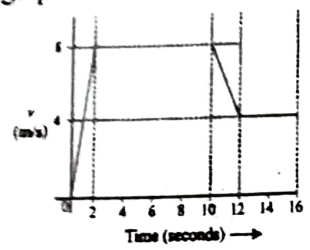
+2 A.M.U. Science/Dip. Engg.
2007-2008

1. An object has a uniform acceleration of 3 m/s^2. At a certain time its velocity is 10 m/s. What was its velocity 2 seconds earlier?
(a) -2 m/s (b) +6m/s
(c) +4m/s (d) -0m/s

2. The velocity-time graph of a runner is shown below. Calculate the distance travelled by the runner.
(a) 80 m
(b) 100m
(c) 120m
(d) 140m



3. A ball of mass 70g moving with a speed of 0.5m/s Vs is stopped by a player in 0.05 seconds. Calculate the force exerted by the player:
(a) 0.07N (b)0.7N
(c)7.0N (d)3.5N

4. Volume of a 500 g box is 450 cm^3. What is the relative density of the material of the box and its weight in water?
(a) 1.43,100 g (b) 1.45,50g
(c) 1.11,50g (d) 1.50,150g

5. A body A of 100 N weight is placed on a table Another smaller body B of 50 N weight is placed on top of A. What is the force on (1) upper body B from the lower body A and (2) the lower body A from the table?
(a) 150 N, 150N (b) 100 N, 150N
(c) 50 N, 50N (d) 50N, 150N

6. Calculate the initial upward acceleration of a rocket of mass 1.3 X 10^4 kg, if the initial upward force produced by its engines is 2.6 x 10^5 N (take g= 10m/s^2):
(a) 13 m/s^2 (b) 26 m/s^2
(c) 10 m/s^2 (d) 20 m/s^2

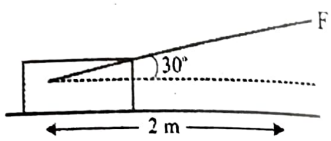
7. A ball of mass 1.5 kg is dropped from the tower 40m high. (1) What is its speed when it has covered 20 m? (2) What is its speed when it hits the ground?
(a) 20m/s, 20√2m/s (b) 15m/s, 20√2 m/s
(c) 20m/s, 30√2m/s (d) 30m/s, 50m/s

8. A satellite of mass m is in a circular orbit of radius *a* around earth (mass M, radius R). The speed of the satellite v is:
(a) $v = \sqrt{\frac{GMm}{R}}$ (b) $v = \sqrt{\frac{GM}{R}}$
(c) $v = \sqrt{\frac{GM}{a}}$ (d) $v = \sqrt{\frac{Gm}{a}}$

9. A force F acts in a body of mass *m* initially at rest producing a uniform acceleration a for a time interval t. The work done W on the body is:
(a) ½ m a^2 t^2 (b) ½ m a F
(c) ½ m a^2 F (d) ½ m a F^2

10. A body of mass 0.5 kg is thrown vertically upward by spending 2 Joules of energy. Calculate the height to which it rises (take g= 10 m/s^2):
(a) 0.5 m (b) 0.2 m
(c) 0.4 m (d) 2.0 m

11. Applying a force, F = 50N on an object the displacement is 2m. The force F makes an angle of 30° with the horizontal. Calculate the work done:
(a) 50 √2 J
(b) 50√3 J
(c) 100 √2 J
(d) 100 √3 J



12. Calculate the final temperature of water when 2 kg of water at 80°C is mixed with 8 kg of water at 20°C:
(a) 32°C (b) 40°C
(c) 36°C (d) 45°C

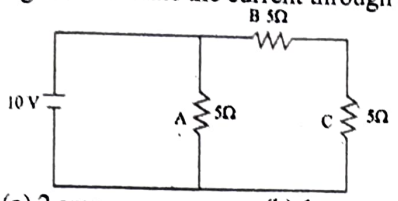
13. What is wavelength of ocean waves of speed 20 m/s and time period 5 seconds?
(a) 20m (b)4m
(c) 100m (d) 200m

14. Which of the following is wrong?
(a) image formed by a concave mirror is always smaller than the object.
(b) image formed by a concave minor is always real.
(c) image formed by a plane mirror is always virtual.
(d) image formed by a concave lens is always virtual.

