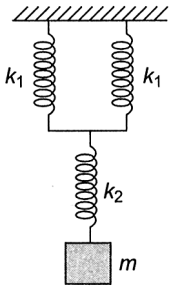
Regn. No. 0920
SKD New Standard Coaching Institute
ESTD. 1985
37 YEARS OF TEACHING EXCELLENCE
Ist & IInd Floor, Skylark Building,
Near Leela Cinema, Newal Kishore Road,
Hazratganj, Lucknow. Toll Free-1800-102-0056

SKD TALLENT SEARCH EXAM (SAMPLE PAPER) - CLASS-XI

PHYSICS

SKD NEW STANDARD COACHING INSTITUTE

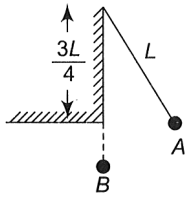
01. What will be the force constant of the spring system shown in the figure?



(1) $\left[\frac{1}{k_1}+\frac{1}{k_2}\right]$ (2) $\left[\frac{1}{2k_1}+\frac{1}{k_2}\right]^{-1}$

(3) $\left[\frac{1}{k_1}+\frac{1}{k_2}\right]^{-1}$ (4) $\left[\frac{1}{2k_1}+\frac{1}{k_2}\right]$

02. A pendulum has period T for small oscillations. An obstacle is placed directly beneath the pivot, so that only the lowest one quarter of the string can follow the pendulum bob when it swings in the left of its resting position as shown in the figure. The pendulum is released from rest at a certain point A. The time taken by its to return to that point is



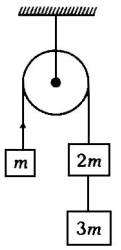
(1) T (2) T/2 (3) 3T/4 (4) T/4

03. A bucket full of water is rotated in a vertical circle of radius R. If the water does not split out, the speed of the bucket at topmost point will be

(1) $\sqrt{Rg}$ (2) $\sqrt{5gR}$

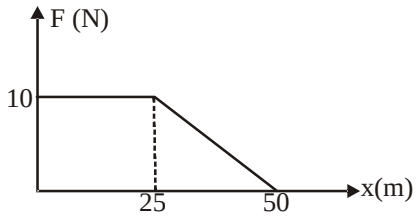
(3) $\sqrt{2Rg}$ (4) $\sqrt{\left(\frac{R}{g}\right)}$

04. In the figure given below, with what acceleration does the block of mass m will move? (Pulley and strings are massless and frictionless)



(1) $\frac{g}{3}$ (2) $\frac{2g}{5}$ (3) $\frac{2g}{3}$ (4) $\frac{g}{2}$

05. An object of mass 5 kg is acted upon by a force that varies with position of the object as shown. If the object starts out from rest at a point x = 0. What is its speed at x = 50 m.



(1) 12.2 ms^{-1} (2) 18.2 ms^{-1}
(3) 16.4 ms^{-1} (4) 20.4 ms^{-1}

ROUGH WORK

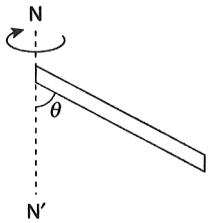
SKD Talent Search Exam

06. A fan makes 2400 rpm. If after it is switched off, it comes to rest in 10 s, then find the number of times it will rotate before it comes to rest after it is switched off.
(1) 400 (2) 100 (3) 200 (4) 50

07. Which motion does not require force to maintain it ?
(1) Uniform circular motion
(2) Elliptical motion
(3) Uniform straight line motion
(4) Projectile motion

08. A long frictionless horizontal rod is set into rotation about a vertical axis passing through its center. Two beads placed on the rod on either side of the axis, are released from rest. The angular speed of the rod
(1) decreases with time
(2) increases with time due to work done by the beads
(3) increases with time due to work done by centrifugal force
(4) remains unchanged

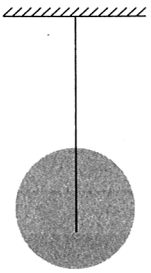
09. The moment of inertia of a rod of mass m, length l, rotating about a vertical axis NN′ such that the rod is tilted at an angle θ with the axis is



(1) $\frac{1}{3}ml^2$ (2) $\frac{1}{3}ml^2\sin^2\theta$

(3) $\frac{1}{3}ml^2\cos^2\theta$ (4) $\frac{1}{3}ml^2\tan^2\theta$

10. A bob of pendulum was filled with Hg and entire Hg is drained out, then the time period of pendulum during the draining of mercury



(1) remains unchanged
(2) decreases
(3) increases
(4) increases then decreases

CHEMISTRY

01. The reaction shows oxidising property of H_2O_2 in acidic medium
(1) $H_2O_2 + Mn^{+2} \rightarrow Mn^{+4} + 2OH^-$
(2) $2Fe^{+2} + H_2O_2 \rightarrow 2Fe^{+3} + 2OH^-$
(3) $2MnO_4^- + 6H^+ + 5H_2O_2 \rightarrow 2Mn^{+2} + 8H_2O + 5O_2$
(4) $2Fe^{+2} + H_2O_2 + 2H^+ \rightarrow 2Fe^{+3} + 2H_2O$

02. Which of the following pairs are NOT resonance structure?

(1) $H_3C-\ddot{\underset{\cdot\cdot}{O}}-\ddot{N}=\ddot{O}:$ and $H_3C-\overset{+}{\ddot{O}}=\ddot{N}-\overset{-}{\ddot{\underset{\cdot\cdot}{O}}}:$

(2) $:\ddot{O}=C=\ddot{O}:$ and $:\ddot{O}=\overset{+}{C}-\overset{-}{\ddot{\underset{\cdot\cdot}{O}}}:$

(3) $H_3C-\ddot{\underset{\cdot\cdot}{O}}-\ddot{N}=\ddot{O}:$ and $H_3C-N\begin{matrix}=O: \\ -O:\end{matrix}$

(4) Each of these pairs represents resonance structure

03. Polynuclear hydrocarbon containing more than two benzene rings fused together are formed on incomplete combustion of tobacco, coal, petroleum. These compounds are
(1) Carcinogenic (2) Toxic in nature
(3) Damage D.N.A. (4) All of these

04. Consider the partial decomposition of A as $2A_{(g)} \rightleftharpoons 2B_{(g)} + C_{(g)}$. At equilibrium 700 mL gases mixture contains 100 mL of gas C at 10 atm and 300 K. What is the value of K_p for the reaction?

(1) $\frac{40}{7}$ (2) $\frac{1}{28}$ (3) $\frac{10}{28}$ (4) $\frac{28}{10}$

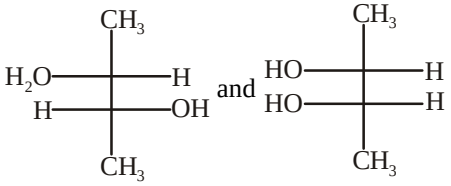
ROUGH WORK

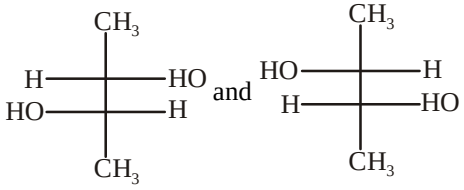
05. Match the correct atomic radius with the element.

