights?

Take-off weight	TOW	750, 000lbs
Take-off weight	DOW	360, 0000lbs
Take-off weight	TOF	210, 000lbs

- A. 540,000lbs
 - B. 390,000lbs
 - C. 290,000lbs
 - D. 180,000lbs
41. From e) above, what is the operating weight of this aircraft.
- A. 540,000lbs
 - B. 390,000lbs
 - C. 290,000lbs
 - D. 180,000lbs

a) In addition to the weight restrictions, an aircraft also has volume and _____ loading limitations.

- A. Volume
- B. Dimensions
- C. Density
- D. floor

b) The _____ which can be occupied by the payload in a hold or compartment is finite and depends on the internal dimensions of an aircraft.

- A. Volume
- B. Dimensions
- C. Density
- D. floor

42. The _____ of a shipment are not the on most freighter aircraft are note the sole limitation as a piece of cargo must also go through the compartment door in order to be accommodated in the hold.

- A. Gross
- B. Volume
- C. Dimensions
- D. Density

43. The volumes of a 737 – 800 are as follows:

FWD compartment 19m³
AFT compartment 24.6m³

What is the maximum weight that can be accommodated in the AFT compartment for a shipment of clothes?

Commodity: Clothing
Average density: 120 kg/m²
Maximum volume: 24.6m³
Maximum weight of the compartment: 3826 kgs

- A. 2955kgs C. 3826kgs
B. 2954kgs D. 2952kgs

44. Moving loads can easily damage and _____ its safety.

What is the maximum weight that can be accommodated in the AFT compartment for a shipment of clothes?

Commodity: Chemicals
Average density: 400 kg/m²
Maximum volume: 24.6m³
Maximum weight of the compartment: 3826 kgs

- A. 2952kgs C. 3826kgs
B. 9845kgs D. 9840kgs

45. Cargo _____ is the relationship of weight to volume.

- A. Pressure C. Dimensions
B. Density D. Both A and C

46. It is economical to load _____ because the volume and weight limitations will be used more cost-effectively

- A. Gross weight only D. A mixture of both high- and low-density cargo
B. Volume weight only
C. High density cargo only

47. The _____ and mail must be loaded in the holds first before _____ .

- A. Cargo, baggage C. ULDS, baggage
B. Baggage, cargo D. Both B and C

48. Refer to the B737-400 loading charts and answer questions 24-27.

BOEING 737-400
 Aft Cargo Compartment
 Light packages handled manually
 Dimensions in cms.

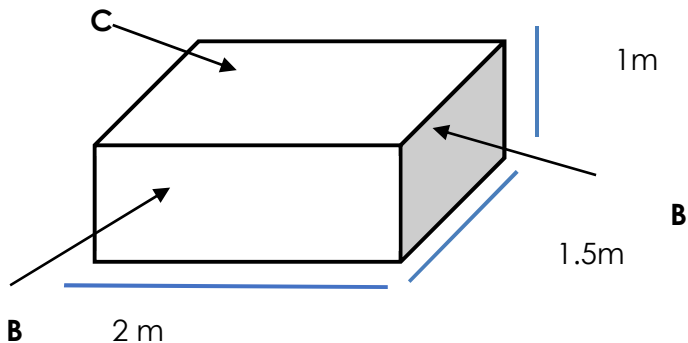
HEIGHT	WIDTH									
	12	25	38	50	63	76	88	101	114	121
12	688	683	678	609	513	444	391	347	309	292
25	685	680	670	556	477	391	355	325	292	274
30	683	678	614	535	462	383	342	312	279	264
35	680	675	594	505	441	375	335	307	274	259
40	678	668	558	480	424	365	325	297	264	248
45	675	624	525	457	383	355	312	284	254	238
50	670	576	492	434	370	342	299	271	241	228
55	635	533	462	411	358	330	284	256	226	215
60	576	492	434	368	342	314	271	238	213	200
66	525	457	406	350	322	297	251	223	195	187
71	477	421	378	327	302	274	228	203	182	170
76	431	388	327	299	274	248	200	177	147	144
81	391	355	309	284	259	203	177	154		
86	353	304	279	254						

• Dimensions in inches.

