

URANIUM TALENT SEARCH EXAMINATION(UTSE) - 2015

(CBSE/ICSE)

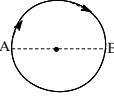
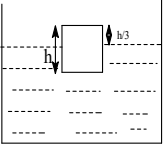
Time: 60 minutes(2 pm - 3 pm)

Class- IX

F.M - 180(+3/-1 system)

Declaration of Result in the internet(www.theuranium.org) : 03.03.2015

(There are 60 MCQs and each has one correct answer. 3 marks will be given for each correct answer and 1 mark will be deducted for each wrong answer.)

- A body continues to accelerate until
 - the velocity changes its direction
 - the resultant force on it begins to decrease
 - the resultant force on it becomes zero
 - all of these
- The numerical ratio of displacement to distance is
 - always <1
 - always >1
 - always $=1$
 - may be ≤ 1
- A particle moves with constant acceleration. It travels 'x' distance in first 10 seconds and 'y' distance in next 10 seconds. Then
 - $y = x$
 - $y = 2x$
 - $y = 3x$
 - $y = 4x$
- A car moving in a straight line accelerates from rest for time ' t_1 ' at a constant rate 'a' and then retards at a constant rate 'b' for time ' t_2 ' and comes to rest. The ratio of t_1/t_2 is
 - a/b
 - b/a
 - a^2/b^2
 - b^2/a^2
- A man goes from A to B along a semi-circular path of radius 2 m in 2 sec. The magnitude of his average velocity is
 - 3.14 m/s
 - 1.57 m/s
 - 1.0 m/s
 - none of the above
- A ball falls from the top of a building in 8 secs. How much time will it take to cover the first quarter of the distance starting from the top ?
 - 1 sec
 - 2 sec
 - 4 sec
 - 5 sec
- An iron ball and a wooden ball of same diameter are released from the top of a tower in vacuum. The time taken by both of them to reach the ground are
 - exactly equal
 - not equal
 - nearly equal
 - equal only at equator and poles
- A body moves with a constant speed along a circle. Then
 - its velocity remains constant
 - no acceleration is produced in it
 - no force acts on the body
 - no work is done on it
- Swimming is possible on account of
 - first law of motion
 - second law of motion
 - third law of motion
 - all of these laws
- A body of mass 3 Kg is sliding with a constant velocity of 3 m/s on a frictionless horizontal table. What amount of force is required to keep the body moving with the same velocity ?
 - 9 N
 - 1 N
 - 29.4 N
 - 0 N
- A body of height 'h' floats in a liquid as shown in the figure. The whole system is falling freely under gravity. The upthrust on the body by the liquid is equal to
 - zero
 - weight of the liquid displaced by the immersed part of the body
 - weight of the liquid displaced by the whole body
 - weight of the body in air
- Work is always done on a body when
 - it experiences an increase in energy through mechanical influence

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- (b) it moves through a certain distance (c) a force acts on it
(d) none of the above
13. Two bodies of mass 4 Kg and 9 Kg are moving with equal kinetic energies. What is the ratio of their momenta ?
(a) 4 : 9 (b) 9 : 4 (c) 2 : 3 (d) 3 : 2
14. Work done in time 't' on a body of mass 'm' which is accelerated from rest to a speed 'v' in time 't₁' is
(a) $\frac{1}{2} \left(\frac{mv}{t_1} \right)^2 t^2$ (b) $\frac{1}{2} m \left(\frac{v}{t_1} \right)^2 t^2$ (c) $\frac{1}{2} m \left(\frac{v}{t_1} \right) t^2$ (d) $\frac{1}{2} m \left(\frac{v^2}{t_1} \right) t$
15. An athlete runs some distance before taking a long jump because
(a) by running, the athlete gives himself larger inertia of motion
(b) by running, action and reaction force increases
(c) he gains energy to jump through long distance
(d) it helps to apply large force
16. A car is moving with a speed 'v'. A retarding force 'F' is applied to stop the car. It stops after covering a distance 's'. If the speed is doubled with same retarding force, the distance to stop will be
(a) s (b) 2s (c) 4s (d) s/2
17. A stone is allowed to fall from a height of 40 m. If there is 40% loss of energy due to impact on the ground then to what height the stone will rise after the impact ?
(a) 10 m (b) 16 m (c) 24 m (d) 36 m
18. Newton's laws of gravitation applies to
(a) planets only (b) small bodies only (c) bodies in vacuum only
(d) both small and big bodies
19. Two air bubbles in water
(a) attract each other (b) repel each other (c) neither attract nor repel
(d) attract only when one is bigger than the other
20. A body weighs 90 N on the surface of the earth. Its weight at a height equal to half of the radius of earth will be
(a) 0 N (b) 40 N (c) 45 N (d) 60 N
21. How many moles of aluminium sulphate contains 0.6 moles of oxygen atoms in it ?
(a) 0.3mole (b) 0.2mole (c) 0.1mole (d) 0.05 mole
22. If the formula of aluminium tetrathionate is Al₂(S₄O₆)₃, then what will be the formula of ammonium tetrathionate?
(a) NH₄S₄O₆ (b) NH₄(S₄O₆)₂ (c) (NH₄)₂S₄O₆ (d) (NH₄)₂(S₄O₆)₃
23. Which of the following statement about the structure of atom is true according to Rutherford's atomic model?
(a) as long as electron revolves in a particular orbit, it does not emit energy.
(b) There is a minute but massive body at centre of an atom.
(c) electrons revolve round the nuclues in fixed circular orbits.
(d) electron can jump from one orbit to the other.
24. How much magnesium chloride will be formed when 4.8 grams of magnesium react with 7.3 grams of hydrogen chloride in water ? (Atomic mass of Mg - 24, Cl - 35.5)
(a) 9.50gm (b) 5.95gm (c) 4.75gm (d) 1.90gm
25. How many neutrons are present in 0.2 moles of ferric oxide (${}^{56}_{26}Fe$ and ${}^{16}_8O$) (N_A = Avogadro's number)
(a) 7.6N_A (b) 16.8N_A (c) 32.0N_A (d) none of these