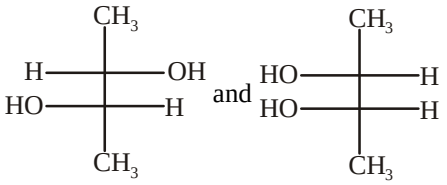
	Elements		Atomic radius (pm)
(i)	Be	(A)	74
(ii)	C	(B)	88
(iii)	O	(C)	111
(iv)	B	(D)	77
(v)	N	(E)	66

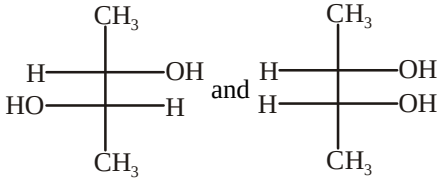
(1) (i)–C; (ii)–D; (iii)–E; (iv)–B; (v)–A
(2) (i)–A; (ii)–B; (iii)–C; (iv)–D; (v)–E
(3) (i)–B; (ii)–C; (iii)–D; (iv)–A; (v)–E
(4) (i)–C; (ii)–E; (iii)–D; (iv)–B; (v)–A

06. Which of the following pairs of compounds are enantiomers?

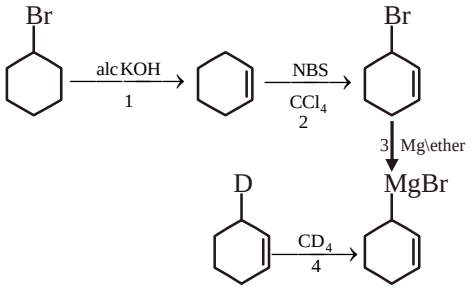
(1) 

(2) 

(3) 

(4) 

07. Consider the given reaction sequence :



In the above sequence, reagent of which step is NOT correct:
(1) Step-1 (2) Step-4
(3) Step-2 (4) Step-3

08. One mole of iron (Fe) reacts completely with 0.65 mol O_2 to give a mixture of only FeO and Fe_2O_3. The mole ratio of ferrous oxide to ferric oxide is
(1) 3 : 2 (2) 4 : 3
(3) 20 : 13 (4) None of these

09. In which case change in pH is maximum ?
(1) 1 mL of pH = 2 is diluted to 100 mL
(2) 0.01 mol of NaOH is added into 100 mL of 0.01 M NaOH solution
(3) 100 mL of H_2O is added into 900 mL of 10^{-6} M HCl
(4) 100 mL of pH = 2 solution is mixed with 100 mL of pH = 12

10. For vaporization of water at 1 atmospheric pressure, the values of ΔH and ΔS are 40.63 $kJmol^{-1}$ and 108 JK^{-1} mol^{-1}, respectively. The temperature when Gibbs energy change (ΔG) for this transformation will be zero, is:
(1) 293.4 K (2) 273.4 K
(3) 393.4 K (4) 376.2 K

ROUGH WORK

Biology

01. Match the Column-I and Column-II and find the correct combination.

	Column-I		Column-II
(A)	Pseudocoelomate	(i)	Platyhelminthes
(B)	Acoelomate	(ii)	Sponges
(C)	Hermaphrodite	(iii)	Aschelminthes
(D)	Tapeworm	(iv)	Taenia

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

02. Find the incorrect statement for "cnidarians".
(1) Polyps produces medusae asexually
(2) Medusae form the polyp sexually
(3) Polyp are umbrella shaped and free swimming structure like in aurelia or jelly fish
(4) Physalia is also known as portuguese man of war

03. Reproduction takes place only by sexual means in phylum-
(1) Cnidarians (2) Ctenophora
(3) Poriferans (4) None

04. Match the Column for respiratory volumes and capacities in human and find the correct combination.

	Column-I		Column-II
(A)	IRV	(i)	2.5 L - 3 L
(B)	RV	(ii)	TV + ERV
(C)	EC	(iii)	ERV + RV
(D)	FRC	(iv)	1.2 L

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

05. Factor responsible for dissociation of O_2 from Hb is-
(1) High PO_2 (2) Low PCO_2
(3) Lesser temperature (4) None

06. Atherosclerosis is also reffered as-
(1) Angina (2) CAD
(3) LADA (4) SAN

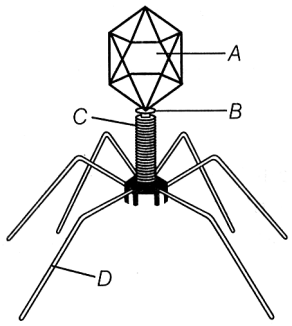
07. Parts of nephron which is not present in cortex is___
(1) PCT (2) DCT
(3) Henles loop
(4) Malpighian corpuscles

