माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

मु.उ.पु. 24 पृष्ठ

कार्यालयीन उपयोग के लिए

परीक्षा के नाम की सील Higher Secondary Examination

निम्न रिक्तियों की सही प्रविष्टि परीक्षार्थी द्वारा की जाए।

1. विषय कोड 220 परीक्षा का विषय Chemistry

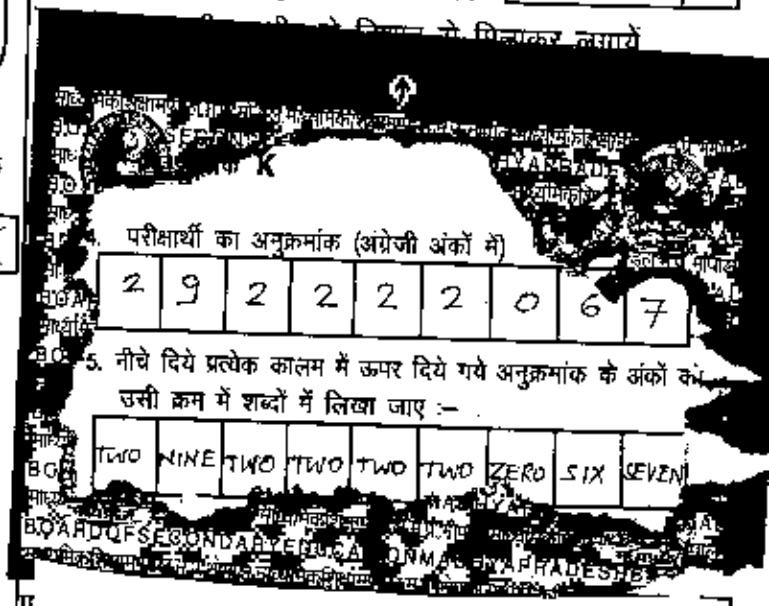
2. परीक्षा का माध्यम English परीक्षा की दिनांक 06-03-20

केन्द्र क्रमांक की सील

केन्द्र क्र.-222033

3. परीक्षार्थी प्रश्न पत्र का पूर्ण कोड नम्बर (सेट A, B, C,या D) अनिवार्यतः भरें

कोड	सेट
U-2044-C	C



4. परीक्षार्थी का अनुक्रमांक (अंग्रेजी अंकों में)

2	9	2	2	2	2	0	6	7

5. नीचे दिये प्रत्येक कालम में ऊपर दिये गये अनुक्रमांक के अंकों को उसी क्रम में शब्दों में लिखा जाए :-

TWO	NINE	TWO	TWO	TWO	TWO	ZERO	SIX	SEVEN

पर्यवेक्षक/केन्द्राध्यक्ष का प्रमाणीकरण

प्रमाणित किया जाता है कि परीक्षार्थी द्वारा निम्नानुसार पूरक उत्तरपुस्तिका ली गई है :-

क :- संख्या शब्दों में [X] अंकों में [X]

ख :- परीक्षार्थी की बैठक व्यवस्था कक्ष क्रमांक [1] में है।

ग :- उत्तर पुस्तिका पर प्रश्न-पत्र का कोड नम्बर एवं सेट सही लिखा है।

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हस्ताक्षर (पर्यवेक्षक) ---

नाम ---- पद ----

पता/संस्था ----

परीक्षार्थी द्वारा ली गई सभी पूरक उत्तर पुस्तिकायें, मुख्य उत्तर पुस्तिका के साथ संलग्न हैं।

हस्ताक्षर केन्द्राध्यक्ष

परीक्षार्थी, परीक्षक से अपेक्षा है कि वे पृष्ठ भाग पर दिये गये निर्देशों का यथेष्ट पालन सुनिश्चित करेंगे।

प्रमाणित किया जाता है कि उपरोक्तानुसार संलग्न पूरक उत्तर पुस्तिका चस्पा स्थिति में यथावत् रखते हुए ही उत्तरपुस्तिका का मूल्यांकन किया पुस्तिका के अन्दर के अंक एवं कवर पृष्ठ पर दर्शाये अंक एक समान

हस्ताक्षर (परीक्षक)

परीक्षक क्रमांक 264

हस्ताक्षर (उपमुख्य प

दिनांक.....

