17/12/2019

PHYSICS 535/1, 2019. MARKING GUIDE.

SECTION A

1. B	6. D	11. A	16. C	21. A	26. B	31. D	36. A
2. D	7. B	12. B	17. B	22. C	27. A	32. B	37. B
3. C	8. D	13. D	18. A	23. B	28. C	33. D	38. A
4. D	9. B	14. A	19. C	24. B	29. A	34, B	39. D
5. C	10. D	15. D	20. B	25. A	30. C	35. C	40. B

SECTION B

41. (a) It is a helium nucleus ✓

(b) (i) $^{226}_{88}Ra \rightarrow {}^{222}_{86}Rn + {}^{4}_{2}He$ ✓✓

(ii) It has 86 protons ✓ and 136 neutrons ✓

(c) - To detect leakages in pipes ✓
- As source of energy ✓

42 (a) A substance strongly attracted by a magnet ✓

(b) Steel bar is placed inside a solenoid ✓ connected to a source of direct current ✓

(c) copper ✓, Rubber ✓

43. (a) (i) Fall in the level of meniscus of a liquid in a capillary tube below the meniscus outside ✓

(ii) Mercury ✓

(b) Occurs when the forces of attraction between the molecules ✓ of a liquid are greater than ✓ those between molecules of liquid and glass.

44. (a) Testing the purity ✓ or quality of substance.

(b) Difficulty to determine the actual volume ✓ of powder because of the air spaces ✓ between the particles. The density determined will be much less ✓

(c) Mass = Volume × density.
= 1.45 × 25 ✓
= 36.25 g ✓

45. (a) The ratio of load to effort ✓

(b) (i) V.R = 2 ✓

(ii) W = mg
= 0.2 × 10
= 2 N ✓

2E = (10 + 2) ✓

E = $\frac{12}{2}$ ✓

= 6 N ✓

46. (a) A point of maximum displacement ✓ of the particles of the medium through which the wave is travelling.

(b) $V = \lambda f$ ✓ But $\lambda = 2l = 2 \times \frac{24}{100} = 0.48$ ✓

$V = 80 \times 0.48$ ✓
$= 38.4\ ms^{-1}$ ✓

(c) Because of the difference in quality or timbre ✓

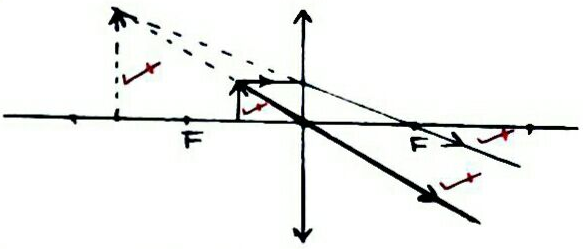
47. (a) (i) The ability to do work ✓

(ii) Chemical ✓ → Electrical ✓ → Light + Heat

(b) Work = Force × distance ✓
= 50 × $\frac{60.0}{100}$ ✓
= 30 J ✓

48. (a) Optical centre is the centre of the lens ✓
Pole is the centre of a curved mirror ✓

(b)



49. (a) Constant rate of change of velocity ✓

(b) Cyclist should lean inwards ✓ towards the centre ✓

(c) $a = \frac{v-u}{t} \Rightarrow a = \frac{0-20}{5} = -4\ ms^{-2}$

$v^2 = u^2 + 2as$ ✓

$\Rightarrow s = \frac{0^2 - 20^2}{2 \times -4}$ ✓

$= 50\ m$ ✓

50. (a) Ammeter has lower resistance than the voltmeter ✓

(b) (i) Connecting a resistor of high resistance in series ✓ with ammeter.

(ii) $I_g = 5mA = 0.005\ A$ ✓
$I_s = (0.1 - 0.005) = 0.095\ A$
$I_g R_g = I_s R_s$ ✓
$0.005 \times 76 = 0.095 \times R_s$ ✓
$\Rightarrow R_s = 4\ \Omega$ ✓

NB: The side of the notes is highly prohibited by the rules of UNEB, CC 535/1 Ex only.