Practical Test
Astronomy Model Answers

1. Sundial
   Length of the rod from end to the board = 8.0 cm (7.5 cm)

2. (e) IAU code – **Oph** (We will also accept **Her -** 0.75)
   (f) IAU code – **Lup** (We will also accept **Ori -** 0.75)

3. Star Trails
   (a) **UMa** (1.5 points), **CVn** (1 point), **Leo, LMi, Dra** (0.5 point each)

   (b) Star Letters **D, H**

   (c) Exposure time = **30 minutes**

Numerical Calculations

Question 1:
(a) As the rod should point to NCP, length of the rod on the ground side should be
$x = 20 / \tan(\phi) = 92$ cm,   where ϕ is the latitude.
Thus, the length on the other side is 8.0 cm. (may be 7.5 cm, given plastic board is 0.5 cm thick)
                                                                                   (2 points)
Marking N and S   **(1 point)**
(b) winter solstice markings should be on side marked by S   **(1 point)**
Marking local noon shadow line   **(0.6 points)**
Symmetric markings for other lines at 30 degrees   **(0.4 points each)**
(c) Realising that Summer Solstice markings will be on the other side of the board **(1.5 points)**
Actual markings for Summer Solstice   **(1.5 points)**
(d) B   **(1 point)**

Question 3 (c)
Connecting start and end points for trails of a few stars (at least 3) and drawing their perpendicular bisectors to find NCP   **(1.5 points)**
Measuring the angle subtended by these trails at the NCP as 7.5 degrees (6-9 degrees accepted)
                                                                                   (1 point)
Estimating exposure time as 30 minutes   **(1.5 point)**

EQUATORIAL SKY CHART

DECLINATION

NORTH

SOUTH

RIGHT ASCENSION