Regn. No. 0920
SKD New Standard Coaching Institute
ESTD. 1985
37 YEARS OF TEACHING EXCELLENCE
Ist & IInd Floor, Skylark Building,
Near Leela Cinema, Newal Kishore Road,
Hazratganj, Lucknow. Call : 7080111582, 7080111595

SAMPLE PAPER - 13

PHYSICS

01. A particle has an initial velocity of 9 m/s due east and a constant acceleration of $2m/s^2$ due west. The distance covered by the particle in the fifth second of its motion is:
(1) 0 (2) 0.5 m
(3) 2 m (4) none of these

02. A ball is dropped from the top of a building 100 m high. At the same instant another ball is thrown upwards with a velocity of 40 m/s from the bottom of the building. The two balls will meet after
(1) 3 s (2) 2 s (3) 2.5 s (4) 5 s

03. A man moves on his motorbike with 54 km/h and then takes a U-turn and continues to move with same speed. The time of U-turn is 10 s. Find the magnitude of average acceleration during U-turn
(1) 0 (2) $3\ ms^{-2}$
(3) $1.5\sqrt{2}\ ms^{-2}$ (4) none of these

04. At the uppermost point of a projectile its velocity and acceleration are at an angle of
(1) 180° (2) 90° (3) 60° (4) 45°

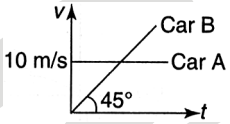
05. A person can throw a stone to a maximum distance of h metre. The greatest height to which he can throw the stone is :
(1) h (2) h/2 (3) 2h (4) 3h

06. Electric potential of earth is taken to be zero because earth is a good
(1) insulator (2) conductor
(3) semiconductor (4) dielectric

07. The charge q is projected into a uniform electric field E, work done when it moves a distance y is
(1) qEy (2) $\frac{qy}{E}$ (3) $\frac{qE}{y}$ (4) $\frac{y}{qE}$

08. A particle located at x = 0 at time t = 0, starts moving along the positive x-direction with a velocity v that varies as $v = \alpha\sqrt{x}$. The displacement of the particle varies with time as
(1) t^3 (2) t^2 (3) t (4) $t^{1/2}$

09. Initially car A is 10.5 m ahead of car B. Both start moving at time t = 0 in the same direction along a straight line. The velocity-time graph of two cars is shown in figure. The time when the car B will catch the car A, will be

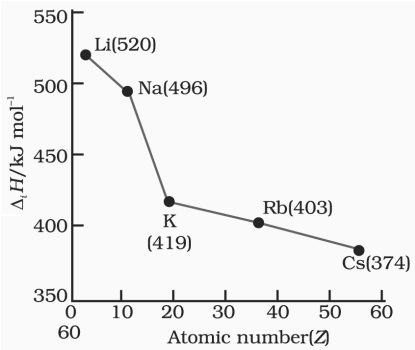


(1) t = 21 sec (2) $t = 2\sqrt{5}$ sec
(3) 20 sec (4) none

10. A 500 μF capacitor is charged at the steady rate of 100 μCs^{-1}. How long will it take to raise the potential difference between the plates of the capacitor to 10 V?
(1) 5 s (2) 10 s
(3) 50 s (4) 100 s

CHEMISTRY

11. The below graph represent



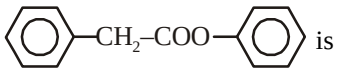
(1) IP_2 (2) ΔHeg_1
(3) IP_1 (4) Electronegativity

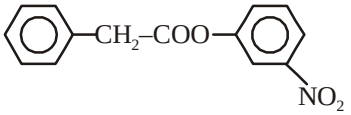
12. The correct IUPAC name of $(C_2H_5)_4C$ is
(1) Tetraethyl methane
(2) 2-Ethylpentane
(3) 3, 3-Diethylpentane
(4) None of these

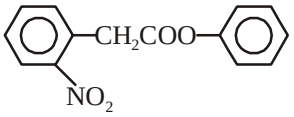
13. Which of the following exhibits tautomerism?
(1) $(CH_3)_2NH$
(2) $(CH_3)_3CNO$
(3) R_3CNO_2
(4) RCH_2NO_2

14. The total number of stereoisomers of the compound $CH_3CHBrCHOHCHOHCHBrCH_3$ is
(1) 8 (2) 10
(3) 16 (4) 4

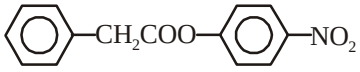
15. The correct product of mono-nitration of



(1) 

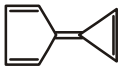
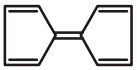
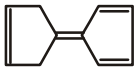
(2) 

(3) 

(4) 

16. In chlorobenzene, the –Cl group
(1) activates the benzene ring more via resonance effect than deactivating it via inductive effect
(2) deactivates the benzene ring more via inductive effect than activating it via resonance effect
(3) activates the benzene ring via resonance effect and deactivates it via inductive effect. Both these effects are evenly matched.
(4) is a net deactivating group with meta director characteristics

17. Which of the following pair are not homolog-
(1) CH_3-CH_2-OH & $CH_3-CH_2-CH_2-OH$
(2) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-OH$ & $H-\overset{\overset{O}{\|}}{C}-OH$
(3) $CH_3-\overset{\overset{O}{\|}}{C}-OCH_3$ & $H-\overset{\overset{O}{\|}}{C}-CH_2-OCH_3$
(4) All of these