15. Two lenses of powers + 2.0 D and -1.5 D are placed in contact with each other. What is the focal length of the combination and the nature of this lens combination?
(a) 200 cm, convergent
(b) 150 cm, divergent

(c) 350 cm, convergent
(d) 150 cm, divergent

16. Three resistances A, B and C each of 5Ω are connected to a battery of 10 V as shown in the figure. Calculate the current through C:



(a) 2 amp (b) 1 amp
(c) 3 amp (d) 0.6 amp

17. The device used to generate electrical energy is:
(a) Electric motor (b) Generator
(c) Galvanometer (d) Voltmeter

18. The number of molecules in 11 g of CO_2 are:
(a) 0.25×10^{23} (b) 0.50×10^{23}
(c) 1.00×10^{23} (d) 1.51×10^{23}

19. The value of charge / mass ratio of electron was determined by:
(a) W.K Roentgen (b) J.J.Thomson
(c) Marie Curie (d) Niels Bohr

20. Which of the following reactions is an example of combination reaction?
(a) $Zn(s) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(s)$
(b) $BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl(aq)$
(c) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$
(d) $C(s) + O_2(g) \rightarrow CO_2(g)$

21. The clement *'X'* and 'Y' have atomic numbers 12 and 17 respectively. Element 'X' reacts with element 'Y' to form compound with molecular formula:
(a) XY (b) XY_2
(c) XY_3 (d) X_2Y_3

22. The atomic radius (pm) of Li, Na, K and Rb varies in the order:
(a) Na<K<Rb<Li (b) K<Na<Li<Rb
(c) Li<Na<K<Rb (d) Rb<K<Na<Li

23. The electron affinity value (kJ mol^{-1}) of fluorine (F) is less than:
(a) Hydrogen (H) (b) Lithium (Li)
(c) Oxygen (O) (d) Chlorine (Cl)

24. Which of the following is an example of strong electrolyte?
(a) H_2CO_3 (b) NH_4OH
(c) NaCl (d) COOH – COOH

25. If pH of a solution changes from 5 to 4, the change in hydrogen ion concentration shall be:
(a) two times (b) five times
(c) ten times (d) twenty times

26. Bleaching powder is manufactured by the reaction of:
(a) $CaCl_2$ and $CaCO_3$ (b) Cl_2 and $Ca(OH)_2$
(c) Cl_2 and $CaSO_4$ (d) Cl_2 and $Ca(HCO_3)_2$

27. The hard glass is obtained by fusing:
(a) soda ash, sand and limestone
(b) a mixture of sand, lime, borax and alkali carbonates
(c) potassium carbonate and limestone
(d) potassium carbonate, lead oxide and sand

28. Which of the following metals is most reactive?
(a) Aluminium (b) lead
(c) Mercury (d) Silver

29. Which of the following alloys contains chromium?
(a) Steel (b) Stainless steel
(c) Magnalium (d) Brass

30. Which of the following is monomer of natural rubber?
(a) Chloroethene (b) Chloroprene
(c) Isoprene (d) Buta-1, 3-diene

31. Alkaline $KMnO_4$ oxidises propanone to:
(a) propanoic acid (b) ethanoic acid
(c) methanoic acid (d) oxalic acid

32. Which of the following metals can displace Zn from $ZnSO_4$ solution?
(a) Calcium (b) Copper
(c) Iron (d) Mercury

33. Heating of sodium ethanoate with soda lime yields:
(a) ethane (b) methane
(c) ethanol (d) methanol

34. The compound formed by the reaction of ethyne with bromine is:
(a) Br-CH=CH-Br (b) $Br\text{-}CH_2\text{-}CHBr_2$
(c) CH_2=CH-Br (d) $Br_2CH\text{-}CHBr_2$

