

# **TITAN-51LM Blueprint & Machining Process Quiz**

## **Section 1 — Blueprint Reading (20 Questions)**

1. What is the material specified for the TITAN-51LM part?
2. What is the scale of the drawing?
3. What units are the dimensions given in?
4. What is the overall diameter of the largest circular flange?
5. How many through holes are equally spaced around the bolt circle?
6. What is the diameter of the bolt circle these holes are located on?
7. What is the diameter of each bolt circle hole?
8. What is the maximum overall height of the part from base to top?
9. Identify the radius value for the large blend at the base of the main hub.
10. How many R0.300 radii are specified in the part?
11. What thread callout is used on the internal threaded holes near the top feature?
12. What is the angle of the chamfer associated with the threaded holes?
13. How many cutouts are there in the truss-style web section?
14. What is the radius of the cutout corners in the truss section?
15. According to the print, what is the minimum fillet radius allowed on sharp internal corners?
16. What is the tolerance format for decimal dimensions (e.g., .XX vs .XXX)?
17. What is the surface finish requirement for this part?
18. What is the nominal wall thickness of the thin flange section?
19. What is the depth of the counterbore or boss feature above the truss section?
20. What is the revision level and release description for this print?

## **Section 2 — Machining Process & Feature Sequencing (10 Questions)**

21. Which operation would most likely be performed first—facing the stock or drilling the bolt circle? Explain why.
22. What setup orientation would best support machining both faces and the internal web features?
23. How many setups do you estimate are required to complete all machining operations efficiently?
24. When machining the lightweight truss pattern, what type of toolpath strategy (e.g., adaptive clearing, pocketing) would you recommend and why?
25. What workholding method could be used to secure the part while maintaining concentricity during turning or facing?

26. Which feature(s) require a thread mill or tap, and what tool would you choose for the 1/2-13 UNC threads?
27. What inspection tool would you use to verify the 4.500" bolt circle spacing accuracy?
28. Which CNC operation would most likely produce the internal blend radii of R0.300 and R0.575?
29. If the part is machined from 6061-T6 aluminum, what spindle speed range would you expect to use for finishing passes?
30. To improve rigidity when machining the thin flange, what workholding or fixturing modification could be used?