

PHYSICS

Question 1. Some heat is developed in a uniform metallic wire when a constant voltage is applied across it. The heat developed is doubled if :

- 1) both the length and radius of wire are halved
- 2) both the length and radius of the wire are doubled
- 3) the radius of wire is doubled
- 4) the length of wire is doubled

Question 2. Uniform electric and magnetic fields are applied in the same direction. If an electron is projected with its velocity in the direction of the magnetic field then:

- 1) the electron bend towards right
- 2) the electron will turn to its left
- 3) the electron velocity will increase in magnitude
- 4) the electron velocity will decrease in magnitude

Question 3. The magnetic fields at two points lying at the same distance from an isolated pole are:

- 1) same in magnitude and direction
- 2) different in magnitude and direction
- 3) same in magnitude and different in direction
- 4) different in magnitude and same in direction

Question 4. The substances for which magnetic susceptibility is independent of temperature are:

- 1) Diamagnetic substances only
- 2) Paramagnetic substances only
- 3) Ferromagnetic substances only
- 4) Diamagnetic and paramagnetic substances

Question 5. A square conducting loop of side length L carries a current I . The magnetic field at the center of the loop is:

- 1) independent of L
- 2) proportional to L
- 3) inversely proportional to L
- 4) linearly proportional to L

Question 6. A charged particle is projected in a plane perpendicular to a uniform magnetic field. The area bounded by the path described by the particle is proportional to:

- 1) the velocity
- 2) the momentum
- 3) the kinetic energy
- 4) none of these

Question 7. As the wavelength of light is increased from violet to red, the luminosity:

- 1) continuously increases
- 2) continuously decreases
- 3) increases and then decreases
- 4) decreases and then increases

Question 8. A lens with a large aperture forms a blurred image of a point object. If a black paper with a small hole in its center is placed in front of the lens then:

- 1) no image is obtained
- 2) the image remains unaffected
- 3) the image becomes more intense but less sharp
- 4) the image becomes more sharp but less intense

Question 9. If the height attained by a projectile is the greatest, then which of the following is maximum?

- 1) horizontal range
- 2) angle of projection with the vertical
- 3) force of gravity
- 4) time of flight

Question 10. Under the action of constant force, a particle experiences a constant acceleration, then the power is:

- 1) zero
- 2) positive
- 3) negative
- 4) increasing uniformly with time

BIOLOGY

Question 11. An example of a cell without nuclear membrane and mitochondria is:

- 1) Sponge cell
- 2) Bacterial cell
- 3) Sperm
- 4) Protist

Question 12. Seedless water melon plants are obtained by:

- 1) Colchicine application
- 2) Raising triploids
- 3) Apply organic manure to the soil
- 4) Inducing parthenogenesis

Question 13. The causative organism of which of the disease is studied from peripheral blood during night time:

- 1) Malaria
- 2) Itches
- 3) Filariasis
- 4) Nephritis

Question 14. The fertilization in which the male gametes are carried through pollen tube is:

- 1) Chalazogamy
- 2) Siphonogamy
- 3) Syngamy
- 4) Porogamy

Question 15. In dogs the barking trait is dominant over the silent trait and erect ears dominant over drooping ears. What is the expected phenotypic ratio of the offspring when dogs, heterozygous for both traits are crossed?

- 1) 1:1:1:1
- 2) 9:3:3:1
- 3) 9:3:4
- 4) 9:7

Question 16. Which of the following cells is used for cloning “Dolly”?

- 1) Nerve cell
- 2) Liver cell
- 3) Udder cell
- 4) Muscle cell

Question 17. Heterospory is the production of:

- 1) Sexual and Asexual spores
- 2) Large and Small spores
- 3) Haploid and Diploid spores
- 4) Diploid and Tetraploid spores

Question 18. The waxy substance which coats the surface of the auditory canal is produced by:

- 1) Harderian glands
- 2) Meibomian glands
- 3) Zeis glands
- 4) Ceruminous glands

Question 19. Prolonged thiamine deficiency in diet leads to:

- 1) Loss of muscles tone & damage to the nerves
- 2) Pellagra
- 3) Haemorrhage
- 4) Anaemia

Question 20. Killing and consuming one’s own kind or intra specific predation is called:

- 1) Parasitism
- 2) Cannibalism
- 3) Autophagy
- 4) None of these

CHEMISTRY

Question 21. Aldehyde which is formed during photosynthesis of plants is:

- 1) methanal
- 2) ethanal
- 3) propanal
- 4) phenyl methanal

Question 22. Hydrogenation of benzoyl chloride in presence of Pd on Barium Sulphate gives:

- 1) Benzyl Alcohol
- 2) Benzaldehyde
- 3) Benzoic acid
- 4) Phenol

Question 23. Milk is:

- 1) Fat dispersed in water
- 2) Fat dispersed in milk
- 3) Fat dispersed in fat
- 4) Water dispersed in milk

Question 24. Chloropicrin is obtained by the reaction of:

- 1) Steam on carbon tetra chloride
- 2) Nitric acid on chlorobenzene
- 3) Chlorine on picric acid
- 4) Nitric acid on chloroform

Question 25. The work done during the expansion of a gas from volume of 4 cubic decimeter to 6 cubic decimeter against a constant external pressure of 3 atmosphere is:

- 1) 6 joule
- 2) - 608 joule
- 3) + 304 joule
- 4) - 304 joule

Question 26. Vapour pressure of dilute aqueous solution of glucose is 750 mm of mercury at 373 Kelvin. The mole fraction of solute is:

- 1) $1/76$
- 2) $1/7.6$
- 3) $1/38$
- 4) $1/10$

Question 27. An aqueous solution contains 6% urea and 18% glucose by weight and Cryoscopic Constant for water is 1.86. The solution will freeze at:

- 1) 4.89 degree centigrade
- 2) - 4.89 degree centigrade
- 3) 3.72 degree centigrade
- 4) - 3.72 degree centigrade

Question 28. 2-Acetoxy Benzoic acid is used as an:

- 1) Antimalarial
- 2) Antidepressant
- 3) Antiseptic
- 4) Antipyretic

Question 29. Soap molecules has two parts – a polar and a non polar. When soap is added to water:

- 1) both parts dissolve in water
- 2) non-polar part dissolve in water
- 3) polar part dissolve in water
- 4) both parts remain undissolved in water and form a hydrocarbon layer

Question 30. Soft drinks and baby feeding bottles are generally made up of:

- 1) Poly urea
 - 2) Polystyrene
 - 3) Polyurethane
 - 4) Polyester
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ASTRONOMY

Question 31. Which of the following statements best describes 'Exoplanets'?

- (1) Planets that are predicted to exist but have not yet been discovered.
- (2) Planets that circled the Sun in the past but have since been ejected out of the solar system.
- (3) Planets that broke up soon after they were formed.
- (4) Planets that are revolving around other stars.
- (5) None of the above.

Question 32. The spectral classification of the Sun is:

- (1) B
- (2) G
- (3) A
- (4) K
- (5) M

Question 33. Venus is the brightest object in the sky after the Sun and the Moon. Why is Venus so bright?

- (1) There is a thick cloud cover over the planet.
- (2) The planet's surface is highly reflective.
- (3) Venus emits light.
- (4) Volcanoes erupt on Venus regularly.
- (5) There is a lot of snow on Venus.

Question 34. As seen from the Earth when does Jupiter enter the position of Inferior Conjunction?

- (1) When its elongation is 0 degree.
- (2) When its elongation is 180 degree.
- (3) When it is at perihelion.
- (4) When it is at aphelion.
- (5) Never.

Question 35. Which of the following pairs has the largest ratio for their masses?

- (1) Jupiter :: Ganymede
- (2) Earth :: Moon
- (3) Pluto :: Charon
- (4) Saturn :: Titan
- (5) Mars :: Demos

Question 36. The Moon is slowly receding away from the Earth. Its present period of revolution around the Earth is 'P', and its distance from the Earth is 'a'. What will its period of revolution around the Earth be when the Moon is at twice its present distance from the Earth?

- (1) $2 \times 1.414 P$
- (2) $2 P$
- (3) $2 P \times P \times P$
- (4) $2 P$
- (5) $8 P$

Question 37. If a star disappears behind the dark side of the Moon, what is the phase of the Moon?

- (1) Waning
- (2) Waxing
- (3) New Moon
- (4) Full Moon
- (5) None of the above

Question 38. When volcanoes on Earth erupt they spew out lava. Where does this lava come from?

- (1) Mantle
- (2) Exosphere
- (3) Inner Core
- (4) Outer Core
- (5) Crust

Question 39. At 8:00 P.M. the Full Moon is seen along-side a bright star. Where in relation to the star, will you see the Moon at midnight?

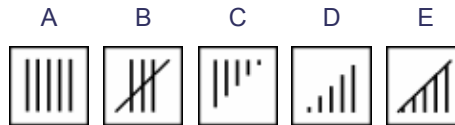
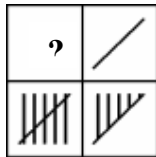
- (1) To its North.
- (2) To its East.
- (3) To its South.
- (4) To its West.
- (5) Where it was when you saw it first.

Question 40. The lines of sight of two bright stars make an angle of 30 degrees with your eye. After 5 hours this angle will be:

- (1) 20 degrees.
- (2) 30 degrees.
- (3) 40 degrees.
- (4) 50 degrees.
- (5) 60 degrees.

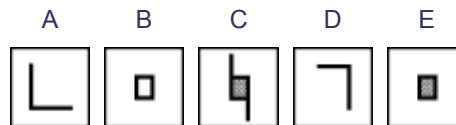
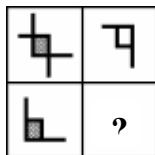
MENTAL ABILITY

Question 41.



- (1) A
- (2) B
- (3) C
- (4) D
- (5) E

Question 42.



- (1) A
- (2) B
- (3) C
- (4) D
- (5) E

Question 43. If 14, 7, 4 are a set and 18, 3, 12 are a set, then by the same logic what would be the missing number in the set 12, 3, ?

- (1) 7
- (2) 8
- (3) 9
- (4) 10
- (5) None of these

Question 44. What number best completes the following series? 1, 9, 25, __, 81, 121

- (1) 36
- (2) 45
- (3) 56
- (4) 64
- (5) None of these

Question 45. Which number is the odd one out?

6467, 9455, 7568, 3124, 4246

- (1) 6467
- (2) 9455
- (3) 3124
- (4) 7568
- (5) None of these

Question 46. There are six equally spaced beads on a circle. How many straight lines are needed to connect each bead with every other bead?

- (1) 12
- (2) 15
- (3) 17
- (4) 18
- (5) None of these

Question 47. How many straight lines must be drawn to divide a regular octagon into 8 identical triangles?

- (1) 5
- (2) 8
- (3) 6
- (4) 4
- (5) None of these