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Name.: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Date : 16/08/2015

Test No.: 0 2

Test Code : 1 1 1

Time : 3 Hrs. **M.M. : 360**

HORIZON TEST SERIES

for

Engineering Entrance Exam. 2016

[Test No. 2]

INSTRUCTIONS FOR STUDENTS

1. Read each question carefully.
2. It is mandatory to use Blue/Black Ball Point Pen to darken the appropriate circle in the answer sheet.
3. Mark should be dark and should complete fill the circle.
4. Rough work must not be done on the Question Paper, no additional sheet will be provided for this purpose.
5. Do not use white-fluid or any other rubbing material on answer sheet. No change in the answer once marked.
6. Student cannot use log tables and calculators or any other material in the examination hall.
7. Before attempting the question paper, student should ensure that the test paper contains all pages and no page is missing.
8. Each correct answer carries four marks. One mark will be deducted for each incorrect answer from the total score.
9. Before handing over the answer sheet to the invigilator, candidate should check the particulars have been filled and marked correctly.
10. Immediately after the prescribed examination time is over, the answer sheet to be returned to the invigilator.
11. Use of Calculator and other Electronic device is not permitted.

Test No. 2

Topics of The Test

Physics	Unit, Dimension and Error in Measurement.
Chemistry	States of Matter (General properties of Gases and Liquids, Gas Laws and Ideal Gas equations, Kinetic Molecular Theory of Gases and Molecular speeds).
Maths	Complex Numbers.

Test No. 2

[PHYSICS]

1. The constant of propertionality $\frac{1}{4\pi\varepsilon_0}$ in Coulomb's law has the following units
(A) $C^{-2}Nm^2$ (B) $C^2N^{-1}m^{-2}$
(C) C^2Nm^2 (D) $C^{-2}N^{-1}m^{-2}$

2. 1 ns is defined as
(A) 10^{-9} s of Kr-clock of 1650763.73 oscillations
(B) 10^{-9} s of Kr-clock of 6521389.63 oscillations
(C) 10^{-9} s of Cs-clock of 1650763.73 oscillations
(D) 10^{-9} s of Cs-clock of 9192631770 oscillations

3. Given that : $y = A\sin\left[\left(\frac{2\pi}{\lambda}\right)(ct - x)\right]$ where, y and x are measured in metre. Which of the following statements is true ?
(A) The unit of λ is same as that of x and A
(B) The unit of λ is same as that of x but not of A
(C) The unit of c is same as that of $\frac{2\pi}{\lambda}$
(D) The unit of $(ct - x)$ is same as that of $\frac{2\pi}{\lambda}$

4. How many wavelengths of the Kr^{89} are there in one metre ?
(A) 658189.63 (B) 2348123.73
(C) 1650763.73 (D) 1553164.12

5. If F denotes force and t time, then in equation $F = at^{-1} + bt^2$, the dimensions of a and b respectively are
(A) $[LT^{-4}]$ and $[LT^{-1}]$
(B) $[LT^{-1}]$ and $[LT^{-4}]$
(C) $[MLT^{-4}]$ and $[MLT^{-1}]$
(D) $[MLT^{-1}]$ and $[MLT^{-4}]$

6. The dimensions of resistance are same as those of .... where h is the Planck's constant and e is the charge.
(A) $\frac{h^2}{e^2}$ (B) $\frac{h^2}{e}$
(C) $\frac{h}{e^2}$ (D) $\frac{h}{e}$

7. The dimensions of potential are the same as that of
(A) work
(B) electric field per unit charge
(C) work per unit charge
(D) force per unit charge

8. Which one of the following pair of quantities has same dimension ?
(A) Force and work done
(B) Momentum and impulse
(C) Pressure and force
(D) Surface tension and stress

Space for Rough Work

9. Which physical quantities have same dimensions ?
(A) Force and power (B) Torque and energy
(C) Torque and power (D) Force and torque

10. The air bubble formed by explosion inside water performed oscillation with time period *T* that is directly proportional to $p^a d^b E^c$, where *p* is the pressure, *d* is the density and *E* is the energy due to explosion. The values of *a, b* and *c* will be
(A) –5/6, 1/2, 1/3 (B) 5/6, 1/3, 1/2
(C) 5/6, 1/2, 1/3 (D) None of these

11. If *E* = energy, *G* = gravitational constant, *I* = impulse and *M*= mass, then dimensions of $\frac{GIM^2}{E^2}$ are same as that of
(A) time (B) mass
(C) length (D) force

12. In the relation $p=\frac{\alpha}{\beta}e^{-\frac{\alpha z}{k\theta}}$, *p* is the pressure, *z* the distance, *k* is Boltzmann constant and θ is the temperature, the dimensional formula of β will be
(A) $[M^0L^2T^0]$ (B) $[ML^2T]$
(C) $[ML^0T^{-1}]$ (D) $[ML^2T^{-1}]$

13. Some physical constants are given in List I and their dimensional formulae are given in List II. Match the following lists.

