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SKD New Standard Coaching Institute
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40 YEARS OF TEACHING EXCELLENCE
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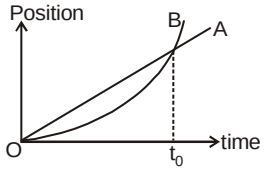
CONQUEST TEST PAPER

Time : 1 : 00 Hr. **Question : 50**

PHYSICS

01. The graph shows position as a function of time for two trains running on parallel tracks. The true statement is



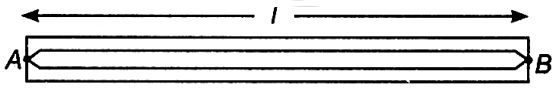
(1) At time t_0, both trains have same velocity
(2) Both trains have the same velocity at some time after t_0
(3) Both trains have the same velocity at some time before t_0
(4) Somewhere on the graph, both trains have the same acceleration

02. A ball is projected from a certain point on the surface of a planet at a certain angle with the horizontal surface. The horizontal and vertical displacement x and y vary with time t (in seconds) as $x = 10\sqrt{3}t$ and $y = 10t-(¼)t^2$. The maximum height attained by the ball is
(1) 100 m (2) 75 m (3) 50 m (4) 25 m

03. The roadway bridge over a canal is in the form of an arc of a circle of radius 40 m. What is the maximum speed with which a car can move without leaving the ground at the highest point ? (Given : g= 10 m s^{-2})
(1) 10 m s^{-1} (2) 20 m s^{-1}
(3) 40 m s^{-1} (4) none of these

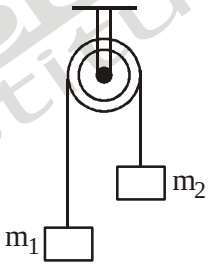
04. A body is vibrating in simple harmonic motion with an amplitude of 0.02 m and frequency of 20 Hz. The maximum velocity and maximum acceleration of body is:
(1) 0.4 π ms^{-1} and $8\pi^2$ ms^{-2}
(2) 0.8 π ms^{-1} and $32\pi^2$ ms^{-2}
(3) 0.2 π ms^{-1} and $2\pi^2$ ms^{-2}
(4) none of these

05. A uniform rod of length *l* and mass m is free to rotate in a vertical plane about A. The rod initially in horizontal position is released. The initial angular acceleration of the rod is (Moment of inertia of rod about A is $\frac{ml^2}{3}$):



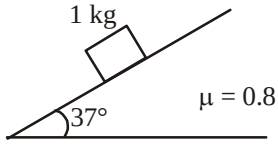
(1) $\frac{3g}{2l}$ (2) $\frac{2l}{3g}$ (3) $\frac{3g}{2l^2}$ (4) mg $\frac{l}{2}$

06. In the adjacent figure find the ratio $m_1 : m_2$ if the acceleration of system is g/n. ($m_1 > m_2$)



(1) n : n + 1 (2) n : n –1
(3) n + 1 : n – 1 (4) n+1 : n

07. If g = 10 ms^{-2}, find frictional force on block.



(1) 8 N (2) 5 N
(3) 4 N (4) 6 N

08. **Assertion (A):** A particle is rotated in a vertical circle with the help of a string. Work done by tension in the string on particle is zero.
Reason (R): Tension is always perpendicular to instantaneous velocity.
(1) Both (A) & (R) are true and the (R) is the correct explanation of the (A)
(2) Both (A) & (R) are true but the (R) is not the correct explanation of the (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

09. A particle has an initial velocity of 7 m/s due east and a constant acceleration of $2m/s^2$ due west. The distance covered by the particle in the fourth second of its motion is:
(1) 0 (2) 0.5 m (3) 2 m (4) none of these.

10. A simple pendulum of length L and mass m is vibrating with an amplitude a. Then the maximum tension in the string is :

(1) mg (2) $mg\left[1+\left(\frac{a}{L}\right)^2\right]$

(3) $mg\left[1+\frac{a}{2L}\right]^2$ (4) $mg\left[1+\frac{a}{L}\right]^2$

CHEMISTRY

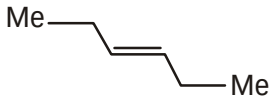
11. **Statement I:** In a period, 2nd ionisation energy of alkali metal is minimum.
Statement II: After losing one electron, alkali metals attains inert gas electronic configuration.
(1) Both Statement I and Statement II are false.
(2) Statement I is true but Statement II is false.
(3) Statement I is false but Statement II is true.
(4) Both Statement I and Statement II are true.