35. Cell were first discovered by Robert Hooke in the year:
(a) 1665 (b) 1674 (c) 1831 (d) 1839

36. The plant cells have a rigid cell wall that lies:
(a) Outside the plasma membrane
(b) Inside the plasma membrane
(c) In between the plasma membranes
(d) None of the above

37. During mitosis nucleolus and nuclear membrane are lost in stage:
(a) Prophase (b) Metaphase
(c) Anaphase (d) Telophase

38. An example of simple and permanent tissue is:
(a) Xylem (b) Phloem
(c) Selerenchyma (d) All the above

39. The shape of squamous epithelial tissue is:
(a) Cubical (b) Flattened
(c) Pillar like (d) None of the above

40. Fresh water sponge belongs to phylum:
(a) Arthropoda (b) Annelida

(c) Porifera (d) Aschleminthes

41. In animal kingdom the largest phylum is:
(a) Arthropoda (b) Annelida
(c) Mollusca (d) Echinodermata

42. In sea horse heart is two chambered, in wall lizard it is three chambered while in pigeon it is four chambered and incase of man it is:
(a) 1 chambered (b) 2 chambered
(c) 3 chambered (d) 4 chambered

43. Energy giving food sources are:
(a) Cereals like Rice and Wheat
(b) Proteins, Milk, Meat
(c) Minerals, Vitamins
(d) All the above

44. Lead chromate is a common adulterant of:
(a) Powdered Haldi (b) Powdered Dhania
(c) Powdered Mirch (d) Edible Oil

45. AIDS disease was first detected in:
(a) England (b) USA
(c) South Africa (d) India

46. Biosphere means:
(a) Part of atmosphere plus life
(b) Part of hydrosphere plus life
(c) Part of lithosphere plus life
(d) All the above

47. The overall equation of photosynthesis is:
(a) $6CO_2 + 12H_2O \xrightarrow[\text{chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6H_2O + 6O_2$
(b) $6CO_2 + 6H_2O \xrightarrow[\text{chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6O_2$
(c) $CO_2 + 6H_2O \xrightarrow[\text{chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + O_2$
(d) None of the above

48. In insects respiratory organ is:
(a) Skin (b) Gills
(c) Lungs (d) Trachea

49. A person having AB blood group can receive blood from the person having a blood group of:
(a) A and B both (b) AB only
(c) O only (d) All the above

50. In plants the movement during pollen tube growth is due to:
(a) Phototropism (b) Geotrotropism
(c) Chemotropism (d) Photoperiodism

51. Fatehpur Sikri was built by:
(a) Akbar (b) Babur
(c) Shahjahan (d) Jahangir

52. An Indian who received the Noble Prize within the last ten years is:
(a) Mashalkar
(b) Amartya Sen
(c) Ram Swamp Bhatnagar
(d) Rabindra Nath Tagore

53. In 1857 the rebelling sepoys who occupied Delhi declared the following to be their sovereign;
(a) Jahandar Shah (b) Akbarshah II
(c) Bahadur Shah Zafar (d) Shah Alam II

54. Kalidas wrote:
(a) Harshacharita (b) Kadambari
(c) Kamasutra (d) Shakuntala

55. Kathakali is performed mostly in:
(a) Kerala (b) Karnataka
(c) Bengal (d) Gujarat

56. Gandhiji was born in:
(a) Durban, South Africa
(b) Porbandar, Gujarat
(c) Mumbai, Maharashta
(d) Karachi, Sind

57. The state in India which has been re-electing the government of same political front for the largest number of years is:
(a)Tamil Nadu (b) Andhra Pradesh
(c) West Bengal (d) Karnataka