	List I		List II
(1)	Planck's constant	(i)	$[ML^{-1}T^{-2}]$
(2)	Gravitational constant	(ii)	$[ML^{-1}T^{-1}]$
(3)	Bulk modulus	(iii)	$[ML^2T^{-1}]$
(4)	Coefficient of viscosity	(iv)	$[M^{-1}L^3T^{-2}]$

The correct answer is

	(1)	(2)	(3)	(4)		(1)	(2)	(3)	(4)
(A)	(iv)	(iii)	(ii)	(i)	(B)	(ii)	(i)	(iii)	(iv)
(C)	(iii)	(ii)	(i)	(iv)	(D)	(iii)	(iv)	(i)	(ii)

14. If the velocity v (is cms^{-1}) of a particle is given in terms of *t* (in second) by the relation

$$v = at + \frac{b}{t+c}$$

then, the dimensions of a, b and c are

	a	b	c
(A)	[L]	[LT]	$[T^2]$
(B)	$[L^2]$	[T]	$[LT^{-2}]$
(C)	$[LT^2]$	[LT]	[L]
(D)	$[LT^{-2}]$	[L]	[T]

15. The Physical quantities not having same dimensions are
(A) torque and work
(B) momentum and Planck's constant
(C) stress and Young's modulus
(D) speed and $(\mu_0\varepsilon_0)^{-1/2}$

16. The only mechanical quantity which has negative dimension of mass is
(A) angular momentum
(B) torque
(C) coefficient of thermal conductivity
(D) gravitational constant

17. Which of the following sets of quantities have same dimensional formula ?
(A) Surface tension, stress and spring constant
(B) Acceleration, momentum and retardation
(C) Thermal capacity, specific heat and entropy
(D) Work, energy and torque

18. Which of the following is dimensionless ?
(A) $\frac{v^2}{rg}$ (B) $\frac{v^2 g}{r}$
(C) $\frac{vg}{r}$ (D) $v^2 rg$

Space for Rough Work

19. Which of the following sets have different dimensions?
(A) Pressure, Young's modulus, Stress
(B) Emf, Potential difference, Electric potential
(C) Heat, Work done, Energy
(D) Dipole moment, Electric flux, Electric field

20. The dimensions of $\frac{a}{b}$ in the equation $p = \frac{a - t^2}{bx}$ where p is pressure, x is distance and t is time, are
(A) $[M^2LT^{-3}]$ (B) $[MT^{-2}]$
(C) $[LT^{-3}]$ (D) $[ML^3T^{-1}]$

21. The dimensions of $e^2/4\pi\varepsilon_0 hc$, where e, ε_0, h and c are electronic charge, electric permittivity, Planck's constant and velocity of light in vacuum respectively, are
(A) $[M^0L^0T^0]$ (B) $[ML^0T^0]$
(C) $[M^0LT^0]$ (D) $[M^0L^0T^1]$

22. The density of a solid ball is to be determined in an experiment. The diameter of the ball is measured with a screw gauge, whose pitch is 0.5 mm and there are 50 divisions on the circular scale. The reading on the main scale is 2.5 mm and that on the circular scale is 20 divisions. If the measured mass of the ball has a relative error of 2%, the relative percentage error in the density is
(A) 0.9% (B) 2.4%
(C) 3.1% (D) 4.2%

23. A student uses a simple pendulum of exactly 1 m length to determine g, the acceleration due to gravity. He uses a stop watch with the least count of 1 s for this and records 40 s for 20 oscillations. For this observation, which of the following statements(s) is/are true ?
(A) Error ΔT in measuring T, the time period, is 0.05s
(B) Error ΔT in measuring T, the time period, is 1s
(C) Percentage error in the determination of g is 5%
(D) Percentage error in the determination of g is 2.5%