परीक्षार्थी के लिए निर्देश

1. परीक्षार्थी को अपना अनुक्रमांक/विषय/माध्यम/दिनांक एवं प्रश्न–पत्र का कोड (समूह) मुख पृष्ठ पर अंकित करना अनिवार्य है। अन्यत्र कहीं भी नहीं लिखा जाएगा।
2. अनुक्रमांक नीचे दिये गए उदाहरण अनुसार लिखा जाए :–

1	8	2	4	3	9	5	6	8
एक	आठ	दो	चार	तीन	नौ	पाँच	छः	आठ

3. उत्तर पुस्तिका के दोनों ओर पृष्ठों में लिखें। बीच में रिक्त स्थान न छोडें। भूल से छूटा/रिक्त स्थान तथा शेष खाली पृष्ठों को क्रास किया जाए।
4. परीक्षार्थी प्रश्न पत्र हल करते समय ही, कव्हर पृष्ठ पर दी गई तालिका में प्रश्न क्रमांक के सम्मुख वाले कालम में उत्तरपुस्तिका का वह पृष्ठ क्रमांक अनिवार्य रूप से अंकित करें जिस पर प्रश्न का उत्तर लिखा गया है। यदि पूरक उत्तरपुस्तिका का उपयोग किया गया हो, तो उस पर 25 से प्रारंभ करते हुए पृष्ठ क्रमांक परीक्षार्थी द्वारा स्वयं डाले जाएँ।

परीक्षक के लिए निर्देश

1. केवल उन्हीं उत्तरपुस्तिकाओं का मूल्यांकन करें जिन पर होलो क्राफ्ट स्टीकर चस्पा है।
2. उत्तरपुस्तिका का मूल्यांकन होलो क्राफ्ट स्टीकर को चस्पा स्थिति में यथावत् रखते हुए ही किया जाये।
3. बिना होलो क्राफ्ट स्टीकर वाली तथा फटे हुए होलो क्राफ्ट स्टीकर वाली सभी उत्तरपुस्तिकाऐं मूल्यांकन हेतु परीक्षा नियंत्रक, माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल को व्यक्तिशः रूप से भेजी जाये।

मूल्यांकन केन्द्र के लिए निर्देश

1. **O.M.R. SHEET** पर प्राप्तांक की प्रविष्टि करने हेतु केवल वही उत्तरपुस्तिकाएँ प्राप्त करें, जिनका मूल्यांकन होलो क्राफ्ट स्टीकर को चस्पा स्थिति में यथावत् रखते हुए ही किया गया है। यदि होलो क्राफ्ट स्टीकर फटा हुआ पाया जाता है तो ऐसी उत्तरपुस्तिकाऐं मूल्यांकन केन्द्र अधिकारी को पृथक से सौपी जाएँ। ऐसे प्रकरणों के प्राप्तांकों की प्रविष्टि **O.M.R. SHEET** में नहीं की जाए। मूल्यांकन केन्द्र अधिकारी ऐसी उत्तरपुस्तिकाऐं पुनः मूल्यांकन के लिये परीक्षा नियंत्रक, माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल को व्यक्तिशः रूप से सौपेंगे।
2. उत्तरपुस्तिका के मुख्य पृष्ठ में अंकों एवं शब्दों में अंकित प्राप्तांकों को मिलान कर **O.M.R. SHEET** में अंकों की सटीक प्रविष्टि करें।
3. **O.M.R. SHEET** पर प्रमाणीकरण कर हस्ताक्षर करें।

Que. 1

1.(a)

Ans. 1 (a) (iii) does not change.