12. Match the Column I with Column II and choose the correct option using the codes given below.

	Column-I		Column-II
A.	3d-transition series	1.	Cerium (Z = 58)
B.	4 d-transition series	2.	Actinium (Z = 89)
C.	4f-inner transition series	3.	Zinc (Z = 30)
D.	5f-inner transition series	4.	Yttrium (Z=39)

(1) A–1; B–2; C–3; D–4
(2) A–1; B–2; C–4; D–3
(3) A–3; B–4; C–2; D–1
(4) A–3; B–4; C–1; D–2

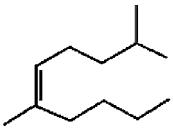
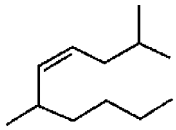
13. What is the IUPAC name of the following compounds?

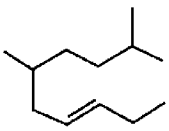
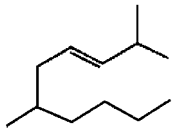


(1) trans-hex-3-ene (2) trans-hex-4-ene
(3) trans-hex-5-ene (4) trans-hex-6-ene

14. Which of the following represent a pair of chain isomers?
(1) n-pentane, Iso-pentane
(2) n-pentane, Neo-pentane
(3) Iso-pentane, Neo-pentane
(4) All of these

15. The correct structure of 2, 6-Dimethyl-dec-4-ene is

(1)  (2) 

(3)  (4) 

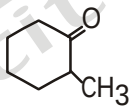
16. Which nomenclature is not according to IUPAC system?
(1) $Br-CH_2-CH=CH_2$
1-Bromoprop-2-ene

(2) $CH_3-CH_2-\underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{CH}}-CH_2-\underset{\underset{CH_3}{|}}{CH}CH_3$
4-Bromo-2,4-dimethylhexane

(3) $CH_3-CH_2-\underset{\underset{\bigcirc}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}CH_3$
2-Methyl-3phenylpentane

(4) $CH_3-\overset{\overset{O}{\|}}{C}-CH_2-CH_2-CH_2COOH$
5-oxohexanoic acid

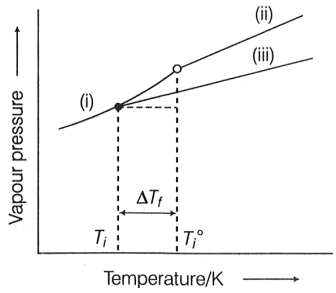
17. IUPAC name for the compound



(1) Methylcyclohexanone
(2) 2-Methylcyclohexanone
(3) Heptanone-2
(4) Methylcyclo-hexanone

18. **Assertion:** The dipole moment helps to predict whether a molecule is polar or non-polar.
Reason: The dipole moment helps to predict geometry of molecules.
(1) If both the assertion and reason are true and reason is a true explanation of the assertion.
(2) If both the assertion and reason are true but the reason is not the correct explanation of assertion.
(3) If the assertion is true but reason is false.
(4) If assertion is false but reason is true.

19. Identify (i), (ii) and (iii) in the following diagram.



(1) (i)–Solution; (ii)– Frozen solvent; (iii)–Liquid solvent
(2) (i)–Frozen solvent; (ii)–Solution; (iii)–Liquid solvent
(3) (i)–Frozen solvent; (ii)–Liquid solvent; (iii)–Solution
(4) (i)–Solution; (ii)–Liquid solvent; (iii)–Frozen solvent

20. **Assertion:** People taking a lot of salty food experience the puffiness or swelling, called edema.
Reason: There is water retention in tissue cells and intercellular spaces because of osmosis.
(1) Both Assertion and Reason are correct, Reason is the correct explanation of Assertion.
(2) Both Assertion and Reason are correct, Reason is not the correct explanation of Assertion.
(3) Assertion is correct, Reason is incorrect.
(4) Assertion is incorrect, Reason is correct.

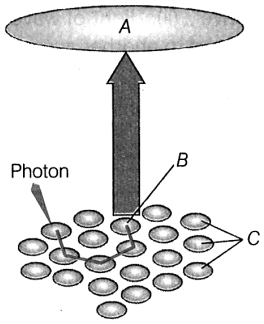
BOTANY

21. Choose the incorrect statements regarding the importance of photosynthesis.
(1) It is responsible for the release of oxygen into the atmosphere
(2) It is the primary source of all food on earth
(3) It is responsible for the water balance on earth
(4) It transforms light energy into chemical energy

22. When intensity of light is low, chloroplasts align themselves in the mesophyll cell in such a way that their flat surfaces are
(1) antiparallel to the cell wall
(2) perpendicular to the cell wall
(3) parallel to the cell wall
(4) middle in the cell

23. In stroma of a chloroplast,
(1) enzymatic reactions incorporate CO_2 into the plant leading to ATP and $NADH_2$ formation
(2) enzymatic reactions incorporate CO_2 into plant leading to the synthesis of sugar, which in turn, forms starch
(3) light energy is captured to form glucose
(4) ATP and $NADPH_2$ are splitted and H_2O and O_2 comes out

24. Given figure depicts the Light Harvesting Complex (LHC). Identify the correct label for the parts A, B and C from the options.



