

## ANSWER KEY

## ASTRONOMY C DIVISION

## PA STATE SCIENCE OLYMPIAD 2005

School Name		
1	1	magnitude
2	1	temperature, K
3	1	spectral class
4	1	luminosity, solar units
5	1	H
6	2	E
7	1	G
8	1	J
9	1	F or J
10	1	F
11	1	A
12	2	K
13	2	L
14	2	D
15	2	346 light years
16	2	180 light years
17	1	7250 Angstroms
18	2	54.1 km/s
19	4	19.0 km/s
20	2	57.3 km/s
21	2	-0.66
22	2	0.845
23	2	26.6 $R_{\text{sun}}$
24	1	0.05 arcseconds
25	1	spectral class K
26	1	planetary nebula
27	2	162 arcseconds
28	4	34.3 km/s
29	4	0.6 $M_{\text{sun}}$ (solar masses)
30	1	1475-1500 Angstroms
31	2	0.214-0.235
32	2	60000-70000 km/s
33	2	857-1000
34	1	quasar or QSO
35	1	ultraviolet
36	1	Antennae galaxies
37	1	dust around galactic nuclei
38	1	young star clusters formed in collision
39	1	N63A supernova remnant
40	1	X-ray, radio, optical
41	1	LMC - Large Magellanic Cloud
42	1	Perseus Cluster
43	1	supermassive black hole, x-ray source
44	1	NGC 3372, Carina Nebula
45	1	image 4
46	1	eta carinae
47	1	>100 solar masses
48	1	M87, Virgo A
49	1	giant elliptical radio galaxy, type E0
50	1	60 million or $6E7$ ly

School Code		
51	1	synchotron radiation from supermassive black hole
52	1	M13
53	1	Hercules
54	1	>12 billion years
55	1	A
56	1	image 3 - DEM L71
57	2	image 2 and image 6
58	1	C
59	1	M39
60	1	Open cluster
61	1	230 - 300 million years
62	1	V838 mon
63	1	image 14
64	1	image 11
65	1	image 13
66	1	NGC 6302
67	1	45 years
68	2	9.5 - 10.0 AU
69	1	0.28 $M_{\text{sun}}$
70	2	(0.14 - 0.2) $M_{\text{sun}}$
71	1	4.56E11 years
72	1	mass transfer or semi-detached binary
73	1	830 - 840 m
74	1	type Ia supernova
75	1	13
76	1	-19.6
77	1	33.1 Mpc
78	1	image 22
79	1	1.4 $M_{\text{sun}}$
80	1	color index (B magnitude - V magnitude)
81	1	apparent magnitude
82	1	globular cluster
83	2	F
84	1	19
85	2	8000-13500 pc
86	2	blue stragglers and white dwarfs
87	1	gravitational lensing
88	2	quasar (4 images) and foreground galaxy
89	1	Einstein Cross
90	2	No overall rotation and no 21-cm radiation in elliptical galaxies

List the participants below

SCORE: