

SKD Talent Search Exam

CLASS - XI

2021

INSTRUCTIONS

MAXIMUM MARKS : 160

SET - 1

TIME : 1:30 HR.

- Use BLACK PEN ONLY to darken the appropriate circle.
- There are 40 questions carrying Four marks each. There shall be no -ve marking. Answer with no response will be awarded zero mark.
- Darken ONLY ONE CIRCLE for each question.
- Mark your answer in the circle corresponding to the Question being answered.
- Do not put any stray marks on the answer sheet.
- Do not erase any given answer by eraser.
- No Mobile phones are permitted inside the examination hall. Possession of mobile phones even in switched-off mode will be treated as use of unfair-means and will be dealt accordingly.
- Use of calculators, tablet, calculator watches, papers etc. are not permitted unless otherwise specified.

S.K.D. SINGH
Founder

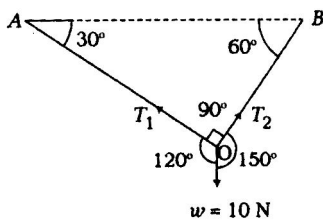


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PHYSICS

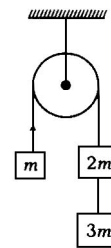
01. A ball of mass 1 kg hangs in equilibrium from two strings OA and OB as shown in figure. What are the tensions in strings OA and OB?
(Take $g = 10 \text{ ms}^{-2}$)



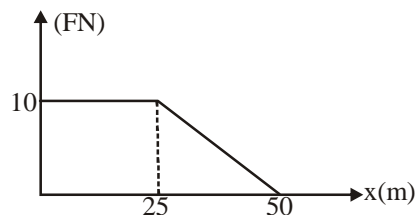
- (1) 5 N, 5 N (2) $5\sqrt{3}$ N, $5\sqrt{3}$ N
(3) 5 N, $5\sqrt{3}$ N (4) $5\sqrt{3}$ N, 5 N
02. A man pushes against a wall but fails to move it. He does
(1) negative work
(2) positive but not maximum work
(3) maximum positive work
(4) no work at all
03. A bucket full of water is rotated in a vertical 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. If the earth suddenly shrinks (without changing mass) to half of its present radius, then acceleration due to gravity will be
(1) $g/2$ (2) 4g
(3) $g/4$ (4) 2g

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05. What is the dimensional formula of gravitational constant?
(1) $[ML^2 T^{-2}]$ (2) $[ML^{-1} T^{-1}]$
(3) $[M^{-1} L^3 T^{-2}]$ (4) None of these
06. The range of a projectile when launched at angle θ is same as when launched at angle 2θ . What is the value of θ .
(1) 15° (2) 30° (3) 45° (4) 60°
07. 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) $\frac{g}{2}$
08. 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.

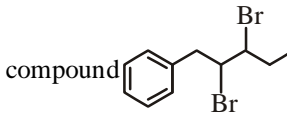


- (1) 12.2 ms^{-1} (2) 18.2 ms^{-1}
(3) 16.4 ms^{-1} (4) 20.4 ms^{-1}

ROUGH WORK

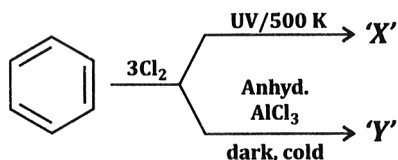
09. A fan makes 2400 rpm. If after it is switched off, it comes to rest in 10 s, then find the number of times it will rotate before it comes to rest after it is switched off.
- (1) 400 (2) 100
(3) 200 (4) 50
10. The mass of a planet is twice the mass of earth and diameter of the planet is thrice the diameter of the earth, then the acceleration due to gravity on the planet's surface is
- (1) $g/2$ (2) $2g$
(3) $2g/9$ (4) $3g/\sqrt{2}$