(1) A–Core molecules; B–Plastocyanin; C–Primary acceptor
(2) A–Primary acceptor; B–Reaction centre; C–Pigment molecules
(3) A–Reaction centre; B–Pigment molecules; C–Primary acceptor
(4) A–Pigment molecules; B–Primary acceptor; C–Reaction centre

25. **Statement I:** In flowering plants, tracheids and vessels are the main water transporting elements.
Statement II: Vessel members are interconnected through perforations in their common walls.
(1) Both statement I and statement II are incorrect.
(2) Statement I is correct, but statement II is incorrect
(3) Statement I is incorrect, but statement II is correct
(4) Both statement I and statement II are correct

26. **Statement-I :** 70 S ribosomes present in both eukaryotes & prokaryotes.
Statement-II : Circular DNA absent in eukaryotic cell nucleus.
(1) Only I is correct (2) Only II is correct
(3) Both are correct (4) Both are wrong

27. Prokaryotic cells have
(1) One envelope system
(2) Two envelope system
(3) Three envelope system
(4) No envelope

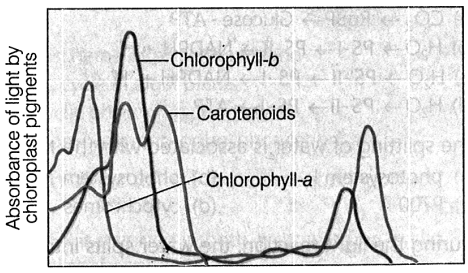
28. Which chemical property is shared by all types of lipids forming plasma membrane
(1) Sugar component (2) Glycerol backbone
(3) Phosphate group (4) Hydrophobic region

29. Pentamerous, actinomorphic and Cymose condition present in –
(1) Cassia and Gulmohur (2) Cotton and lily
(3) Tobacco and tomato (4) Pea and cabbage

30. Consider the following statement mark the correct
(1) Phycomycetes are asepetate and Conidia present
(2) Ascomycetes are septate ,conidia present and sexual spore is basidiospore
(3) Basidiomycetes are septate , asexual spore and sex organ absent and sexual spore exogenous
(4) Deuteromycetes are septate, conidia present and ascospore

31. Read the following statements with regard to the experiment performed by TW Engelmann and choose the correct statement.
(1) He split white light into spectral component using a prism
(2) He placed a green alga, i.e., Spirogyra in the bacterial suspension
(3) He observed that the bacteria were accumulated only in the region of blue light of the spilt spectrum
(4) He used bacteria to detect the sites of CO_2 evolution

32. Given below is the absorption spectra of the photosynthetic pigments chlorophyll-a, chlorophyll-b and carotenoid. Study the graph below and select the correct statements from options given



(1) All these pigments have an ability to absorb light at specific wavelengths
(2) Chlorophyll-a shows maximum absorption in blue and red regions
(3) Chlorophyll-a is the chief pigment associated with photosynthesis
(4) All of the above

33. **Assertion :** Certain bacteria possess plasmid.
Reason : Certain bacteria possess resistance to antibiotics.
(1) Both Assertion & Reason are true and the reason is the correct explanation of the assertion.
(2) Both Assertion & Reason are true but the reason is not the correct explanation of the assertion.
(3) Assertion is true statement but Reason is false.
(4) Both Assertion and Reason are false statements

34. Consider the following statement and mark the correct one
(1) Diatom - chief producer, syrup making, Polishing, silica in wall and pellicle
(2) Euglenoids - Chlorophyll a and Chlorophyll b, Pellicle, equal flagella and marine
(3) Dinoflagellates - Red tide, toxins , marine ,stiff cellulose plates
(4) Slime mould - main stage plasmodium, cell wall absent, Spore with cell wall, spore disperse by water

35. True sexual reproduction is present in
(1) Nostoc and Mycoplasma
(2) Claviceps and TMV
(3) Albugo and Agaricus
(4) E.coli and diatom

ZOOLOGY

36. Match the following columns.

Column I (Neuron types)	**Column II (Features)**
A. Multipolar neuron	1. One axon, one dendrite
B. Bipolar neuron	2. One axon, multiple dendrites
C. Unipolar neuron	3. One axon and cell body

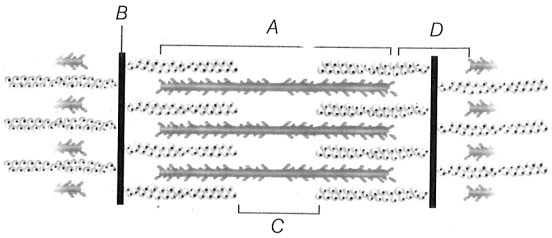
(1) A–2; B–3; C–1
(2) A–1; B–3; C–2
(3) A–2; B–1; C–3
(4) A–3; B–2; C–1