1.(b)

Ans. 1 (b) (ii) ohm^{-1} cm^{-1}

1.(c)

Ans. 1.(c) (iv) colloidal solution.

1.(d)

Ans. 1.(d) (ii) $C_6H_5N_2Cl$

1.(e)

Ans. 1.(e) (iii) Morphine

Que. 2

(a) Solid

(b) Molality

(c) 10^{-9} sec

(d) Vitamin K

(e) Chloroform ($CHCl_3$) and KOH

Que·3

(a) Diamond ⟶ Covalent solid

(b) CCl_3NO_2 ⟶ Chloropicrin

(c) Coagulation ⟶ Precipitation of colloidal solution

(d) Laughing gas ⟶ N_2O

(e) Argon ⟶ Useful in bulbs

Que·4

(i) Nickel (Ni)

(ii) Brownian movement

(iii) Autocatalyst

(iv) fully filled d-orbital

(v) $AgNO_3$

Que·7

Ans·7 Bleaching of flowers is permanent by Cl_2 while temporary by SO_2 is the correct statement because Cl_2 reacting with moisture produces [O] nascent oxygen by which oxidation of colourful substance takes place and

the substance become colourless i.e., bleached. In case of SO_2, nascent Hydrogen [H] which is responsible for the reduction of colourful substances (flower) but in presence of air, flowers come in contact with oxygen and reoxidised to become colourful. In case of Cl_2, substance (bleached flowers) cannot regain Hydrogen from the atmosphere.

Que 5

Ans 5 we know that,

Integrated rate law for first order reaction is

$$K = \frac{1}{t} \ln\left(\frac{a}{a-x}\right)$$

where, a = initial conc. and x = a used up conc. after reaction for the half life, $t = t_{1/2}$ and $x = a/2$ because the concentration of the reactant becomes half of its original value after t half life. so, putting these values in above eqn :-

$$K = \frac{1}{t_{1/2}} \ln\left(\frac{a}{a-a/2}\right) = \frac{1}{t_{1/2}} \ln\left(\frac{2a}{a}\right)$$

$$\Rightarrow K = \frac{2.303}{t_{1/2}} \log_{10} 2 \Rightarrow K = \frac{0.693}{t_{1/2}}$$

$$\text{so, } \boxed{t_{1/2} = \frac{0.693}{K}}$$

पृष्ठ के अंकों का योग

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Que. 6

Ans. 6 Photography is the art of making the real expression of the scene or an object over the art paper with the help of light.

There are 6 steps in photography :-

(I) formation of photographic plate :-

The plate is made up of AgBr.

$$NH_4Br + AgNO_3 \longrightarrow AgBr + NH_4NO_3$$

(II) Exposure :-

The plate is exposed towards the light reflecting from the object which reduces AgBr.

$$2AgBr \longrightarrow 2Ag + Br_2$$

(III) Developing :-

The process to remove the extra AgBr from the plate which is unexposed by dipping it into quinol.

(IV) fixing :-

It is the process of creating negative impression of object over the photographic plate.

(V) Printing :- Printing is the process to get the impression of object over a art paper.

(VI) Toning :-

It is used to give extra effects to add some glory to the plate by reacting with $AuCl_3$

$$AuCl_3 + 3Ag \longrightarrow 3AgCl_2 + Au\downarrow$$

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Que. 8

(a)

Ans. 8 (a) Fluorine is strong agent because it is at the top of the group-17 having smaller size than that of other halogens. It has highest electronegativity due to which it can attract electrons very strongly so, it will oxidise the other substance very strongly.

(b)

Ans. 8(b) HF is a liquid whereas hydrides of other halogens are gases at ordinary temperature because it has highest electronega- tivity in the periodic table due to which it can form strong hydrogen bonds between the molecules of HF to hold them tight with each other. whereas other halogens are unable to form such strong H-bonds between their molecules so, their molecules are in gaseous state while HF is in liquid state.