HEIGHT	WIDTH									
	5	10	15	20	25	30	35	40	45	48
5	271	269	267	240	202	175	154	137	122	115
10	270	268	264	219	188	154	140	128	115	108
12	269	267	242	211	182	151	135	123	110	104
14	268	266	234	199	174	148	132	121	108	102
16	267	263	220	189	167	144	128	117	104	98
18	266	246	207	180	151	140	123	112	100	94
20	264	227	194	171	146	135	118	107	95	90
22	250	210	182	162	141	130	112	101	89	85
24	227	194	171	145	135	124	107	94	84	79
26	207	180	160	138	127	117	99	88	77	74
28	188	166	149	129	119	108	90	80	72	67
30	170	153	129	118	108	98	79	70	58	57
32	154	140	122	112	102	80	70	61		
34	139	120	110	100						

49. A package measuring $280 \times 62 \times 75$ cm is to be loaded in the AFT compartment of a B737-400. Tilting is permitted. What is the maximum length of the hold door?
- A. 299cm
 B. 274cm
 C. 228cm
 D. 203cm
50. Can the shipment in 24) above be accommodated in the aircraft, if the package is not tilted?
- A. True
 B. False
51. Can the shipment in 24) above be accommodated in the aircraft, if the package is tilted?
- A. Yes
 B. No
52. If the Package in 24) above is tilted, what is the maximum length of the aircraft hold door?
- A. 299cm
 B. 274cm
 C. 228cm
 D. 294cm

Refer to the diagram below and answer questions 28) - 36)
 A piece of cargo measuring: $2 \times 1.5 \times 1$ m and weighing 1625 kgs.



Determine the contact area when each of the sides in questions 28-31, are in contact with the compartmental floor and identify the side with the greatest contact area.

53. Side A

_____m²

- A. 1m²
- B. 2m²

- C. 3m²
- D. 1.5m²

54. Side B

_____m²

- A. 1m²
- B. 2m²

- C. 1.5m²
- D. 3m²

55. Side C

_____m²

- A. 1m²
- B. 1.5m²

- C. 2m²
- D. 3m²

56. Side with the greatest contact area: _____

- A. A
- B. B

- C. C
- D. D

What is the pressure exerted on the floor when the sides in questions 32-34 are in contact with the compartmental floor?

57. Side A

_____kg/m²

- A. 812.5/M2
- B. 1083.3kg/m2

- C. 541.6/m2
- D. 546.1/m2

58. Side B

_____kg/m²

- A. 812.5/M2
- B. 1083.3kg/m2

- C. 541.6/m2
- D. 546.1/m2

59. Side C

_____kg/m²

- A. 812.5/M2
- B. 1083.3kg/m2

- C. 541.6/m2
- D. 546.1/m2

60. The maximum floor loading limitation is 650kgs/m². In which position (e.g., side A, B and C) can the package be loaded on the aircraft without exceeding this limitation?

Side:

- A. A
- B. B

- C. C
- D. Both A and B

61. What is the minimum contact area of the spreader required, if the package cannot be loaded in the position(s) indicated in c) above?

- A. 2.515m²
- B. 2.414m²

- C. 2.313m²
- D. 2.212m²

62. Cargo compartment 1 of an aircraft has a maximum volume of 15m³ and a maximum weight of 3500kgs.

63. What is the maximum weight of a clothing consignment that can be loaded into the aircraft? The average density for clothing is 120kg/m³

- A. 3,500kg
- B. 3,000kg

- C. 2800kg
- D. 1800kg

64. To improve the handling of greater volumes of cargo, it is necessary to group items into _____.

- A. Smaller units
- B. Large units

- C. Medium units
- D. Both A and B

65. An aircraft ULD _____ directly with aircraft loading and restraint system.

- A. Fits
- B. Interfaces

- C. Gets loaded
- D. Both B and C

66. The three main types of ULDs used in the aviation industry include pallets, non-structural igloos and accessories as well as _____.
- A. Tiedowns
 - B. Straps
 - C. Chains
 - D. Containers
67. _____ are platforms with flat undersurfaces, built with standard aircraft requirements, on which goods are assembled and secured by nets or igloos.
- A. Igloos
 - B. Pallets
 - C. Containers
 - D. Both A and B
68. Pallets are usually not more than _____ thick and have seat tracks around the edges to secure the net.
- A. 25cm
 - B. 25in
 - C. 25mm
 - D. 25m
69. A _____ is an open front bottomless rigid shell, made of fiberglass, metal or other suitable material.
- A. Pallet
 - B. Non-structural igloo
 - C. Container
 - D. Both B and C
70. A _____ is used in combination with an aircraft certified pallet and net assembly.
- A. Pallet
 - B. Non-structural igloo
 - C. Container
 - D. Both B and C

The End