CHEMISTRY

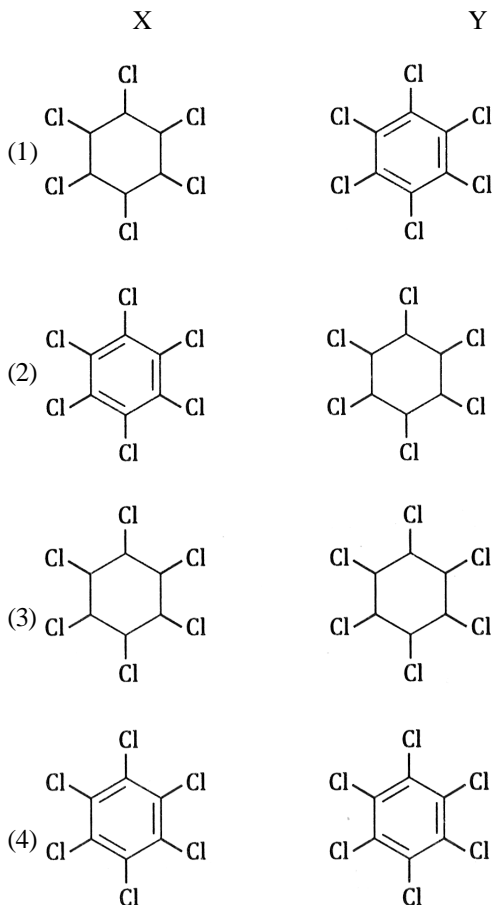
11. What will be the molality of the solution containing 18.25g of HCl gas in 500g of water?
- (1) 0.1 m (2) 1 M
(3) 0.5 m (4) 0.5 M
12. The ionic radii (in Å) of N^{3-} , O^{2-} and F^- are respectively:
- (1) 1.71, 1.36 and 1.40
(2) 1.36, 1.40 and 1.71
(3) 1.36, 1.71 and 1.40
(4) 1.71, 1.40 and 1.36
13. Which of the following is not correctly matched with hybridisation?
- (1) Tetrahedral - dsp^2
(2) Trigonal bipyramidal - sp^3d
(3) Octahedral - sp^3d^2
(4) Tetrahedral - d^3s
14. The pair of species with same bond order is
- (1) C_2 , B_2 (2) O_2^+ , NO
(3) NO, CO (4) N_2 , O_2
15. Which of the following statements is/are correct for ideal gas behaviour?
- (1) $Z = \frac{PV_{ideal}}{nRT}$
(2) For ideal behaviour of a gas $Z = 1$
(3) If volume occupied by a gas at any pressure and temperature is equal to the volume calculated by the formula $PV = nRT$, the gas is behaving ideally
(4) All of the above
16. From the following bond energies :
- H-H bond energy = 431.37 kJ mol⁻¹
C=C bond energy = 606.10 kJ mol⁻¹
C-C bond energy = 336.49 kJ mol⁻¹
C-H bond energy = 410.50 kJ mol⁻¹
- enthalpy for the reaction given below will be
- $$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{C} = \text{C} + \text{H} - \text{H} \rightarrow \text{H} - \text{C} - \text{C} - \text{H} \\ | \quad | \quad | \quad | \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$$
- (1) 553.0 kJ mol⁻¹
(2) 1523.6 kJ mol⁻¹
(3) -243.6 kJ mol⁻¹
(4) -120.0 kJ mol⁻¹
17. O. N. of oxygen in OF₂ is
- (1) -1 (2) -1/2
(3) -2 (4) +2
18. Select the correct option as IUPAC name of the compound
- 
- (1) 2,3-Dibromo-1-phenylpentane
(2) 3,4-Dibromo-5-phenylpentane
(3) 3,4-Dibromo-6-phenylpentane
(4) None of these

ROUGH WORK

19.



What are 'X' and 'Y' ?



20. In Kolbe's electrolytic method, when $\text{CH}_3\text{COONa}(\text{aq})$ is electrolysed, which of the following gas is produced at cathode?

