

Rocketry Test

Put your answers on the attached answer sheet.

You should attempt all questions. Each question you answer correctly is worth 2%.

Notes may not be used in this test. Anyone caught referring to notes, or comparing answer with other candidates, will be given a score of 0%.

The pass mark is 60%, so you need to correctly answer at least 30 questions.

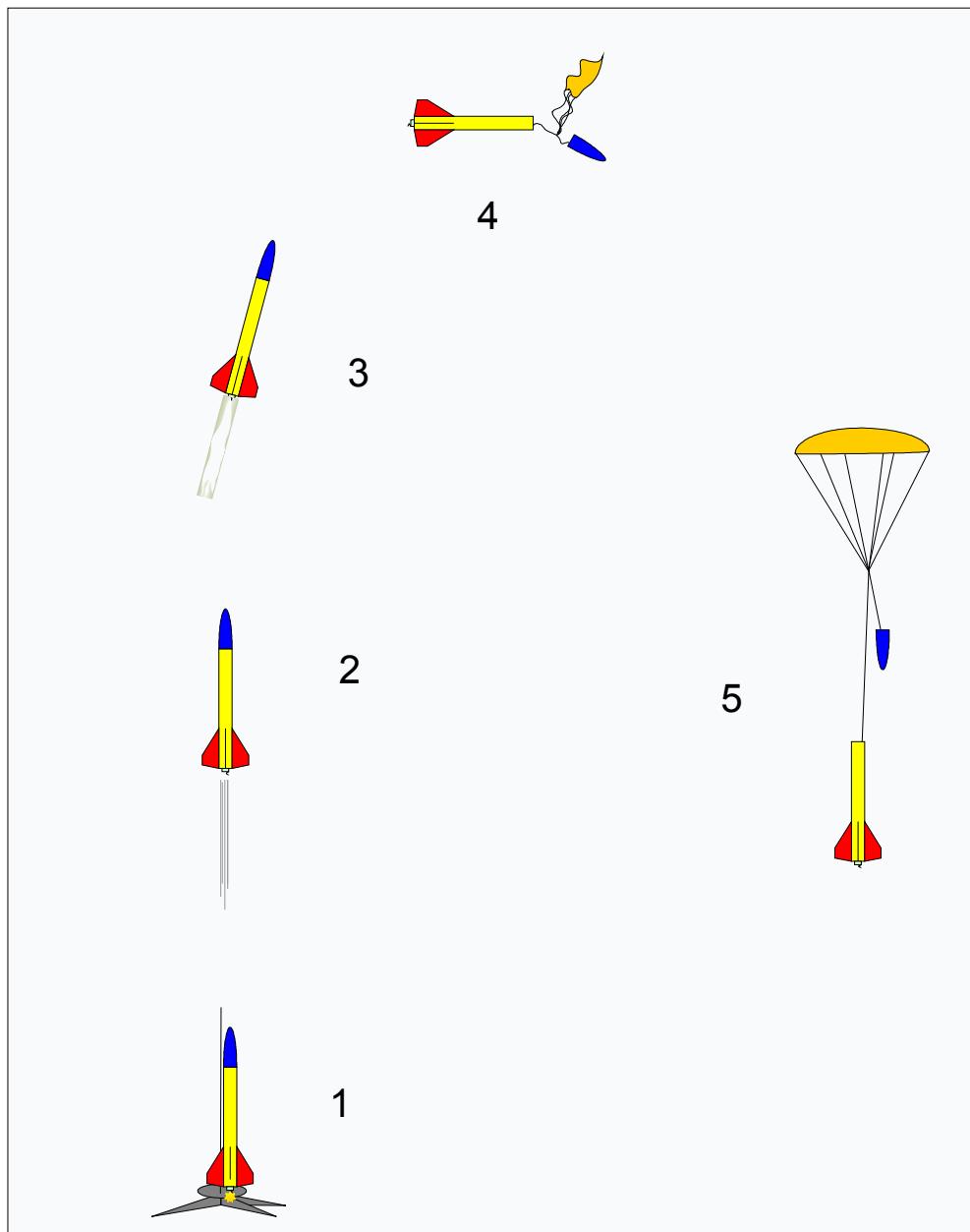
There is no time limit for the paper. Hand it in when you are satisfied that you've answered as many questions as you can.

If you are unsuccessful then re-read the notes and have another attempt.

Stages of Flight

Questions 1-5: There are 5 stages to a rocket flight. What are they called?