24. A student performed the experiment of determination of focal length of a concave mirror by $u - v$ method using an optical bench of length 1.5 m. the focal length of the mirror used is 24 cm. The maximum error in the location of the image can be 0.2 cm. The 5 sets of (u, v) values recorded by the student (in cm) are : (42, 56), (48, 48), (60, 40), (66, 33), (78, 39). The data set(s) that cannot come from experiment and is (are) incorrectly recorded, is (are)
(A) (42, 56) (B) (48, 48)
(C) (66, 33) (D) (78, 39)

25. The percentage errors in the measurement of length and time period of a simple pendulum are 1% and 2% respectively. Then the maximum error in the measurement of acceleration due to gravity is
(A) 8% (B) 3%
(C) 4% (D) 5%

26. A student has measured the length of a wire equal to 0.04580 m. This value of length has the number of significant figures equal to
(A) five (B) four
(C) six (D) none of these

27. Two full turns of the circular scale of a screw gauge cover a distance of 1 mm on its main scale. The total number of divisions on the circular scale is 50. Further, it is found that the screw gauge has a zero error of – 0.03 mm. while measuring the diameter of a thin wire, a student notes the main scale reading of 3 mm and the number of circular scale divisions in line with the main scale as 35. The diameter of the wire is
(A) 3.32 mm (B) 3.73 mm
(C) 3.67 mm (D) 3.38 mm

Space for Rough Work

28. A student performs an experiment to determine the Young's modulus of a wire, exactly 2 m long, by Searle's method. In a particular reading, the student measures the extension in the length of the wire to be 0.8 mm with an uncertainty of ± 0.05 mm at a load of exactly 1.0 kg. The student also measures the diameter of the wire to be 0.4 mm with an uncertainty of ± 0.01 mm. Take $g = 9.8$ ms^{-2}(exact). The Young's modulus obtained from the reading is

(A) $(2.0 \pm 0.3) \times 10^{11}\ Nm^{-2}$

(B) $(2.0 \pm 0.2) \times 10^{11}\ Nm^{-2}$

(C) $(2.0 \pm 0.1) \times 10^{11}\ Nm^{-2}$

(D) $(2.0 \pm 0.05) \times 10^{11}\ Nm^{-2}$

29. The length of a simple pendulum is about 100 cm known to an accuracy of 1 mm. Its period of oscillation is 2s determined by measuring the time for 100 oscillations using a clock of 0.1 s resolution. What is the accuracy in the determined value of g ?

(A) 0.2% (B) 0.5%

(C) 0.1% (D) 2%

30. A cube has a side of length 1.2×10^{-2}m. Calculate its volume.

(A) $1.7 \times 10^{-6} m^3$ (B) $1.73 \times 10^{-6} m^3$

(C) $1.70 \times 10^{-6} m^3$ (D) $1.732 \times 10^{-6} m^3$

[CHEMISTRY]

31. Which of the following will increase with the increase in temperature ?

(A) Surface tension (B) Viscosity

(C) Molality (D) Vapour pressure

32. Surface tension vanishes at

(A) boiling point

(B) critical point

(C) condensation point

(D) triple point

33. Vapour pressure increases with increase in

(A) concentration of solution containing non-volatile solute

(B) temperature up to boiling point

(C) temperature up to triple point

(D) altitude of the concerned place of boiling

34. If volume containing gas is compressed to half, how many moles of gas remained in the vessel ?

(A) Just double (B) Just half

(C) Same (D) More than double

35. During the evaporation of liquid

(A) the temperature of the liquid will rise

(B) the temperature of the liquid will fall

(C) may rise or fall depending on the nature

(D) the temperature remains unaffected

36. To an evacuated vessel with movable piston under external pressure of 1 atm. 0.1 mole of He and 1.0 mole of an unknown compound (vapour pressure 0.68 atm at 0°C) are introduced. Considering the ideal gas behaviour, the total volume (in litre) of the gases at 0°C is close to

(A) 3 (B) 5

(C) 7 (D) 9

37. If 10^{-4} dm^3 of water is introduced into a 1 dm^3 flask at 300 K, how many moles of water are in the vapour phase when equilibrium is established (Given vapour pressure of H_2O at 300K is 3170 Pa; R = 8.314 $JK^{-1}mol^{-1}$)

(A) 5.56×10^{-6}mol (B) 1.53×10^{-2}mol

(C) 4.46×10^{-2}mol (D) 1.27×10^{-3}mol

38. The density of a gas is 1.964 g dm^{-3} at 273 K and 76 cm Hg. The gas is

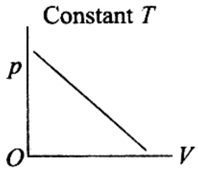
(A) CH_4 (B) C_2H_6

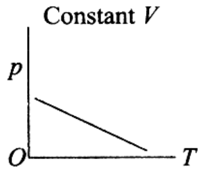
(C) CO_2 (D) Xe

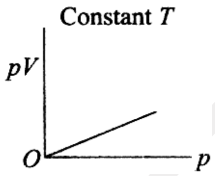
Space for Rough Work

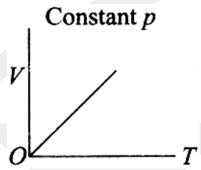
39. Which of the following diagrams correctly describes the behaviour of a fixed mass of an ideal gas ?