37. Which part of thyroid gland synthesises, T_3 and T_4 hormones?
(1) Follicles
(2) Stromal tissue
(3) Isthmus
(4) Both follicles and stromal tissue

38. A person in old age with a weak immune system could have problem in which of the following glands?
(1) Thyroid gland (2) Parathyroid gland
(3) Thymus gland (4) Pituitary gland

39. Assertion: T_3 and T_4 are synthesised by follicular cells of thyroid gland.
Reason: Deficiency of iodine in our diet results in hyperthyroidism and enlargement of thyroid gland.
(1) Assertion and Reason are true and Reason is the correct explanation of Assertion
(2) Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(3) Assertion is true, but Reason is false
(4) Assertion is false, but Reason is true

40. Given below is the figure of a sarcomere. Identify the parts labelled as A to D and select the correct option.



(1) A–A-band; B–Z-line; C–H-zone; D–I-band
(2) A–A-band; B–H-line; C–Z-zone; D–I-band
(3) A–I-band; B–H-line; C–Z-zone; D–A-band
(4) A–I-band; B–Z-line; C–H-zone; D–A-band

41. For how long, contraction of the muscles continues in sliding filament theory?
(1) Till ATP binds to myosin head
(2) Till ADP binds to myosin head
(3) Till Ca^{2+} present in sarcoplasm
(4) Till polymerisation of myosin head is going on

42. Find out the correct order of number of bones in the human skull (i.e. cranial bone, facial bone, hyoid bone and middle ear bone, respectively).
(1) 14, 8, 1 and 3 (2) 6, 8, 14 and 1
(3) 14, 8, 3 and 1 (4) 8, 14, 1 and 6

43. Which of the following statement is incorrect regarding girdle?
(1) The scapula has a slightly elevated ridge called spine which projects as acromion
(2) The acromion articulates with the head of clavicle to form pelvic girdle
(3) The collar bone consists of two curvature, and a slendered, long bone structure
(4) Each half of pectoral girdle consists of a clavicle and a scapula

44. **Assertion:** Human skull articulates with superior part of vertebral column.
Reason: It is attached to vertebral column through two occipital condyles.
(1) Assertion and Reason are true and Reason is the correct explanation of Assertion
(2) Assertion and Reason are true, but Reason is not the correct explanation of Assertion
(3) Assertion is true, but Reason is false
(4) Assertion is false, but Reason is true

45. Additional volume of air, a person can inspire and expire by forcible inspiration and expiration, respectively is called
(1) TV and RV (2) IRV and ERV
(3) IC and EC (4) FRC and TLC

46. Which among the following kidney structures form a highly coiled network of tubules?
(1) PCT and DCT
(2) Loop of Henle
(3) Loop of Henle and collecting duct
(4) Collecting duct

47. Read the following statements regarding the mechanism of concentration of filtrate and select which of them are true and false?
I. Medullary gradient is maintained by NaCl and glucose.
II. NaCl transported by ascending limb of Henle's loop is exchanged with descending limb of vasa recta.
III. NaCl is returned to interstitium by ascending limb of vasa recta.
IV. Small amounts of urea enters the thin segment of the ascending limb of Henle's loop.
(1) I–T; II–F; III–F; IV–F
(2) I–F; II–T; III–T; IV–T
(3) I–T; II–F; III–F; IV–T
(4) I–T; II–T; III–F; IV–F

48. Match the following columns.

Column I (Disorders)	**Column II (Features)**
A. Myasthenia gravis	1. Degeneration of skeletal muscles
B. Muscular dystrophy	2. Neuromuscular junction affected
C. Tetany	3. Low Ca^{2+} in body fluid
D. Arthritis	4. Inflammation of joints

(1) A–4; B–2; C–3; D–1
(2) A–1; B–3; C–4; D–2
(3) A–3; B–4; C–1; D–2
(4) A–2; B–1; C–3; D–4

49. **Statement I:** The pCO_2 level at the tissue is high due to catabolism.
Statement II: At the alveolar site, pCO_2 is low due to which CO_2 and H_2O are formed.
(1) Both statement I and statement II are incorrect
(2) Statement I is correct, but statement II is incorrect
(3) Statement I is incorrect, but statement II is correct
(4) Both statement I and statement II are correct

50. **Assertion:** Kidney helps to regulate the blood pressure by secreting the enzyme renin, which activates the renin-angiotensin-aldosterone pathway.
Reason: Increased renin causes a decrese in blood pressure.
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true, but R is not the correct explanation of A.
(3) A is true, but R is flase.
(4) A is false, but R is true.