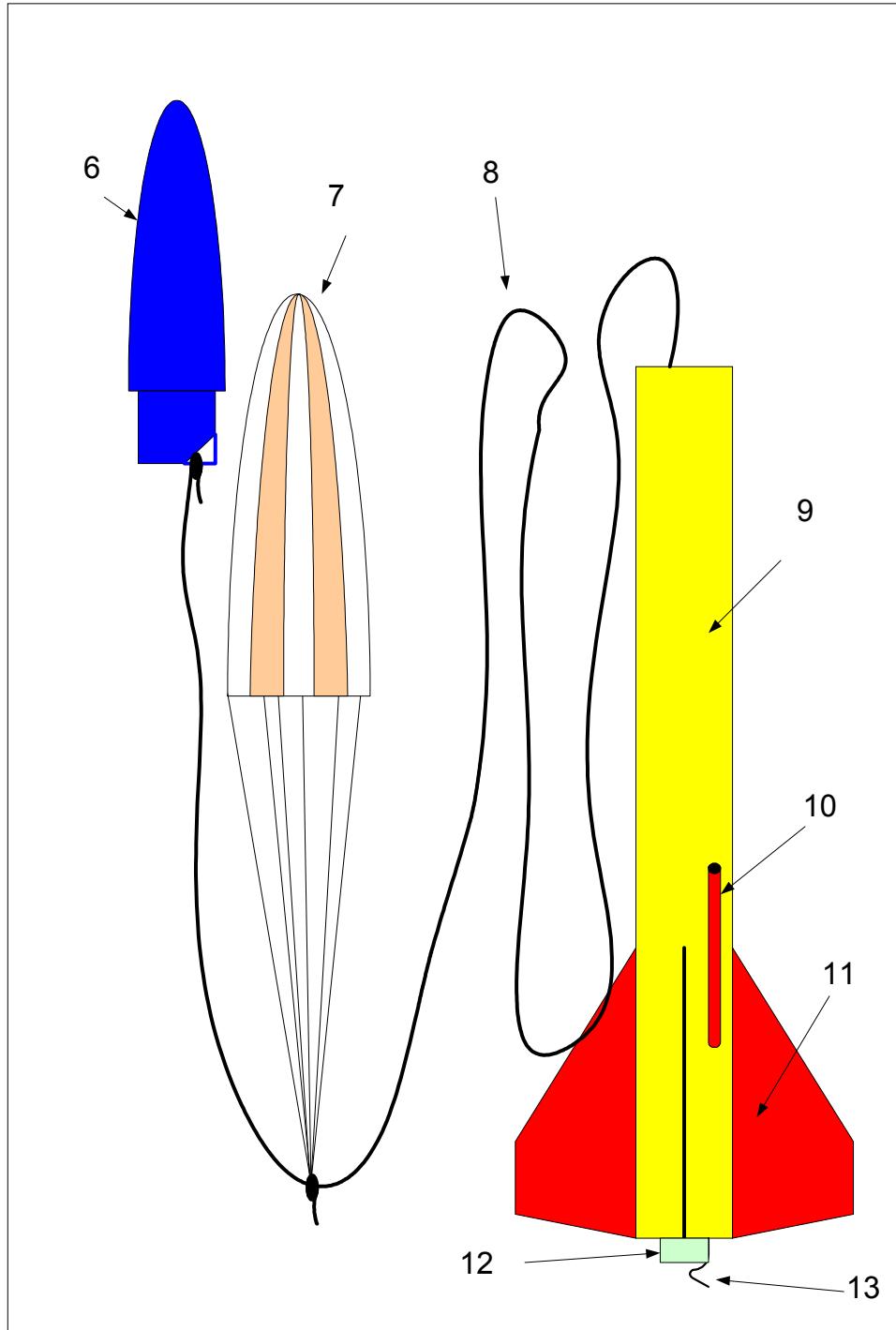
Write the answers on the answer sheet.



Parts of a rocket

Questions 6 - 13: Name the following rocket parts.

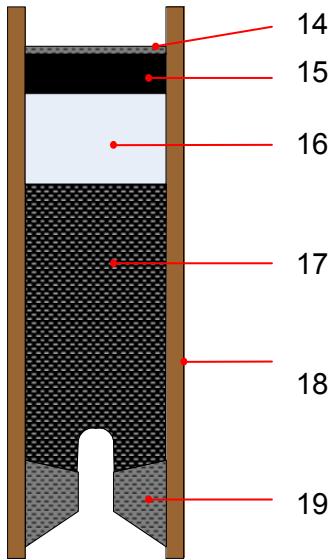
Write the answers on the answer sheet.



Parts of a Motor

Questions 14-19. Name the following motor parts:

Write the answers on the answer sheet.