    (T is measured in K).

    (A) 

    (B) 

    (C) 

    (D) 

40. The density of O_2 is 16 at NTP. At what temperature its density will be 14 ? Consider that the pressure remains constant, at

    (A) 50°C (B) 39°C

    (C) 57°C (D) 43°C

41. Gas equation $pV = nRT$ is obeyed by ideal gas in

    (A) adiabatic process

    (B) isothermal process

    (C) Both (A) and (B)

    (D) None of the above

42. 10 g each of CH_4 and O_2 are kept in cylinders of same volume under same temperatures, give the pressure ratio of two gases

    (A) 2 : 1 (B) 1 : 4

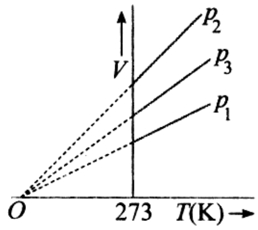
    (C) 2 : 3 (D) 3 : 4

43. Calculate the total pressure in a 10.0 L cylinder which contains 0.4 g helium, 1.6 g oxygen and 1.4 g nitrogen at 27°C.

    (A) 0.492 atm (B) 49.2 atm

    (C) 4.92 atm (D) 0.0492 atm

44. The volume-temperature graphs of a given mass of an ideal gas at constant pressures are shown below. What is the correct order of pressures ?



    (A) $p_1 > p_3 > p_2$ (B) $p_1 > p_2 > p_3$

    (C) $p_2 > p_3 > p_1$ (D) $p_2 > p_1 > p_3$

45. To what temperature must a neon gas sample be heated to double its pressure, if the initial volume of gas at 75°C is decreased by 15.0% ?

    (A) 319°C (B) 128°C

    (C) 60°C (D) 90°C

46. For an ideal gas, number of mol per litre in terms of its pressure p, temperature T and gas constant R is

    (A) pT / R (B) pRT

    (C) p / RT (D) RT / p

47. Based on kinetic theory of gases following laws can be proved

    (A) Boyle's law (B) Charles' law

    (C) Avogadro's law (D) All of these

48. Avogadro's hypothesis states that

    (A) the ideal gas consists of a large number of small particles called molecules.

    (B) under the same conditions of temperature and pressure equal volumes of gases contain the same number of molecules.

    (C) volume of a definite quantity of gas at constant pressure is directly proportional to absolute temperature.

    (D) a given mass of gas at constant pressure is directly proportional to absolute temperature.

Space for Rough Work

49. If two moles of an ideal gas at 546 K occupy volume 44.8 L, then pressure must be
(A) 2 atm (B) 3 atm
(C) 4 atm (D) 1 atm

50. The rate of diffusion of hydrogen gas is
(A) 1.4 times to He gas
(B) same as He gas
(C) 5 times to He gas
(D) 2 times to He gas

51. A certain mass of gas occupies a volume of 300 cc at 27°C and 620 mm pressure. The volume of this gas at 47°C and 640 mm pressure will be
(A) 400 cc (B) 510 cc
(C) 310 cc (D) 350 cc

52. The molecular velocity of any gas is
(A) inversely proportional to the square root of temperature
(B) inversely proportional to absolute temperature
(C) directly proportional to square of temperature
(D) directly proportional to squre root of temperature

53. For one mole of an ideal gas, increasing the temperature from 10°C to 20°C
(A) increases the average kinetic energy by two times
(B) increases the rms velocity by $\sqrt{2}$ times
(C) increases the rms velocity by two times
(D) increases both the average kinetic energy and rms velocity, but not significantly

54. The root mean square velocity of a gas is doubled when temperature is
(A) increased four times
(B) increased two times
(C) reduced to half
(D) reduced to one fourth

