

**WINGS OF CAROLINA FLYING CLUB
PILOT CHECK-OUT QUIZ - MOONEY 201**

Pilot _____

Score _____

Instructor _____

Date _____

Instructor: Please note the final score (subtract 1.7 points from 100 for each wrong answer) on the checkout form and file the quiz in the Pilot Records folder.

Pilot: All questions may be answered by reference to published materials or information readily available online. These may include

- 1) WCFC SOPs and Flight Standards,
- 2) FAR / AIM,
- 3) M20J AFM for each WCFC airplane,
- 4) WCFC M20J Pilot's Handbook,

- 5) WCFC 5726M supplement on CD.
- 6) Mooney Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Number 1229 issued 9-6-83, recorded on CD available from the club. *(This is a generic AFM that applies to the serial numbers encompassing 5760R and 5726M, but not 1068*

Circle the letter by the correct answer.

1. The WCFC Mooney model(s) is (are)

- a) M20P
- b) M20J
- c) M20k
- d) M-201

2. The FAA type designator (box 3 - FAA flight plan) for the **Mooney** is

- a) M20P
- b) M20J
- c) M-201
- d) M20-K

3. When filing a flight plan in the domestic format (FAA form 7233-1), IFR or VFR, the proper equipment suffix (Box 3) for the club's Mooneys is:

- a) /I
- b) /R
- c) /G
- d) /A

4. The engine in the Mooney M20J is a

- a) Continental IO-360
- b) Lycoming O-360
- c) Lycoming IO-360
- d) Continental O-200

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5. The maximum rated horsepower of the engine is

- a) 180
- b) 200
- c) 201
- d) 360

6. For purposes of FAA pilot qualification as PIC, the Mooney M20J is considered:

- a) a high-altitude airplane and requires a high-altitude endorsement from a flight instructor (or previous documented experience as specified in the FARs).
- b) a high-performance airplane and requires an endorsement from a flight instructor attesting to proficiency in high-performance airplanes (or previous documented experience as specified in the FARs).
- c) both a complex and a high-performance airplane and requires a high-performance endorsement from a flight instructor (or previous documented experience as specified in the FARs).
- d) a complex airplane and requires an endorsement from a flight instructor attesting to proficiency in complex airplanes (or previous documented experience as specified in the FARs).

7. The grade of fuel required for the engine is

- a) Aviation 80 (pink)
- b) Aviation 100LL (light blue) or Aviation 100 (green)
- c) Aviation 100LL (light blue) or Automotive no-lead (clear)
- d) Aviation 100LL (light blue) or Aviation 115 (purple)

8. The maximum usable fuel capacity and "to the tabs" fuel capacity (indicated by the "reduced fuel quantity indicator installed in each tank) is

- a) 50 gallons (300 pounds) and 42 gallons (252 pounds)
- b) 396 pounds (66 gallons) and 300 pounds (50 gallons)
- c) 384 pounds (64 gallons) and 300 pounds (50 gallons)
- d) 52 gallons (312 pounds) and 50 gallons (300 pounds)

9. The "visual fuel quantity gauge" located on the top of each wing tank is:

- a) Sufficiently accurate for preflighting fuel quantity.
- b) To be used only as a reference for filling the tanks
- c) Electrically-powered and therefore accurate only with the master on and thus receiving battery power
- d) Accurate only when the tanks are filled to the tabs.

10. Which of the three WCFC Mooneys has the largest useful load?

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The maximum certificated gross weights of WCFC's M20Js are

_____ lbs
N1068X

_____ lbs
N5726M

_____ lbs
N5760R

Write in Basic Empty Weights of Club Mooneys:

- a) N1068X
- b) N5726M
- c) N5760R
- d) depends on fuel load

N _____ lbs
N _____ lbs
N _____ lbs

11. Given the following data, representative of a typical family of two adults and two children, are weight and balance limits met? (Use the WCFC Mooney with the lowest empty weight.)