Motors

20. Which motor type has the most propellant:
 - A. An "A" motor
 - B. A " $\frac{1}{2}A$ " motor
 - C. A "B" motor

21. What is the pyrotechnic material on the tip of an igniter called?
 - A. Pyrogen
 - B. Pirouette
 - C. Pyromaniac

22. An A8-3 rocket motor has an average thrust of:
 - A. 2.5 Newtons
 - B. 3 Newtons
 - C. 8 Newtons

23. What is the propellant used in model rockets?
 - A. Sulphur rich black powder
 - B. Sulphur
 - C. Black powder

24. A C6-5 rocket motor has a delay of:
 - A. 5 seconds
 - B. 6 seconds
 - C. 10 seconds

25. Which of the following is the best description of what the delay grain does
- A. Deploys the parachute after the propellant has been consumed
 - B. Delays firing of the ejection charge and provides tracking smoke
 - C. Provides tracking smoke so the rocket is visible
26. Which of the following launches should not be allowed:
- A. A rocket with a weight of 1 Newtons (100 grammes) powered by a motor with 6 Newtons thrust
 - B. A rocket with a weight of 2 Newtons (200 grammes) powered by a motor with 10 Newtons thrust
 - C. A rocket with a weight of 1 Newton (100 grammes) powered by a motor with 4 Newtons thrust
27. Your rocket normally flies on a C6-5 motor. Which motor would use on a windy day
- A. C6-3
 - B. C6-5
 - C. C6-7
28. Which combination of motors has the largest impulse:
- A. Four B6-4
 - B. One D12-5
 - C. Three C6-5

Stability

29. A stable rocket will have:
- A. Centre of gravity in front of centre of pressure
 - B. Centre of gravity and centre of pressure in the same place
 - C. Centre of pressure in front of centre of gravity
30. What is the ideal separation between centre of gravity and centre of pressure
- A. Less than the diameter of the rocket
 - B. About 1-2 rocket diameters
 - C. More than 2 rocket diameters
31. Which of the following will increase the stability of a rocket
- A. Decreasing the number of tail fins
 - B. Adding weight to its nose
 - C. Adding fins near the nose
32. What is the centre of gravity of a rocket
- A. A point half way between the nose and the fins
 - B. The point through which the aerodynamic forces act
 - C. The point of balance of the rocket

Safe Distances

33. A rocket with a C impulse motor is expected to fly to 200m altitude. What is the smallest site in which it can be safely flown?
- A. 200m x 200m
 - B. 120m x 120m
 - C. 60m x 60m

34. How far should you be away from a rocket powered by a single “D” motor
- A. 10 meters
 - B. 5 meters
 - C. 2 meters

Range Procedure

35. Which of the following defines the range.
- A. The area within 10 metres of any launch pad
 - B. The whole flying and recovery area
 - C. The area beside the launch pad
36. What should you do if the rocket fails to ignite?
- A. Keep pushing the launch button until it fires
 - B. Wait one minute, then approach the rocket with the RSO
 - C. Go to the rocket and try to sort the problem out
37. Your rocket gets stuck in power lines. What will you do?
- A. Climb up and retrieve it
 - B. Try to hook it down with a wooden pole
 - C. Leave it, and build a new one
38. When may the RSO ask you to do a swing test
- A. Whenever he thinks it is necessary to prove its stability
 - B. Before every flight
 - C. At the start of every flying session
39. What should you do if a rocket mislaunches?
- A. Run away as fast as possible
 - B. Throw yourself to the ground to make as small a target as possible
 - C. Watch the rocket and step aside if it comes towards you
40. What is the correct countdown:
- A. 5-4-3-2-1-FIRE
 - B. 5-4-3-2-1- LAUNCH
 - C. 10-9-8-7-6-5-4-3-2-1-BLAST OFF
41. When may you retrieve your rocket:
- A. As soon as it lands
 - B. When the RSO calls “Range Open”
 - C. As soon as the last rocket lands
42. When the RSO calls “Range Closed” it means that:
- A. People may go and retrieve their rockets
 - B. Everyone must leave the range as launching is about to start
 - C. People may enter the range and put their rockets on the launch pad.
43. Someone calls “heads up”. What does it mean?
- A. Someone is about to launch a good-looking rocket
 - B. Look out! You nearly trod on someone’s rocket.
 - C. Look up because a rocket may be descending near you

44. What type of ignition system will you use for your rocket?
- A. Electrical ignition
 - B. A fuse and matches
 - C. A small charge of black powder
45. When may you enter the range.
- A. Anytime
 - B. When the range safety officer allows
 - C. When you're about to launch
46. When may you insert the safety key
- A. When the RSO tells you to start your countdown
 - B. As soon as your rocket is on the launch pad
 - C. Whenever the range is open

General Knowledge

47. What type of rocket motors will you use?
- A. Home made black powder motors
 - B. Commercially made and certified motors
 - C. Rechargeable motors
48. The highest point in a rocket's flight is called the:
- A. Perigee
 - B. Apogee
 - C. Periphery
49. Why do we use a launch rail?
- A. To direct the rocket until the fins can stabilise it.
 - B. To keep the rocket away from the blast plate
 - C. To stop the rocket from falling over and being damaged
50. Which of the following is true
- A. A large rocket with a C motor will fly to the same height as a small rocket on a C motor
 - B. A large rocket will fly higher on a C motor than a small rocket
 - C. A small rocket will fly higher on a C motor than a large rocket