Que·9

(i) $K_4[Fe(CN)_6]$

Ans. Potassium hexacyanoferrate(II).

(ii) $[Cr(NH_3)_6(NO_2)_3]$

Ans. Hexaammine trinitrito Chromium(III).

(iii) $[Ni(CN)_3]Cl_3$

Ans. Tricyano Nickel(VI) Chloride.

(iv) $K_2[PtCl_6]$

Ans. Potassium hexachloroplatinate(IV).

Que·11

Ans·11 Williamson's continuous etherification process in which H_2SO_4 (sulphuric acid) is acting as a catalyst so, it's small amount should convert the large amount of alcohol into ether. This process takes place in two steps :-

(i) $C_2H_5OH + H_2SO_4 \longrightarrow C_2H_5HSO_4 + H_2O$

(ii) $C_2H_5HSO_4 + C_2H_5OH \longrightarrow C_2H_5OC_2H_5 + H_2SO_4$

Catalyst

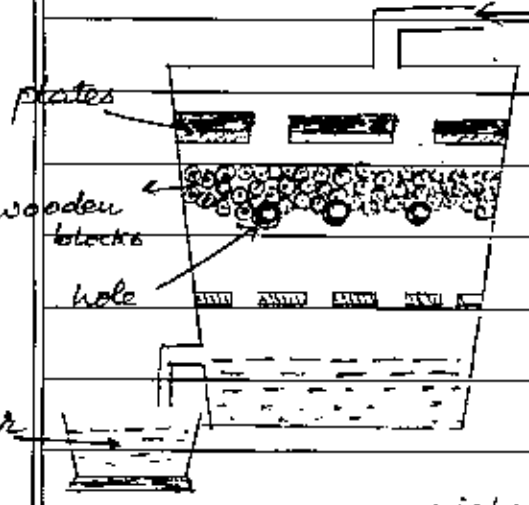
but it is not actually continuous because after some time, the reaction is stopped due to the exhaustion of H_2SO_4 because of 2 reasons :—

(i) The water produced in first step is diluting the conc. H_2SO_4 solution.

(ii) Due to the presence of alcohol, sulphuric acid is oxidised into sulphurous acid.

Que. 17.

Ans. 18



Quick vinegar process is really a quick method to obtain ~~an~~ acetic acid from alcohol. A chamber made of wooden vat is surrounded by two wooden plates, and between these wooden plates are those moistened with old vinegar which is the chief source of the enzyme called mycoderma aceti. Then, from the top of the chamber, 10% ethanol solution is dropped and oxidised by the oxygen coming from the holes in the presence of ~~catalyst~~

enzyme 'Mycoderma aceti' and gets converted into ethanoic acid solution (vinegar) which is collected near the bottom. The whole process is carried out according to the chemical equation:-

$$C_2H_5OH \xrightarrow[\text{Mycoderma aceti}]{[O]} CH_3COOH$$
Vinegar.

Que. 13

Ans. 13

	DNA	RNA
1.	It is found in the nucleus of the cell.	It is found in the cytoplasm and nucleus partially.
2.	It contains deoxyribose sugar.	It contains Ribose sugar.
3.	It has double helical structure.	It's structure is of single strand.
4.	It is responsible for the hereditary functions	It is responsible for the protein synthesis & so on.

Que. 14

Ans: 14 The names of medicinal plants are:-

Bel → fever, dysentery

Rati → especially for the nightblindness.

Haldi → also use in nightblindness, wounds healing

Kaju → Save sole of the foot from the cracking.