Pilot - 180 lbs
Rear Passenger - 90 lbs
Baggage - 50 lbs
Usable Fuel - 64 gallons (full usable fuel)

Front Seat Passenger - 150 lbs
Rear Passenger - 130 lbs
Hat Rack - 10 lbs

- a) Yes, but near gross weight and near the aft limit
- b) No, slightly over gross weight and aft of the aft CG limit
- c) Yes, but near gross weight, and near the forward limit
- d) No, slightly over gross weight and within CG
- e) No, well over gross weight and aft of the aft CG limit (50.2 inches)

12. In the M20J – assuming that the total weight is within the maximum gross weight and that no other change or shift of weight occurs – the consumption of fuel and reduction of the fuel weight has which effect:

- a. Shifts the CG substantially forward
- b. Shifts the CG substantially aft
- c. Does not shift the CG substantially
- d. Has no effect whatsoever

Correctly identify the following speeds at gross weight (KIAS)

- 13. V_a _____
- 14. V_{so} _____
- 15. V_{fe} _____
- 16. V_{le} _____
- 17. V_{no} _____
- 18. $V_{lo}(Ret)$ _____
- 19. V_y _____
- 20. V_x _____
- 21. Best Glide: _____
- 22. V_{ne} _____
- 23. The Landing Gear Safety Bypass Switch Override

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- a) Allows the landing gear to be retracted at speeds less than 65 KIAS (75 mph) or may be used to override a failed deactivation of the airspeed actuated safety switch.
- b) Overrides the "squat switch" on the left main gear
- c) Both a) and d) are correct.
- d) Overrides the safety features of the airspeed actuated safety switch and can cause the gear to start retracting while on the ground

24. The Mooney electrical storage battery is:

- a) mounted on the firewall in the engine compartment
- b) a 24-volt battery in 60R
- c) a 24-volt battery in 68X
- d) a 12-volt battery in 68X

25. The "Aux Bus" circuit breaker powers

- a) the auxiliary bus located on the lower right panel
- b) all of the white switch/breakers on the lower panel
- c) the bottom row of circuit breakers on the left breaker panel
- d) the auxiliary power to the standby vacuum pump

26. How is the voltage regulator "re-set" after a high voltage indication?

- a) by closing the field winding circuit breaker
- b) by pushing in the "ALT" circuit breaker
- c) by first switching off the radio master, then turning off, and then on, the master switch
- d) by pulling the "ALT" circuit breaker.

27. A tripped ALT circuit breaker normally indicates

- a) the voltage regulator failed, allowing the alternator to produce excessive output that tripped the circuit breaker
- b) the alternator ceased providing output and therefore the circuit breaker tripped
- c) a fault has occurred within the alternator creating an excessive output that tripped the circuit breaker
- d) the Aux Bus has failed, allowing the alternator to produce excessive output that tripped the circuit breaker

28. What is the function of the DIM switch - to the right of the annunciator panel?

- a) Dims the low fuel lights only
- b) Dims all annunciator lights for night operation
- c) Is used for testing the dim function only
- d) Does not work in the Mooney installation

29. Where is the pitot system drain located? Where is the alternate static pressure source valve located?

- a) On the sidewall of the cabin near the pilot's left knee. There is no alternate static source valve – you can break the VSI glass to admit static air to the system.

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- b) On the forward bottom skin of the left wing just outboard of the fillet; Under the left flight panel
 - c) On the inside fuselage wall abeam the pilot's seat; Under the panel below the altimeter and vertical speed indicator
 - d) On the bottom of the fuselage tail cone near the battery box vent inlet; Under the left flight panel
30. In an engine failure situation, the Mooney air start procedure recommends (in part):
- a) Immediately positioning the mixture to full rich
 - b) Opening the throttle fully (full forward)
 - c) Placing the mixture control at idle cutoff (full aft), opening the throttle $\frac{1}{4}$ travel, then slowly enriching the mixture
 - d) Positioning the throttle closed (full aft), positioning the mixture full rich, then slowly opening the throttle
31. If the "VAC" illuminates steadily in the annunciator panel, it indicates
- a) that voltage (AC) is high
 - b) that suction is above 5.5 inches of mercury
 - c) that voltage (AC) is low
 - d) that suction is below 3.5 inches of mercury
32. Following an engine fire in flight and successful shutdown, according to published procedures
- a) the engine may be restarted by using the engine restart checklist
 - b) the engine may be restarted only if the pilot determines that a fire hazard no longer exists
 - c) the engine rotation should be stopped by slowing down
 - d) do not attempt an engine restart
33. In a one-turn spin and recovery the Mooney M20J may lose up to how many feet of altitude?
- a) 500 feet
 - b) 1,000 feet
 - c) 1,500 feet
 - d) 2,000 feet
34. Intentional spins in the M20J Mooney
- a) are allowable only when the airplane is operated in the Utility Category
 - b) are not approved and are prohibited
 - c) are approved only for a maximum gross weight of fewer than 2500 pounds
 - d) are approved only for a Center of Gravity near the forward limit to guarantee stall recovery
35. After manually extending the gear, the emergency (red) gear lever must be latched before normal operation.

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- a) True
b) False
36. Which of the following is true about the M20J landing gear system?
- a) A green GEAR UNSAFE light indicates that the gear is neither fully extended nor fully retracted.
b) The landing gear may be retracted manually
c) A green GEAR UP light indicates that the gear is fully retracted
d) All gear lights are extinguished when the gear is fully retracted.
37. From an altitude of 8,000 feet AGL, at a weight of 2500 pounds, what would be the most effective engine-out glide speed and the attainable glide range? (Assume the gear retracted, flaps retracted, cowl flaps closed, propeller windmilling, and no wind.)
- a) 91 kts / 18 NM
b) 85 kts / 15 NM
c) 88 kts / 18 NM
d) 88 kts / 15 NM
38. To achieve the maximum glide range in an engine-out situation, the propeller control should be
- a) pushed full in
b) left alone
c) pulled full out
d) cycled to keep oil in the prop dome
39. M20J Mooneys equipped with the original McCauley propeller (including 26M and 68X in the WCFC fleet) have a caution range indicated by a yellow band on the tachometer from 1500 to 1950 RPM. Continuous operation within this range must be avoided
- a) to keep from "laboring" the engine
b) to avoid detonation
c) to keep from running "over square"
d) to avoid "de-tuning" the crankshaft flyweights
40. Pilots should be especially aware to supervise any ground towing
- a) to avoid exceeding the nose gear steering limits
b) to be sure that the wing tips will clear other objects
c) to be sure that the proper tow bar is hooked to the tug
d) to be sure that the brakes are properly released
41. The minimum taxi ground turning radius of the M20J without using the brakes is:
- a) 33 feet
b) 27 feet
c) 41 feet

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d) 21 feet

42. We know that fuel, spark, and air are required for combustion. If the induction air filter becomes clogged (as perhaps with ice) alternate induction air can be obtained by:

- a) pulling the alternate air knob to engage the alternate air system
- b) a spring-loaded door that opens by induction vacuum
- c) activating carburetor heat that bypasses the induction filter
- d) there is no available source of alternate induction air

43. The maximum WCFC recommended cruise percentage of power setting for the M20J is

- a) 58% with a leaned fuel burn of 8.2 gph
- b) 65% with a leaned fuel burn of 9.6 gph
- c) 75% with a rich fuel burn of 14 gph
- d) 95% with a rich fuel burn of 19 gph

44. The M20J, although normally aspirated, performs very well between 8000 and 12000 feet. According to the Mooney Cruise Power Schedule performance charts, fuel burn for the M20J at 10,000 feet MSL, standard temperature, leaned for best economy, and 60% power at 2400 RPM is:

- a) 10.0 gph
- b) 8.6 gph
- c) 60% power is unattainable at that altitude
- d) 8.4 gph

45. The highest recommended cruise power setting recommended by the WCFC normal operations checklist equates to

- a) 67% power
- b) 71% power
- c) 75% power
- d) 95% power

46. When "load shedding" during an electrical (alternator) failure, which of the following would be the greatest electrical current users to shut off (in order)? Reference N5760R (Think in terms of steady power users, not intermittent loads.)

- a) Nav 1, Landing Light, Com 2, Position Lights, Landing Gear Actuator
- b) Com 1, Position Lights, Landing Light, Nav 2, Transponder, Gear Warning
- c) Landing Light, Nav Lights, Com 2, Nav 2, ADF, Transponder, Auto Pilot
- d) Landing Light, Nav Lights, Com 2 and Nav 1, Auto Pilot, and any other radios or electrical equipment not absolutely necessary.

47. If the radio master switch fails in the "off" position

- a) The radios will not be able to be switched on
- b) The radios will remain on and function normally if the master is ON
- c) The radios may be switched on by turning the master switch OFF
- d) The "AUX BUS" (panel SW BUSS) circuit breaker should be pulled to restore radio power

NOTE: The following questions concern published WCFC policy and standard procedure as found in Club published materials.

