

2012 A 答案

- 1 D 2 B 3 A 4 D 5 C
 6 D 7 A 8 E 9 B 10 C
 11 D 12 C 13 B 14 C 15 A

16 3

$$2e + \frac{\lambda}{2} = n\lambda \quad 3$$

$$R = \frac{r_1^2 - r_2^2}{20\lambda} \quad 2$$

$$R = 20m \quad 2$$

17 (a) Stationary orbits will be such that the circumference of a circular orbit is equal to an integral number of deBroglie wavelength so that constructive interference may take place i.e. $2\pi r = n\lambda$

But $\lambda = h/p$

$$\therefore L = rp = nh/2\pi \quad (\text{Bohr's quantization condition}) \quad 2$$

$$(b) \quad \frac{Ne^2}{4\pi\epsilon r^2} = m \frac{v^2}{r} \quad 2$$

$$E = E = K + U = \frac{1}{2}mv^2 - Ne^2/4\pi\epsilon or \quad 2$$

Result **En =** 2

(c) **N=3 En =** 2

18 a) 1/3 2

b) $\gamma = 4/3$ 3

polyatomic 1

c) T=0.693 T0 2

E=0.693 E0 2

19 a) 124 GeV 2

$\gamma = 125$ $v = 0.99987$ C 4

b) not charged

it decays into two photons 4