LIST OF SELECTED CONSTANT VALUES
SENARAI NILAI PEMALAR TERPILIH

Speed of light in vacuum *Laju cahaya dalam vakum*	c	$= 3.00 \times 10^{8}$ m s^{-1}
Permeability of free space *Ketelapan ruang bebas*	μ_0	$= 4\pi \times 10^{-7}$ H m^{-1}
Permittivity of free space *Ketelusan ruang bebas*	ε_0	$= 8.85 \times 10^{-12}$ F m^{-1}
Electron charge magnitude *Magnitud cas elektron*	e	$= 1.60 \times 10^{-19}$ C
Planck constant *Pemalar Planck*	h	$= 6.63 \times 10^{-34}$ J s
Electron mass *Jisim elektron*	m_e	$= 9.11 \times 10^{-31}$ kg $= 5.49 \times 10^{-4}$ u
Neutron mass *Jisim neutron*	m_n	$= 1.674 \times 10^{-27}$ kg $= 1.008665$ u
Proton mass *Jisim proton*	m_p	$= 1.672 \times 10^{-27}$ kg $= 1.007277$ u
Deuteron mass *Jisim deuteron*	m_d	$= 3.34 \times 10^{-27}$ kg $= 2.014102$ u
Molar gas constant *Pemalar gas molar*	R	$= 8.31$ J K^{-1} mol^{-1}
Rydberg constant *Pemalar Rydberg*	R_H	$= 1.097 \times 10^{7}$ m^{-1}
Avogadro constant *Pemalar Avogadro*	N_A	$= 6.02 \times 10^{23}$ mol^{-1}
Boltzmann constant *Pemalar Boltzmann*	k	$= 1.38 \times 10^{-23}$ J K^{-1}
Gravitational constant *Pemalar graviti*	G	$= 6.67 \times 10^{-11}$ N m^2 kg^{-2}
Free-fall acceleration *Pecutan jatuh bebas*	g	$= 9.81$ m s^{-2}

LIST OF SELECTED CONSTANT VALUES
SENARAI NILAI PEMALAR TERPILIH

Atomic mass unit *Unit jisim atom*	1 u	$= 1.66 \times 10^{-27}$ kg $= 931.5 \frac{\text{MeV}}{c^2}$
Electron volt *Elektron volt*	1 eV	$= 1.6 \times 10^{-19}$ J
Constant of proportionality for Coulomb's law *Pemalar hukum Coulomb*	$k = \frac{1}{4\pi\varepsilon_0}$	$= 9.0 \times 10^9$ N m^2 C^{-2}
Atmospheric pressure *Tekanan atmosfera*	1 atm	$= 1.013 \times 10^5$ Pa
Density of water *Ketumpatan air*	ρ_w	$= 1000$ kg m^{-3}

LIST OF SELECTED FORMULAE
SENARAI RUMUS TERPILIH

1. $\vec{A} \bullet \vec{B} = AB\cos\theta$
2. $\vec{A} \times \vec{B} = AB\sin\theta\hat{n}$
3. $v = u + at$
4. $s = ut + \frac{1}{2}at^2$
5. $v^2 = u^2 + 2as$
6. $s = \frac{1}{2}(u+v)t$
7. $p = mv$
8. $J = F\Delta t$
9. $J = \Delta p = mv - mu$
10. $f = \mu N$
11. $W = Fs\cos\theta$
12. $K = \frac{1}{2}mv^2$
13. $U = mgh$
14. $U_s = \frac{1}{2}kx^2 = \frac{1}{2}Fx$
15. $P_{av} = \frac{\Delta W}{\Delta t}$
16. $P = Fv$
17. $F_c = \frac{mv^2}{r} = mv\omega = mr\omega^2$
18. $F = \frac{GMm}{r^2}$
19. $a_g = \frac{GM}{r^2}$
20. $U = \frac{GMm}{r}$
21. $v_{esc} = \sqrt{\frac{2GM}{R}} = \sqrt{2gR}$
22. $v = \sqrt{\frac{GM}{r}}$
23. $T = 2\pi\sqrt{\frac{r^3}{GM}}$
24. $s = r\theta$
25. $v = r\omega$
26. $a_t = r\alpha$
27. $a_c = \frac{v^2}{r} = r\omega^2$
28. $\omega = \omega_o + \alpha t$
29. $\theta = \omega_o t + \frac{1}{2}\alpha t^2$

