Please use the Scantron sheets for your answers.

You need to "bubble in" your name, your W# and Test Form you receive! Follow the example on the screen.

If you skip any of these, you will not receive any credit for this exam!

EXAMPLE COVERSHEET FOR EXAM 3

Constants and equations new since the last exam are shown in blue here. They will be in black for the exam itself. The exam will look very similar to this. Familiarize yourself with the information before the exam.

Make s… …g this is

TEST FORM: A

Constants and conversions (*Note: You will not necessarily use all of these*)

$c = 3.0 \times 10^8\ m/s$ 1 km = 1000 m G = 6.67 x $10^{-11}\frac{Nm^2}{kg^2}$ M_{sun} = 1.989 x $10^{30} kg$

1 meter = 3.28 feet 1 AU = 1.5 x 10^{11} m 1 day = 86,400s

Density: Water = 1000 kg/m^3 Rock = 3000 kg/m^3 Iron metal = 7900 kg/m^3

$L_\odot$ = 3.85*10^{26} Watts $R_\odot$ = 700,000 km 1 pc = 3.26 light years 1 light year = 9.46*10^{15}m

$\sigma = 5.67 \times 10^{-8}\frac{Watts}{m^2 \cdot K^4}$

Equations and mathematical relationships (*Note: You will not necessarily use all of these*)

$F_G = G\frac{m_1 m_2}{d^2}$ $P^2 = \left(\frac{4\pi^2}{GM_{Sun}}\right)a^3$ $P^2 = a^3$, where P(period) is in years and a is in AU

$a_c = \frac{v^2}{r}$ $a = F/m$ $F = ma$ $c = f\lambda$ $f = \frac{1}{T}$ $E \propto f \propto \frac{1}{\lambda}$

$\lambda_{peak}T$ = 2.898×10^{-3} m·K $°C = (°F - 32) \times \frac{5}{9}$ Kelvins (K) = °C + 273.15

$V_{sphere} = \frac{4}{3}\pi r^3$ $\partial = \frac{m}{V}$ $E = mc^2$ $\lambda_{max}T = 2.9*10^6$ nm·K

$M_v = m_v - 5\log d + 5$ $F_{emitted} = \sigma T^4$ $distance\ (pc) = \frac{1}{parallax\ (arcseconds)}$

$L = \sigma T^4 \cdot 4\pi R^2$ $L = F_{detected} \cdot 4\pi d^2$ $L \propto M^{3.5}$