

K132 EXERCISES

ENEGY101A FOUNDATION STUDIES IN RENEWABLE ENERGY AND SUSTAINABILITY

Formative Assessment Questions

Slide 1

Q1. What are three different motivations that drive today's energy discussions?

Slide 2

Q2. How does the climate change motivation argued?

Slide 3

Q3. How does the burning of fossil fuels cause pollutions in atmosphere?

Slide 4

Q4. Describe the composition of green house gas.

Slide 5

Q5. How does we estimate the change of global temperature?

Slide 6

Q6. Why does CO₂ emission need to be reduced?

Slide 7

Q7. What are the effects to earth if the current level of CO₂ emission continue?

Slide 9 to 10

Q8. Explain Australian Energy resources.

Slide 12

Q9. explain Australian Energy consumption.

Slide 13

Q10. Explain Australian Electricity Consumption

Slide 14 to 16

Q11+12 Describe the advantages & disadvantages of using coal as energy source.

Slide 17

Q13. Describe the crude oil usage in Australia.

Slide 18

Q14. Describe the natural gas usage in Australia.

Fundamental of Physics

Page 1198, 1224 Fig 43.2, Page 1226 Fig 43.3, Page 1229 Fig 43.4, Page 1230 Fig 43.5

Q15. Explain

1. Nuclear Binding Energy
2. Nuclear Fission
3. Sketch the model of nuclear fission
4. Nuclear reactor

Slide 20 +21

Q16. Describe the ways that raw solar power is turned in to useful power.

Slide 22+23+24

Q17. Explain the available power from solar photovoltaic system.

Slide 25

Q18. Explain solar farming

Slide 26 to 29

Q19. Explain solar bio-mass.

Slide 30

Q20. How can we adjust ZCA 2020?

Slide 31

Q21. Explain small scale solar technology.

Slide 32 to 35

Q22. How much wind power could we plausibly generate?

Slide 38

Q23. Why do we need to have an energy plan that adds up every minute of every day?
Slide 39+40

Q24. How can we reduce the intermittent operation of wind power plant?
Slide 41

Q25. Explain the energy storage system for wind energy.
Slide 42+43

Q26. Explain the potentials of wind energy in Australia.
Slide 44 to 47

Q27. Explain the principle of hydro electric power.
Slide 48+49

Q28. Explain the advantage of hydro power to provide switch on/ off rate of high power.
Slide 50 to 57

Q29. Explain the pump storage system for hydro power.
Slide 58

Q30. How can we balance the fluctuating demand and fluctuating supply of electricity?
Slide 59

Q31. Explain the idea of modifying the rate of production of stuff to match the power of a renewable source.
Slide 60+61

Q32. Explain controlling electricity demand automatically.
Slide 62 to 67

Q33. Explain the use of geothermal energy.
Slide 68 to 70

Q34. Explain Geothermal power as mining.
Slide 71 to 73

Q35. What are the major types of geothermal energy resources?
Slide 74

Q36. How does geothermal energy create from hot dry rocks?
Slide 75

Q37. What are the advantages and disadvantages of geothermal energy?
Slide 76

Q38. Where is geothermal energy used in Australia?
Slide 77

Q39. Explain energy crops.
Slide 78

Q40. What makes the energy crops for bio-energy so unique from other renewable energy sources?
Slide 79 to 83

Q41. Explain the occurrences of ocean waves that moves with velocity 16 m/s and period 10 sec.
Slide 87+88

Q43. Write the formula to calculate the potential energy produced by wave.
Slide 89

Q44. Calculate tidal power produced by ocean wave if velocity 16 m/ s and height 1m , relative density= 1
Slide 90

Q45. Explain the operation of deep water device in wave power generation.
Slide 91

Q46. Explain the operation of shallow water device in wave power generation.
Slide 92 to 97

Q47. Explain the power density of tidal pool
Slide 98

Q48. Write the equation to calculate the pack kinetic energy flux at any section.
Slide 99 to 101

Q49. Write the following equations

- (a) Power of shallow water tidal wave.
- (b) Kinetic energy flux
- (c) The ratio of kinetic energy flux to power.

Slide 101 to 103

Q50. Write the equation that relates to power per tide mill and area per tide mill.

Slide 105 to 108

Q51. Explain the followings.

- (a) Sustainable Energy
- (b) Green Energy

Slide 109 to 110

Q52. Explain (a) Renewable Energy Technology (b) First/ Second & Third Generation of RE

Slide 111

Q53. Describe the energy cost of eating foods and fertilizer and other energy costs in farming.

Slide 112

Q54. Describe the climate zones of Australia

Slide 113

Q55. What is passive design?

Slide 114

Q56. Explain the design for climate with the aspects of orientation and shading

Slide 115+116

Q57. Explain passive solar heating system.

Slide 117 to 120

Q58. Explain the followings

- (a) Passive cooling
- (b) Insulation
- (c) Thermal mass
- (d) Glazing

Slide 123

Q59. Describe key design features for zone 1 High humid summer/ warm winter.

Slide 124+ 125

Q60. What should be done for building design in zone 2 warm humid summer and mild winter and what should be avoided?

Slide 126

Q61. Describe the key design features for zone 3 hot dry summer/ warm winter

Slide 127+128

Q62. What should be done for building in zone 4 hot dry summer/ cool winter and what

should be avoided?

Slide 129+130

Q63. Describe the key design features for zone 5 warm temperate?

Slide 131+132

Q64. Describe the key features of zone 6 mild temperate

Slide 133+134

Q65. Describe the key design features for zone 7 cool temperate.

Slide 135+136

Q66. Describe the key design features for zone 8 Alpine.

Slide 138+139

Q67. How do you understand human thermal comfort?

Slide 140+141

Q68. Describe the factors that contribute the loss and gain of body heat.

Slide 142

Q69. Sketch the diagram of orientation for passive heating

Slide 143+144

Q70.To design the house , what research should be done on local climate?

Slide 145+146

Q71.Describe the choosing of site for house.