LIST OF SELECTED FORMULAE
SENARAI RUMUS TERPILIH

30. $\omega^2 = \omega_o^{\ 2} + 2\alpha\theta$

31. $\tau = rF\sin\theta$

32. $I = \sum mr^2$

33. $I_{\text{solid sphere}} = \frac{2}{5}MR^2$

34. $I_{\text{solid cylinder/disc}} = \frac{1}{2}MR^2$

35. $I_{\text{ring}} = MR^2$

36. $I_{\text{rod}} = \frac{1}{12}ML^2$

37. $\tau = I\alpha$

38. $L = I\omega$

39. $x = A\sin\omega t$

40. $v = \frac{dx}{dt} = \pm\omega\sqrt{A^2 - x^2}$

41. $a = \frac{dv}{dt} = \frac{d^2x}{dt^2} = -\omega^2 x$

42. $K = \frac{1}{2}m\omega^2\left(A^2 - x^2\right)$

43. $U = \frac{1}{2}m\omega^2 x^2$

44. $E = \frac{1}{2}m\omega^2 A^2$

45. $\omega = \frac{2\pi}{T} = 2\pi f$

46. $T = 2\pi\sqrt{\frac{l}{g}}$

47. $T = 2\pi\sqrt{\frac{m}{k}}$

48. $k = \frac{2\pi}{\lambda}$

49. $v = f\lambda$

50. $y(x,t) = A\sin(\omega t \pm kx)$

51. $y = A\cos kx\sin\omega t$

52. $I = \frac{P}{A}$

53. $f = \frac{nv}{2l}$

54. $f_n = \frac{n}{2l}\sqrt{\frac{T}{\mu}}$

55. $f = \frac{nv}{4l}$

56. $v = \sqrt{\frac{T}{\mu}}$

57. $\mu = \frac{m}{l}$

LIST OF SELECTED FORMULAE
SENARAI RUMUS TERPILIH

58. $f_a = \left(\frac{v \pm v_o}{v \pm v_s}\right) f$

59. $\sigma = \frac{F}{A}$

60. $\varepsilon = \frac{e}{l_o}$

61. $Y = \frac{\sigma}{\varepsilon}$

62. $U = \frac{1}{2} Fe$

63. $\frac{dQ}{dt} = -kA\left(\frac{dT}{dx}\right)$

64. $\Delta L = \alpha L_o \Delta T$

65. $\Delta A = \beta A_o \Delta T$

66. $\Delta V = \gamma V_o \Delta T$

67. $\beta = 2\alpha$

68. $\gamma = 3\alpha$

69. $pV = nRT$

70. $n = \frac{m}{M} = \frac{N}{N_A}$

71. $v_{rms} = \sqrt{\frac{3kT}{m}} = \sqrt{\frac{3RT}{M}}$

72. $pV = \frac{1}{3} Nmv_{rms}^2$

73. $p = \frac{1}{3} pv_{rms}^2$

74. $K_{tr} = \frac{3}{2}\left(\frac{R}{N_A}\right) T = \frac{3}{2} kT$

75. $U = \frac{1}{2} fNkT = \frac{1}{2} fnRT$

76. $Q = \Delta U + W$

77. $W = nRT \ln \frac{V_2}{V_1} = nRT \ln \frac{p_1}{p_2}$

78. $W = \int pdV = p\left(V_2 - V_1\right)$