08. Incorrect option for ANF (Artrial Natriuretic Factor) is
(1) An increase blood flow to the atria of the heart can cause the release of ANF
(2) ANF causes vasoconstriction (constriction of blood vessels)
(3) ANF decreases the blood pressure
(4) ANF mechanism acts as a check on the renin - angiotensin mechanism

09. In the given lists of hormone, how many are of steroids nature.
insulin, glucagon, thyroxine, testosterone, cortisol, progesterone, estradiol, epinephrine
(1) 2 (2) 3 (3) 4 (4) 5

10. Several Non-endocrine tissue present in our body secretes hormones called-
(1) Inhitory peptides (2) Growth factors
(3) CCK (4) Corticoids

11. Identify the label A, B, C and D in the following figure.



(1) A–Head; B–Collar, C–Sheath; D–Tail fibres
(2) A–Collar; B–Head, C–Sheath; D–Tail fibres
(3) A–Head; B–Collar, C–Tail fibres; D–Sheath
(4) A–Collar; B–Tail fibres, C–Head; D–Sheath

ROUGH WORK

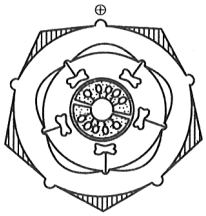
12. Match the following columns.

	Column-I		Column-II
A.	Phycomycetes	1.	Alternaria and Trichoderma
B.	Ascomycetes	2.	Agaricus and Ustilago
C.	Basidiomycetes	3.	Aspergillus, Claviceps and Neurospora
D.	Deuteromycetes	4.	Mucor, Rhizopus and Pythium

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

13. Gymnosperms are characterised by
(1) multiflagellate sperms (2) naked seeds
(3) winged seeds (4) seeds inside fruits

14. Study carefully the given floral diagram and select the option, which correctly represents the related Floral Formula (FF).



(1) $\%\,\varphi\,\sigma\,K_{(5)}C_{1+2+(2)}A_5\,\overline{G}_{(2)}$
(2) $\oplus\,\varphi\,\sigma\,K_{(5)}\overset{\frown}{C_{(5)}\,A_5}\,\underline{G}_{(2)}$
(3) $\oplus\,\varphi\,\sigma\,P_{5+5}A_{(5)}\underline{G}_{(2)}$
(4) $\oplus\,\varphi\,\sigma\,K_{(5)}\overset{\frown}{C_{(5)}\,A_{(5)}}\underline{G}_{(2)}$

15. Which one is the correct reaction of photosynthesis?

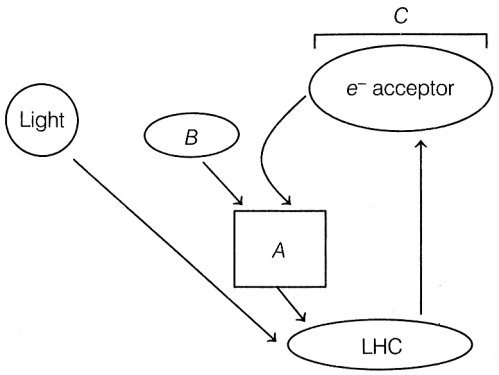
(1) $6CO_2 + 6H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} 6O_2 + C_6H_{12}O_6$

(2) $6CO_2 + 12H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} C_6H_{12}O_6 + 6O_2 + 6H_2O$

(3) $C_6H_{12}O_6 + 6O_2 + 6H_2O \xrightarrow[\text{Chlorophyll}]{\text{Light}} 6CO_2 + 12H_2O + \text{Energy}$