- (1) CO_2 (2) H_2
(3) CH_4 (4) NaOH

Biology

21. Bilaterally symmetrical, triploblastic, segmented and coelomate animals belongs to phylum

- (1) Mollusca
(2) Arthropoda
(3) Aschelminthes
(4) Platyhelminthes

22. A file like rasping organ present in molluscans is

- (1) Radula (2) Statocyst
(3) Mantle (4) Foot

23. In cockroach, the incorrect match is

- (1) Malpighian tubule - 100-150 in number
(2) Gastric caeca - 6-8 in number
(3) Spiracles - 15 pairs
(4) Abdominal segment in both male & female - 10 in number

24. Trachea is a straight tube extending up to the mid-thoracic cavity which divides at the level of.....

- (1) T_6 (2) T_5
(3) T_2 (4) T_7

25. Match the column-I & column-II and find the correct combination for lung volumes and capacities

- | | |
|-----------------|------------------------------|
| Column-I | Column-II |
| A. TV | i. 1.1 Litres |
| B. IRV | ii. $\text{ERV} + \text{RV}$ |
| C. ERV | iii. 0.5 Litre |
| D. FRC | iv. 2.5 - 3.0 Litre |

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

26. A series of linked enzymatic reaction involve in coagulation or clotting of blood is

- (1) Cascade process
(2) Ornithine process
(3) Erythroblastosis foetalis
(4) RAAS mechanism

ROUGH WORK

27. Adrenal medullary hormone can
 (1) Decrease the cardiac output
 (2) Increase the cardiac output
 (3) Does not have any effect on cardiac output
 (4) Either increase or decrease the cardiac output

28. Each kidney of an adult human measures.....
 (1) length 2-3 cm, width 10-12 cm, thickness -5-7 cm
 (2) length 10-12 cm, width 5-7 cm, thickness -2-3 cm
 (3) length 10-12 cm, width 2-3 cm, thickness -5-7 cm
 (4) length 5-7 cm, width 10-12 cm, thickness -2-3 cm

29. Full form of ANF that is released from heart is
 (1) Angiotensin natrial factor
 (2) Atrial neonatal factor
 (3) Atrial natriuretic factor
 (4) Atrial natriatrial factor

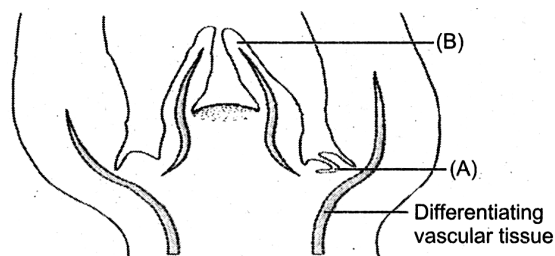
30. Sebaceous gland can eliminates
 (1) Sterols
 (2) Hydrocarbons
 (3) Waxes
 (4) All of these

31. Archaeobacteria are
 (1) Halophiles
 (2) Thermoacidophiles
 (3) Methanogens
 (4) All of these

32. 'Floridean starch' is reserve food material in
 (1) Chlorophyceae
 (2) Myxophyceae
 (3) Phaeophyceae
 (4) Rhodophyceae

33. Perigynous condition found in
 (1) Lily (2) Brinjal
 (3) Rose (4) Citrus

34. Identify given diagram and choose the correct answer for labelled (A) and (B) of given diagrams



- (1) Apical meristem of shoot (A)-Axillary bud, (B)-Meristematic zone
 (2) Apical meristem of shoot (A)-Axillary bud, (B)-Leaf primordium
 (3) Apical meristem of shoot (A)-Leaf primordium, (B)-Axillary bud
 (4) All are incorrect

35. 9 + 2 organisation of microtubules found in
 (1) Cilia
 (2) Flagella
 (3) Centriole
 (4) More than one is correct

36. Ribosome present in/on
 (1) ER
 (2) Nuclear membrane
 (3) Freely in the cytoplasm
 (4) All of these

37. Which pigment is absent in chloroplast ?
 (1) Xanthophyll
 (2) Anthocyanin
 (3) Chlorophyll 'a'
 (4) Carotene

38. The net gain of ATP molecules in glycolysis is
 (1) 2 (2) 4
 (3) 8 (4) 36

ROUGH WORK

39. O₂ evolution is directly associated with
- (1) PS-I
 - (2) PS-II
 - (3) Phytochrome
 - (4) Phycocyanin

40. Pyruvic acid is produced at the end of
- (1) Glycolysis
 - (2) Krebs' cycle
 - (3) Calvin cycle
 - (4) Photorespiration

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