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26. How many ions are formed when 0.71 grams of sodium sulphate reacts completely with just sufficient quantity of barium chloride in aqueous solution? Note that one of the products is an insoluble precipitate and does not ionise. (Atomic mass of Na - 23, S - 16) (N_A = Avogadro's number)
- (a) $0.03N_A$ (b) $0.02N_A$ (c) $0.01N_A$ (d) Nil
27. In a sample of potassium dichromate the mass of oxygen was found to be 18.5×10^{-22} gm. The number of chromium atoms present in that sample of potassium dichromate would be
- (a) 5 (b) 10 (c) 15 (d) 20
28. 0.1 mole of washing soda on heating suffers a loss of _____ gm of weight.
- (a) 4.4gm (b) 22.4gm (c) 18gm (d) none
29. Calculate the volume of water liberated at 4°C when 4.9 grams of H_2SO_4 react with excess of sodium hydroxide solution.
- (a) 2240ml (b) 4480ml (c) 1.8ml (d) none of these
30. 500 mL of methane is mixed with 500 mL of oxygen gas in a closed tube and exploded by applying a spark so that methane underwent complete combustion with a 'pop' sound. The resulting gaseous mixture is then cooled to room temperature so that water vapour is condensed and is thus eliminated from the gaseous phase. What will be the final volume of the gaseous phase? (Presume no change in pressure and temperature)
- (a) 500 mL (b) 1000 mL (c) 250 mL (d) none
31. 1 mole of ammonia is dissolved in 5 moles of water at a particular temperature. What is the concentration of ammonia solution in mass/mass %?
- (a) 18.9 (b) 18.00 (c) 16.00 (d) 15.9
32. The dispersed phase and dispersion medium of mud are respectively
- (a) solid and liquid (b) liquid and solid (c) solid and solid (d) gas and solid
33. How will you separate the components of a mixture of petrol and water?
- (a) simple distillation (b) distillation using a fractionating column
(c) chromatography (d) using a separating funnel
34. X is a solid which can float in its own liquid. Identify X.
- (a) iodine (b) iron (c) ice (d) NaCl
35. The order of density of wood, cotton, water and air is
- (a) wood > cotton > water > air (b) wood > water > cotton > air
(c) wood > cotton > air > water (d) wood > water > air > cotton
36. The distribution of electron in an atom M is 2,8,5. It is an isobar of S-32 ($Z = 16$). How many neutrons are present in the nucleus of M?
- (a) 15 (b) 16 (c) 17 (d) 32
37. Which of the following scientist did not contribute for the construction of atomic model?
- (a) Thomson (b) Rutherford (c) Avogadro (d) Bohr
38. Which of the following is a physical change?
- (a) combustion of solid carbon (b) Electrolysis of salt solution
(c) sublimation of iodine (d) none of the above
39. Given below are two liquid mixtures A and B with the boiling point of each liquid. Indicate the correct technique to separate the liquids in each case. A: methyl alcohol(64.7°C) + ethyl alcohol(79.29°C) B: pentane(36°C) + toluene(110.6°C):
- (a) A: simple distillation, B: fractional distillation (b) A and B: both fractional distillation
(c) A: fractional distillation, B: simple distillation (d) none of these