58. A Vice-Chancellor of the Aligarh Muslim University who rose later to be the President of India, was:
(a) Fakhruddin Ali Ahmad
(b) Dr. Ziauddin Ahmad
(c) Dr. Abdul Kalam
(d) Dr. Zakir Husain

59. The leader of Soviet Union (Russia) under whom Hitler was defeated in World War II was:
(a) Stalin (b) Lenin
(c) Trotsky (d) Brezhnev

60. The only power that has actually used atomic weapons against another country is:
(a) Russia (b) United States
(c) Germany (d) United Kingdom

61. In a group of 80 people, 45 like coffee, 50 like tea and each person likes at least one of the two drinks. The number of people who like both coffee and tea is:
(a) 5 (b) 10 (c)15 (d)20

62. The domain of the real valued function $f(x) = \sqrt{x} + \sqrt{x-10}$ is:
(a) $(x : 0 \le x \le 10, x \in R)$
(b) $(x : x \ge 10, x \in R]$
(c) $(x ; x < 10, x \in R)$
(d) none of these

63. The value of $\frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{3}} + \frac{2\sqrt{3}}{\sqrt{6}-2}$
(a) $\sqrt{3}$ (b) $2\sqrt{3}$
(c) $4\sqrt{3}$ (d) 0

64. If $3^x - 3^{x-1} = 18$, then the value of x is:

(a) 3 (b) 8
(c) 27 (d) 216

65. Rs. 49 was divided among 150 children. Each girl got 50 paise and each boy 25 paise. The number of boys was:
(a) 101 (b) 102
(c) 103 (d) 104

66. The number of degrees in an angle which is equal to one-fifth of its supplement is:
(a) 15 (b)30
(c) 60 (d) 150

67. The sum of the base angle of a triangle is 140° and their difference is 40°. The angles of triangle are:
(a) 90°, 50°, 40° (b) 100°, 40°, 40°
(c) 80°, 40°,60° (d) 130°,30°,20°

68. **The base of a triangle is smaller than its altitude. If its area is $1/2\ x^2 + 2x + 3/2$, its base is:**
(a) (x + 1) (b) (x + 2)
(c) (x + 3) (d) (x - 4)

69. The perimeter of a rectangle is 82 m and its area is $400m^2$. The breadth of the rectangle is:
(a) 25 m (b) 16 m
(c) 9 m (d) 20 m

70. A goods train leaves a station at a certain time at a fixed speed . After 6 hours, an express train leaves the same station and moves in the same direction at a uniform speed of 90 km/hr. This train catches the goods train in 4 hours. The speed of the goods trains is:
(a) 36 km/hr (b) 40 km/hr
(c) 42 km/hr (d) 45 km/hr

71. If (x-a) is a factor of $(x^3-3x^2a + 2a^2x+b)$, then the value of b is:
(a) 0 (b) 1 (c) 2 (d) 3

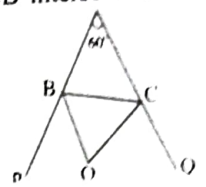
72. If $(x + k)$ is a H.C.F. of (x^2+ax+b) and (x^2+cx+d) then the value of k is:
(a) $\frac{b+d}{a+c}$ (b) $\frac{a+b}{c+d}$
(c) $\frac{a-b}{c-d}$ (d) $\frac{b-d}{a-c}$

73. The value of $\frac{x-3}{x^2-x-6}+\frac{2x-1}{2x^2+5x-3}-\frac{2x+5}{x^2+5x+6}$
(a) 0 (b) 1 (c) -1 (d) 0

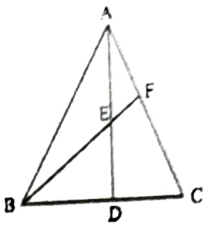
74. The ratio of the sum and the product of the roots of $7x^2 - 12x + 18=0$ is:
(a) 7: 12 (b) 3 : 2
(c) 2 : 3 (d)7:18