55. At 400 K, the root mean squre (rms) speed of a gas X (molecular weight = 40) is equal to the most probable speed of gas Y at 60 K. The molecular weight of the gas Y is
(A) 2 (B) 4
(C) 6 (D) 8

56. Different gases at the same temperature have same
(A) pressure (B) number of moles
(C) volume (D) average kinetic energy

57. The most probable velocity (in cm/s) of hydrogen molecule at 27°C, will be
(A) 19.3×10^4 (B) 17.8×10^4
(C) 24.93×10^9 (D) 17.8×10^8

58. What is the temperature at which the kinetic energy of 0.3 mole of helium is equal to the kinetic energy of 0.4 mole of argon at 400 K ?
(A) 400 K (B) 873 K
(C) 533 K (D) 300 K

59. In two vessels of 1 L each at the same temperature 1 g of H_2 and 1 g of CH_4 are taken, for these
(A) V_{rms} values will be same
(B) kinetic energy per mol will be same
(C) total kinetic energy will be same
(D) pressure will be same

60. The kinetic theory of gases predicts that total kinetic energy of a gaseous assembly depends on
(A) pressure of the gas
(B) temperature of the gas
(C) volume of the gas
(D) pressure, volume and temperature of the gas.

Space for Rough Work

[MATHEMATICS]

61. In which quadrant of the complex plane, the point $\frac{1+2i}{1-i}$ lies ?

(A) Fourth (B) First
(C) Second (D) Third

62. The value of sum $\sum_{n=1}^{13}(i^n + i^{n+1})$, where $i=\sqrt{-1}$, equals

(A) i (B) $i - 1$
(C) $-i$ (D) 0

63. If z = x + iy, $z^{\frac{1}{3}} = a - ib$ and $\frac{x}{a} - \frac{y}{b} = k(a^2 - b^2)$, then value of k equals

(A) 2 (B) 4
(C) 6 (D) 1

64. $\frac{3+2i\sin\theta}{1-2i\sin\theta}$ will be purely imaginary, if θ is equal to

(A) $2n\pi \pm \frac{\pi}{3}$ (B) $n\pi + \frac{\pi}{3}$
(C) $n\pi \pm \frac{\pi}{3}$ (D) None of these

65. If $\left(\frac{1+i}{1-i}\right)^x = 1$, then

(A) x = 4n, where n is any positive integer
(B) x = 2n, where n is any positive integer
(C) x = 4n + 1, where n is any positive integer
(D) x = 2n + 1, where n is any positive integer

66. If $-\pi < \arg(z) < -\frac{\pi}{2}$ then $\arg(\bar{z}) - \arg(-\bar{z})$ is

(A) π (B) –π
(C) π/2 (D) –π/2

67. If $\left|z - \frac{4}{z}\right| = 2$, then the maximum value of $|z|$ is equal to

(A) $\sqrt{3}+1$ (B) $\sqrt{5}+1$
(C) 2 (D) $2+\sqrt{2}$

68. The number of solutions of the equation $z^2 + \bar{z} = 0$ is

(A) 2 (B) 4
(C) 6 (D) 8

69. The conjugate of a complex number is $\frac{1}{i-1}$. Then, that complex number is

(A) $\frac{1}{i-1}$ (B) $-\frac{1}{i-1}$
(C) $\frac{1}{i+1}$ (D) $-\frac{1}{i+1}$

70. If z is a complex number such that $z = -\bar{z}$, then

(A) z is purely real
(B) z is purely imaginary
(C) z is any complex number
(D) real part of z is the same as its imaginary part

71. The principal amplitude of $(\sin 40° + i\cos 40°)^5$ is

(A) 70° (B) –110°
(C) 110° (D) –70°

72. The modulus and amplitude of $(i + i\sqrt{3})^8$ are respectively

(A) $256\ and\ \frac{\pi}{3}$ (B) $256\ and\ \frac{2\pi}{3}$
(C) 2 and $\frac{2\pi}{3}$ (D) 256 and $\frac{8\pi}{3}$

Space for Rough Work

73. Let z, w be complex numbers such that $\bar{z} + i\bar{w} = 0$ and arg (zw) = π. Then, arg(z) equals

(A) $\frac{\pi}{4}$ (B) $\frac{\pi}{2}$

(C) $\frac{3\pi}{4}$ (D) $\frac{5\pi}{4}$

74. If $z_1 = 1 + 2i$ and $z_2 = 3 + 5i$, then $\text{Re}\left[\frac{\bar{z}_2 z_1}{z_2}\right]$ is equal to

(A) $-\frac{31}{17}$ (B) $\frac{17}{22}$

(C) $-\frac{17}{31}$ (D) $\frac{22}{17}$

75. Let z_1 be a complex number with $|z_1| = 1$and z_2 be any complex number, then $\left|\frac{z_1 - z_2}{1 - z_1 z_2}\right|$ is equals to