48. The minimum length runway for takeoff in the Mooney permitted by WCFC policy is:

- a) 3,000 feet at S.L. for normal takeoff procedures
- b) 3,500 feet at 1,000 MSL for normal takeoff procedures
- c) 5,000 feet at 6,000 MSL for normal takeoff procedures
- d) a & b are correct

49. IAS on approach should be

- a) 90 KIAS on final and 71 KIAS over the threshold
- b) 80 KIAS on final and 71 KIAS over the threshold
- c) 90 KIAS on final and over the threshold
- d) 80 KIAS over the threshold

50. WCFC procedure regarding checklist use

- a) suggests that all normal checklists be memorized when possible
- b) states that checklists be read aloud utilizing the "challenge/response" method
- c) requires that the checklist be accomplished after the cockpit or desired configuration has been set up so as to verify actions
- d) is unclear

51. Power reductions in descent should be accomplished

- a) about 1" at a time, enriching mixture, cowl flaps closed
- b) about 8" at a time, enriching mixture, cowl flaps open
- c) smoothly as necessary, mixture lean, cowl flaps open
- d) about 3" at a time, mixture lean, cowl flaps closed

52. WCFC policy permits leaning the M20J

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- a) at a climb power of 80%
b) to peak or lean of peak if power below 60% and engine smooth
c) b) and d) are correct
d) at climb power of 75% to rich of peak
53. The Pilot-In-Command is responsible for seeing that the passengers are briefed before each takeoff on the use of seat belts and emergency egress procedures.
- a) true, and a similar briefing is required before landing
b) false, this is not a specific requirement, although it would be a good operating practice
c) true, the FARs require such a briefing and also specify that the passengers should be instructed to fasten their seat belts before landing
d) false, this is only a requirement for large aircraft
54. Why is it a good practice to start and taxi on one tank and switch to the other before run-up and takeoff?
- a) to be sure that the fuel valve is operational
b) to be sure that the pilot knows where the valve is
c) to increase the chances that any contaminants will be discovered before the tanks are switched enroute
d) both a & c are correct
55. What is the current refueling policy on the club Mooneys when returning to KTTA?
- a) Always completely fill the tanks.
b) Always fill to the tabs, unless the next pilot makes a specific request.
c) Leave minimum fuel in the aircraft to allow the next pilot maximum flexibility.
d) Check with the Club manager before refueling.
56. Why should cranking be kept to a minimum when hot starting the Mooney?
- a) Because the engine will quickly start and "overrun" the starter.
b) Because the battery may be quickly worn down.
c) Because the starter is already "heat soaked" and excessive cranking will melt down the armature windings and ruin the starter.
d) Because the engine starts best with short bursts of cranking.
57. What is the correct procedure for hot starting the Mooney?
- a) Turn the boost pump on, prime briefly with the mixture, and crank.
b) Leave the boost pump off, the mixture "cut off," throttle at 1/2 inch, and crank for a maximum of 12 seconds (count or use clock).
c) b and d are correct.
d) If the engine won't start using b), then pressurize the system, prime for 3 seconds at 1/4 inch throttle, and use "flooded start" technique (boost pump off, throttle full open, mixture "cut off", slowly but firmly open mixture and bring throttle to 1,000 rpm when engine fires).
58. You are planning on flying today and RWY 3 is in use. The metar reads

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KTTA 301955Z AUTO 07020KT 10SM CLR 32/20 A3013 RMK AO2 T03170198. Your personal minimums (and WCFC policy) requires you to abide by the manufacturer's maximum demonstrated crosswind velocity. What do you do?

- a) Take off on RWY 3 – the crosswind component is slightly below the Mooney's crosswind maximum
- b) Take off on RWY 3 – there are no reported gusts and the crosswind component is exactly at the Mooney's crosswind maximum
- c) Take off on RWY 21 – the winds favor RWY 21 and the crosswind component will be less.
- d) Wait until the winds drop to 18KTs then take off
- e) Do not depart until the crosswind component is below the Mooney's crosswind maximum

59. What is the Mooney's maximum demonstrated crosswind component?

- a) 15 knots
- b) 10 knots
- c) 11 knots
- d) 17 knots