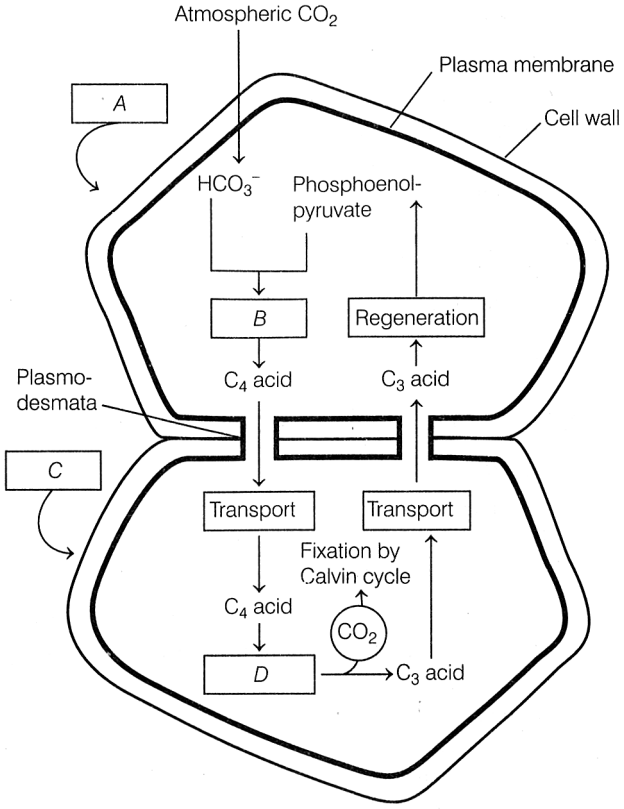
(4) $C_6H_{12}O_6 + 6O_2 \xrightarrow[\text{Chlorophyll}]{\text{Light}} 6CO_2 + 6H_2O + \text{Energy}$

16. Identify A, B and C in the given figure of cyclic phosphorylation and choose the correct option accordingly.



(1) A–ETS; B–ADP + Pi → ATP; C–PS-II
(2) A–ETS; B–ADP + Pi → ATP; C–PS-I
(3) A–$NADH_2$; B–ADP + Pi → ATP; C–PS-I
(4) A–$NADH_2$; B–ADP + Pi → ATP; C–PS-II

17. Identify A, B and C and D in the given figure and choose the correct option accordingly.



ROUGH WORK

(1) A–Mesophyll cell; B–Fixation; C–Bundle sheath cell; D–Decarboxylation
(2) A–Mesophyll cell; B–Decarboxylation; C–Bundle sheath cell; D–Fixation
(3) A–Chloroplast; B–Decarboxylation; C–Bundle sheath cell; D–Fixation
(4) A–Chloroplast; B–Fixation; C–Bundle sheath cell; D–Fixation

18. Yeast poison themselves to death when the concentration of alcohol reaches
(1) 20% (2) 13%
(3) 15% (4) 14%

19. The respiratory Quotient (RQ) or respiratory ratio is

(1) $RQ = \frac{\text{Volume of } O_2 \text{ evolved}}{\text{Volume of } CO_2 \text{ consumed}}$

(2) $RQ = \frac{\text{Volume of } O_2 \text{ consumed}}{\text{Volume of } CO_2 \text{ evolved}}$

(3) $RQ = \frac{\text{Volume of } CO_2 \text{ consumed}}{\text{Volume of } O_2 \text{ evolved}}$

(4) $RQ = \frac{\text{Volume of } CO_2 \text{ evolved}}{\text{Volume of } O_2 \text{ consumed}}$

20. Match the following columns.

	Column-I		Column-II
A.	RQ	1.	Chemiosmotic ATP synthesis
B.	Mitchel	2.	Muscle fatigue
C.	Cytochromes	3.	Inner mitochondrial membrane
D.	Lactic acid	4.	Alcoholic fermentation
E.	Yeast	5.	Respirometer

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

ROUGH WORK