18. Which of the following compound requires minimum energy for free rotation across double bond between ring:
(1) 
(2) 
(3) 
(4) 

19. Which of the following configuration has maximum value of E.A.
(1) $1s^2 2s^2 2p^4$ (2) $1s^2, 2s^1$
(3) $_{36}[Kr]\ 4d^{10}5s^1$ (4) $1s^2 2s^2 2p^6 3s^2 3p^4$

20. Which of the following is true for carbene:
(1) Electron deficient species but neutral
(2) Have two bonds and two electron
(3) It is short lived species
(4) All of these

BOTANY

21. Syntyhesis of histone proteins occurs in
(1) G_1 phase (2) S phase
(3) anaphase (4) G_0 phase

22. Match column-I with Column-II and select the correct option from the codes given below.

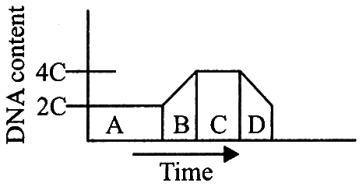
	Column-I		Column-II
A.	V-shaped at anaphase	i.	Acrocentric chromosome
B.	L- shaped at anaphase	ii.	Metacentric chromosome
C.	J- shaped at anaphase	iii.	Telocentric chromosome
D.	I- shaped at anaphase	iv.	Sub-metacentric chromosome

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

23. ..... is directly connected to the outer nuclearmembrane
(1) Mitochondria (2) Golgi body
(3) ER (4) Chloroplast

24. One single maize root apical meristem can give rise to how many new cells per hour ?
(1) 17500 (2) >17500
(3) <17500 (4) None of these

25. The graph given shows the change in DNA content during various phases (A to D) in a typical mitotic cell cycle. Identify the phases and select the correct option.



(1) A-G_2, B-G_1, C-S, D-M
(2) A-G, B-S, C-G_2, D-M
(3) A-G_1, B-S, C-G_2, D-M
(4) A-M, B-G_1, C-S, D-G_2

26. What is a tonoplast ?
(1) Outer membrane of mitochondria
(2) Inner membrane of chloroplst
(3) Membrane boundry of the vacuole of plant cells
(4) Cell membrane of a plant cell

27. How many of the following properties are related to lysosomes?
Membrane bound vesicular structure, hydrolases, basic pH, formed in the RER, capable of digesting nucleic acids.
(1) Two (2) Three
(3) Four (4) Five

28. Which of the following pairs of bacteria are involved in two step conversion of NH_3 into nitrate ?
(1) *Azotobacter* and *Nitrosomonas* respectively
(2) *Nitrosomonas* and *Nitrobacter* respectively
(3) *Azotobacter* and *Nitrobacter* respectively
(4) *Pseudomonas* and *Nitrobacter* respectively

29. ..... is the single membrane bound organelle.
(1) Sphaerosome (2) Peroxisome
(3) Lysosome (4) All of these

30. If the initial amount of DNA is denoted as 2C then the amount of DNA after S-phase will be:
(1) 4C (2) 6C
(3) C (4) 2C

ZOOLOGY

31. Mammals are adapted for
(1) Walking and running
(2) Climbing and burrowing
(3) Swimming and flying
(4) All of these

32. Growth factors are
(1) Secreted by non-endocrine tissues
(2) Not essential for repairing or regeneration
(3) Secreted by endocrine tissues
(4) Secreted by juxtaglomerular cells

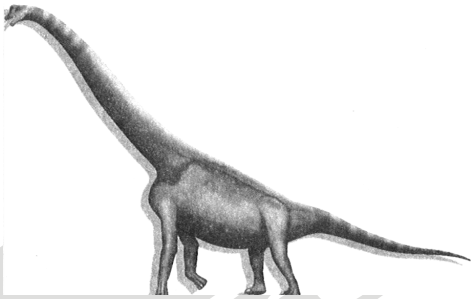
33. Earth was formed _____ billion years back.
(1) 4.5 (2) 5.5
(3) 3.5 (4) 1.5

34. A health disorder that results from the deficiency of thyroxine in adults and characterized by (i) low metabolic rate, (ii) increase in body weight and (iii) tendency to retain water in tissues is
(1) Simple goitre (2) Myxoedema
(3) Cretinism (4) Hypothyroidism

35. Glucocorticoid causes all except
(1) Proteolysis
(2) Lipolysis
(3) Glycogenolysis
(4) Gluconeogenesis

36. The fitness referred to in Darwin's theory is
(1) Physical fitness
(2) Mental fitness
(3) Reproductive fitness
(4) All of these

37. What does this diagram show?



(1) Brachiosaurus (2) Stegosaurus
(3) Triceratopts (4) Tyrannosaurus

38. Androgenic steroids are also secreted by adrenal cortex and it causes
(1) Growth of axial hair
(2) Growth of pubic hair
(3) Growth of facial hair
(4) All of these

39. % weight of few elements in human body are given. Identify the incorrect information.
(1) Hydrogen – 3.5
(2) Carbon – 18.5
(3) Oxygen – 65.0
(4) Sulphur – 0.3

40. Which of the following is true for person having blood group B?
(1) He can donate blood to person of blood groups 'AB' and 'B'
(2) He can accept blood from those with blood gruops 'B' and 'O'
(3) He can donate blood to and accept from person with blood group 'B' only
(4) Both (1) and (2)