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40. 6 kJ of heat is needed to melt one mole of ice. The latent heat of fusion of ice in kJ/Kg and the temperature while melting process is going on respectively are
 (a) 0.333, 0°C (b) 6000, 0°C (c) 0.333, > 0°C (d) 333.33, 0°C
41. According to ICBN nomenclature rules, what is correct printed name of pipul tree (*Aswattha* tree) ?
 (a) *Ficus Bengalensis* (b) *Ficus Religiosia* (c) *Ficus religiosia* (d) *Ficus bengalensis*
42. To which of the following does fungi belong ?
 (a) uni and multicellular-absence of cell wall- carry out photosynthesis
 (b) uni and multicellular-have cell wall - cannot carry out photosynthesis
 (c) prokaryote-unicellular- carry out photosynthesis
 (d) eukaryote-uni and multicellular-absence of cell wall- cannot carry out photosynthesis
43. Which of the following is correct regarding funaria ?
 (a) phanerogam-differentiated body-no specialised tissue for conduction of water
 (b) bryophyta-differentiated body-presence of specialised tissue for conduction of water
 (c) cryptogamae-differentiated body-no special tissue for conduction of water
 (d) bryophyta-undifferentiated body-no special tissue for conduction of water
44. Which is correct from among the following ?
 (a) wheat-angiosperm-monocot (b) cycas-gymnosperm-dicot
 (c) tamarind-angiosperm-monocot (d) maize-angiosperm-dicot
45. Which is correct from among the following ?
 (a) hookworm is a nematohelminthes which does not have a nervous system
 (b) liverfluke is a nematohelminthes which shows bilateral symmetry in its body
 (c) earthworm is an arthropoda which performs respiration in skin or gill
 (d) hydra is a coelenterata which expels its waste in same opening through which it takes food
46. Which is not correct about crab and cockroach ?
 (a) both belong to arthropoda
 (b) the outer layer of their bodies contain a substance called chitin.
 (c) crab does not have wings on its chest while cockroach has
 (d) crab is a mollusca while cockroach is an arthropoda
47. Which is incorrect among the following ?
 (a) platypus-aves-oviparous (b) uric acid- faeces of parrot
 (c) amphibia-three chambered heart (d) myxin - a vertebrate animal
48. Which is true regarding the exchange of gases and water through plasma membrane ?
 (a) gases are exchanged by the process of osmosis
 (b) water is exchanged by the process of osmosis which is based on the principle of diffusion.
 (c) water is exchanged by the process of diffusion which is based on the principle of osmosis.
 (d) since plasma membrane is made up of phospholipids, only gases can diffuse through it but water cannot pass through it
49. Identify which of the following is correct ?
 (a) rough endoplasmic reticulum- synthesis of fats and lipids
 (b) smooth endoplasmic reticulum- synthesis of proteins

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- (c) mitochondria - ATP (d) all of these
50. The cell organelle which help in synthesis of cell wall and plasma membrane respectively are
 (a) dictyosome, golgi body (b) endoplasmic reticulum, golgi body
 (c) dictyosome, endoplasmic reticulum (d) endoplasmic reticulum, dictyosome
51. Protein is made up of which chemical units ?
 (a) only amino acids (b) amino acids + m-RNA (c) amino acids + m-RNA + t-RNA
 (d) amino acids + m-RNA + t-RNA + ribosomal RNA
52. Which of the following contains DNA ?
 (a) chromosome (b) chloroplast (c) mitochondria (d) all of these
53. Which is correct about the tissue present at the internodes on twigs and base of leaves of plants ?
 (a) meristematic-lateral (b) sclerenchyma-intercalary (c) meristematic-intercalary
 (d) meristematic- apical
54. If we apply mild pressure to a leaf or stem or root, it does not break. In stead it bends. For which tissue this special property is acquired ?
 (a) simple permanent tissue-parenchyma (b) simple permanent tissue-sclerenchyma
 (c) simple permanent tissue-collenchyma (d) complex permanent tissue-xylem
55. Which of the following tissues are made from dead cells ?
 (a) sclerenchyma (b) tracheid (c) vessels (d) all of these
56. Which is correct about chlorenchyma and collenchyma ?
 (a) lignin is present in the intercellular space in both
 (b) chlorenchyma contains chloroplast which is absent in collenchyma
 (c) both belong to parenchyma type
 (d) both the tissue are usually present in aquatic plants
57. Which is wrong about epithelial tissues ?
 (a) columnar epithelium-oviduct (b) cuboidal epithelium- salivary glands
 (c) squamous epithelium - internal layer of blood vessel
 (d) pseudostratified epithelium-covering of ovary
58. The percentage of protein nutrient and the type of vitamin present in fish respectively are
 (a) 19, Vitamin A,D (b) 21, Vitamin A B2 (c) 13, Vitamin B2 (d) 4, Vitamin B12
59. The disease which is caused when the bilirubin percentage in blood becomes high, the microbe which is responsible for the diseases and the organ which is affected by the disease respectively are
 (a) hepatitis-virus-liver (b) typhoid-virus-liver (c) hepatitis-bacteria-liver
 (d) AIDS- virus- enlargement of lymph glands in neck
60. Nowadays one of the important mode of air pollution is the formation of SMOG which is now called photochemical smog. Out of many substances present in smog, carbon particles(dust) and water particles are the important ones. Which other substances are present in photochemical smog ?
 (a) NO_x (b) O_3 (c) both NO_x & O_3 (d) none of these

Answer Keys

- 1.c 2.d 3.c 4.b 5.d 6.c 7.a 8.d 9.c 10.d 11.a 12.a 13.c
 14.b 15.a 16.c 17.c 18.d 19.a 20.b 21.d 22.c 23.b 24.a 25.b 26.b
 27.d 28.c 29.c 30.a 31.d 32.a 33.d 34.c 35.b 36.c 37.c 38.c 39.c
 40.d 41.c 42.b 43.c 44.a 45.d 46.d 47.a 48.b 49.c 50.c 51.a 52.d
 53.c 54.c 55.d 56.b 57.d 58.a 59.a 60.c