(A) 0 (B) 1

(C) –1 (D) 2

76. One of the values of $\left(\frac{1+i}{\sqrt{2}}\right)^{\frac{2}{3}}$ is

(A) $\sqrt{3} + i$ (B) $-i$

(C) i (D) $-\sqrt{3} + i$

77. If $z^2 + z + 1 = 0$, where z is a complex number, then the value of

$$\left(z + \frac{1}{z}\right)^2 + \left(z^2 + \frac{1}{z^2}\right)^2 + \left(z^3 + \frac{1}{z^3}\right)^2 + \ldots + \left(z^6 + \frac{1}{z^6}\right)^2$$

is

(A) 6 (B) 12

(C) 18 (D) 24

78. If ω is a cube root of unity, then the value of $(1 - \omega + \omega^2)^5 + (1 + \omega - \omega^2)^5$ is

(A) 30 (B) 32

(C) 2 (D) none of these

79. If 1, a_1, a_2, ..., a_{n-1} are the n roots of unity, then the value of $(1 - a_1)(1 - a_2)(1 - a_3) \ldots (1 - a_{n-1})$ is equal to

(A) $\sqrt{3}$ (B) $\frac{1}{2}$

(C) n (D) 0

80. One root of $(1)^{1/3}$ is

(A) $\frac{\sqrt{3}i}{2}$ (B) $\frac{1+\sqrt{3}i}{2}$

(C) $\frac{1-\sqrt{3}\,i}{4}$ (D) $\frac{-1-\sqrt{3}\,i}{2}$

81. The value of $1 + \sum_{k=0}^{14}\left\{\cos\frac{(2k+1)}{15}\pi + i\sin\frac{(2k+1)}{15}\pi\right\}$ is

(A) 0 (B) –1

(C) 1 (D) i

82. Let $x = \alpha + \beta$, $y = \alpha\omega + \beta\omega^2$, $z = \alpha\omega^2 + \beta\omega$, ω is an imaginary cube root of unity. The value of xyz is

(A) $\alpha^2 + \beta^2$ (B) $\alpha^2 - \beta^2$

(C) $\alpha^3 + \beta^3$ (D) $\alpha^3 - \beta^3$

83. The product of cube roots of –1 is equal to

(A) –1 (B) 0

(C) –2 (D) 4

Space for Rough Work

84. If $z_r = \cos\left(\frac{\pi}{2^r}\right) + i\sin\left(\frac{\pi}{2^r}\right)$, then $z_1 \cdot z_2 \cdot z_3 \ldots$ upto ∞ equals

(A) –3

(B) –2

(C) –1

(D) 0

85. If ω is a complex cube root of unity, then the value of $\omega^{99} + \omega^{100} + \omega^{101}$ is

(A) 1

(B) –1

(C) 3

(D) 0

86. If P is the point in the Argand diagram corresponding to the complex number $\sqrt{3} + i$ and if OPQ is an isosceles right angled triangle, right angled at 'O', then Q represents the complex number

(A) $-1 + i\sqrt{3}$ or $1 - i\sqrt{3}$

(B) $1 \pm i\sqrt{3}$

(C) $\sqrt{3} - i$ or $1 - i\sqrt{3}$

(D) $-1 \pm i\sqrt{3}$

87. If $|z + 4| \leq 3$, then the maximum value of $|z + 1|$ is

(A) 4

(B) 10

(C) 6

(D) 0

88. If magnitude of a complex number 4 – 3i is tripled and is rotated anti-clockwise by an angle π, then resulting complex number would be

(A) –12 + 9i (B) 12 + 9i

(C) 7 – 6i (D) 7 + 6i

89. If $z_1 = 1 + 2i$, $z_2 = 2 + 3i$, $z_3 = 3 + 4i$, then z_1, z_2, z_3 represents the vertices of a/an

(A) equilateral triangle

(B) isosceles triangle

(C) right angled triangle

(D) none of these

90. The complex number z = x + iy which satisfy the equation $\left|\frac{z - 5i}{z + 5i}\right| = 1$ lies on

(A) the axis of x

(B) the straight line y = 5

(C) the circle passing through the origin

(D) none of the above.

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Space for Rough Work