75. If $(x^{3/2} - xy^{1/2} + x^{1/2}y - y^{3/2})$ is divided by $(x^{1/2} - y^{1/2})$ then the quotient is:
(a) x+y (b) x-y
(c) $x^{1/2} + y^{1/2}$ (d)$x^2 - y^2$

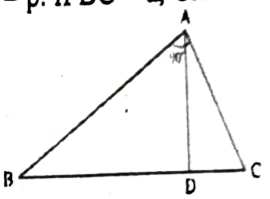
76. The sides AB and AC of the triangle ABC are produced to P and Q respectively. The bisectors of ∠PBC and ∠QCB intersect at O. If ∠BAC = 60°, then ∠BOC is:
(a) 25°
(b)30°
(c) 45°
(d) 60°



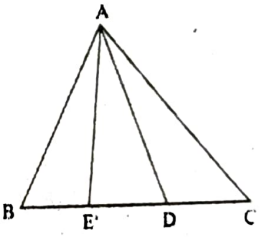
77. In ΔABC, AD is the median through A and E is the mid-point of AD and BE produced meets AC at F, then AF is equal to;
(a) 1/5 AC
(b) 1/4 AC
(c) 1/3 AC
(d) 1/2 AC



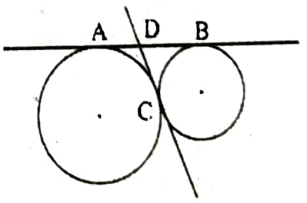
78. **In a right angled ΔABC, right angled at A, if AD ⊥ BC such that AD = p. If BC = a, CA = b and AB = c, then:**
(a) $p^2 = b^2 + c^2$
(b) $1/p^2 = 1/b^2 + 1/c^2$
(c) p/a = p/b
(d) $p^2 = b^2 c^2$



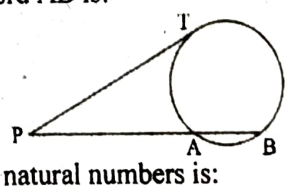
79. In the given figure, AD is median of ΔABC and AE ⊥ BC. If BC = a, $CA = b$, AB = c, AD =p, AE = h and $DE=x$, then $b^2 + c^2$ is equal to:
(a) $2p^2 + 1/2\ a^2$
(b) $p^2 + a^2$
(c) $2p^2 + a^2$
(d) $p^2 + 2a^2$



80. In the given figure, AB and CD are two common tangents to two touching circles. If DC = 4 cm, then AB is equal to:
(a) 4cm
(b) 6 cm
(c) 8 cm
(d)12cm



81. If PAB is a secant to a circle intersecting it at A and B, PA = 8 cm and a tangent PT is of length 12 cm, then chord AB is:
(a) 10cm
(b)$4\sqrt{5}$ cm
(c) 4 cm
(d) 18cm



82. The sum of all 2 digit natural numbers is:
(a) 4750 (b) 4905
(c) 3776 (d) 4680

83. The value of $\frac{\cos 68^\circ}{\sin 22^\circ} + \frac{\sin 20^\circ}{\cos 70^\circ}$
(a) 0 (b) -1
(c) 1 (d) 2

84. If the length of shadow of a pole is double of the length of the pole then the angle of elevation of the sun is:
(a) 30° (b) 45°
(c) 60° (d) none of these

85 The volume of a sphere of radius r is equal to volume of a right circular cone of the base of radius r. The height of the cone is:
(a) r (b)2r
(c)3r (d) 4r

86 Three cubes of sides 8 cm, 6 cm, and 1cm are melted to form a new cube. The surface area of the cube so formed is:
(a) 480 cm^2 (b) 486 cm^2
(c) 490 cm^2 (d) 500 cm^2

87. Tickets numbered from 1 to 20 are mixed up and a ticket is drawn at random. The probability that the drawn ticket has a number multiple of 3 or 7 is:
(a) 1/15 (b) 1/2
(c) 2/5 (d) 7/20

88. The arithmetic mean of 5 numbers is 27. If one of these numbers is removed then mean becomes 25, the removed number is:
(a) 28 (b) 26
(c) 25 (d) 35

89. The point on x-axis equidistant from the points A(7, 6) and B(-3,4):
(a) (0, 4) (b) (-4, 0)
(c) (3,0) (d)(0,3)

90. Two vertices of a triangle ABC are A(-1,4) and B(5,2) and its centroid is (0,-3). The Co-ordinates of C are:
(a) (4, 3) (b) (-4, -15)
(c) (-15, -4) (d) none of these

91. The first Vice-Chancellor of Aligarh Muslim University was :
(a) Sahibzada Aftab Ahmad Khan
(b) Sir Ross Masood
(c) Raja Muhammad Ali of Muhmudabad
(d) Dr. Ziauddin Ahmed

92. Sir Syed Ahmad Khan was the editor of the famous journal:
(a) Tahzeeb-ul-Akhlaq
(b) Al-Hilal
(c) Comrade
(d) Young India

93. The Mughal empire was established in India by:
(a)Jahangir (b)Humayun
(c)Babur (d)Shahjahan

94. Abul Fazl, the famous historian of Akbar's reign, is the author of:
(a) Akbarnama
(b) Muntkhab-ul-Tawarikh
(c) Tabaqat-i-Akbari
(d) Badshahnama

95. Sir Syed Ahmad Khan established the Scientific Society in:
(a)1851 (b) 1864
(c) 1875 (d) 1886

96. The Mohammedan Anglo-Oriental College was established in:
(a) 1870 (b) 1875
(c) 1880 (d) 1885

97. The famous sufi-poet Amir Khusrau was the disciple of:
(a) Shaikh Moinuddin Chisti
(b) Shikh Qutubuddin Bakhtiar Kaki
(c) Shaikh Nizammuddin Aulia
(d) Shaikh Shahabuddin Suhrawardi

98. In post-independence India, Maulana Abul Kalam Azad was the minister of:
(a) Home Affairs
(b) Education
(c) External Affairs
(d) Health and Social Welfare

99. Kabir was the disciple of:
(a) Ravidas (b) Raidas
(c) Ramananda (d) Ramadas

100. Sir Syed's book, *Asar-us-Sanadid* deals with:
(a) the revolt of 1957
(b) the British rule in India
(c) the monuments of Delhi
(d) the condition of Muslims in India

Answers 2007-2008

1.	c
2.	b
3.	b
4.	c
5.	d
6.	c
7.	a
8.	b
9.	a
10.	c
11.	b
12.	a
13.	c
14.	d
15.	a
16.	b
17.	b
18.	d
19.	b
20.	d
21.	b
22.	c
23.	d
24.	c
25.	c

26.	b
27.	c
28.	a
29.	b
30.	c
31.	none
32.	a
33.	b
34.	d
35.	a
36.	a
37.	a
38.	d
39.	b
40.	c
41.	a
42.	d
43.	a
44.	a
45.	b
46.	d
47.	b
48.	d
49.	d
50.	c

51.	a
52.	b
53.	c
54.	d
55.	a
56.	b
57.	c
58.	d
59.	a
60.	c
61.	c
62.	b
63.	c
64.	a
65.	d
66.	b
67.	a
68.	c
69.	b
70.	a
71.	a
72.	d
73.	a
74.	c
75.	a

76.	d
77.	c
78.	b
79.	a
80.	c
81.	a
82.	b
83.	d
84.	d
85.	d
86.	b
87.	c
88.	d
89.	c
90.	b
91.	c
92.	a
93.	c
94.	a
95.	b
96.	b
97.	c
98.	b
99.	c
100.	c