Que: 15

(i) Normality :- Normality is defined as number of gram equivalents of solute dissolved in 1 litre of the solution. i.e,

$$N = \frac{\text{mass of solute}}{\text{Equivalent mass of solute}} \times \frac{1000}{\text{volume of solution in ml}}$$

(ii) Molality :- It is defined as the number of the moles of solute dissolved in 1kg of the solvent or 1000g of the solvent. i.e,

$$m = \frac{\text{mass of solute}}{\text{Molecular mass of solute}} \times \frac{1000}{\text{mass of solvent in gm}}$$

Ques.5

(iii) ppm (parts per million) :- It is defined as the part of the solute present in per million part of the solution. This is used to measure very small concentrations of solute.

$$ppm = \left(\frac{\text{mass of solute}}{\text{mass of solution}}\right) \times 10^6$$

(iv) Molarity :- It is defined as the number of the moles of solute dissolved in 1 Litre of the solution. i.e,

$$M = \frac{\text{mass of solute}}{\text{Molecular mass of solute}} \times \frac{1000}{\text{Volume of solution in ml}}$$

v) Henry's law :- According to Henry's law, the mole fraction of the gas present in the solution is directly proportional to the partial pressure applied by it over solution. i.e,

$$P \propto x$$

$$P = K_H x$$

where, K_H = Henry's constant

Que. 16

Ans. 16 Kohlrausch's Law :-

According to this law, at infinite dilution of the ~~solution~~ electrolyte where there is complete dissociation of electrolyte takes place and negligible forces of attraction are present between the ions of electrolyte, the conductivity of the whole electrolyte becomes equal to the individual conductivities of cations & anions. i.e,

$$(\Lambda_m^\infty)_{\text{Electrolyte}} = (\Lambda_m^\infty)_{\text{Cation}} + (\Lambda_m^\infty)_{\text{Anion}}$$

Two Applications of Kohlrausch's Law :-

(i) To determine the limiting molar conductance at infinite dilution of weak electrolytes. Such as. CH_3COOH etc.

(ii) To determine the solubility of the substance in the given solution.

$\Lambda_m = \Lambda_m^\infty$ & $M = S$ (solubility)

$$\Lambda_m = \frac{K \times 1000}{M}$$

$$\Lambda_m^\infty = \frac{K \times 1000}{S}$$

$$\therefore \boxed{S = \frac{K \times 1000}{\Lambda_m^\infty}}$$

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पृष्ठ के अंकों का योग

Que. 17

Ans. 17 Lanthanide Contraction is found in lanthanide series. Lanthanide contraction is the process in which elements having $(n-2)f$ orbital & ns orbital are present, undergo the change of their atomic size due to the poor shielding effect. $(n-2)f$ orbitals are having configuration in space in such a way that they do not repel the electrons of outermost S-orbital due to which attraction between the nucleus and outermost shell electrons is increased as there is an increase in the no. of electrons.

(Reason):-

(I) Electrons are increasing when we move down the group and these electrons are continuously entering in $(n-2)f$ orbital

(II) $(n-2)f$ orbitals have such a configuration due to which the shielding effect of these orbital electrons is negligible towards ns orbital electrons.

Consequences :-

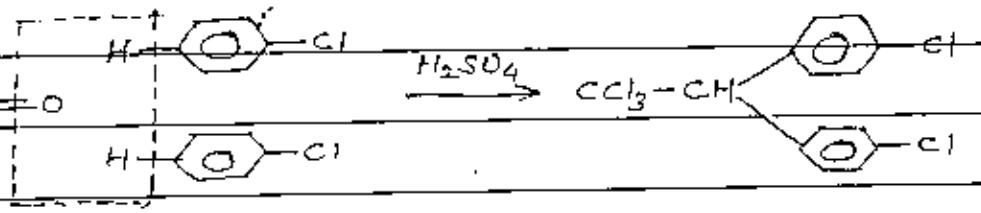
(I) Atomic Size :- The atomic size is decreasing down the group in these elements.

(II) Electronegativity :- The electronegativity of the elements is increasing on moving down the group.

(III) Basicity :- As we know that, basicity increase down the group but in this case basicity is decreasing down the group and acidity of the elements is increasing.

Que. 10

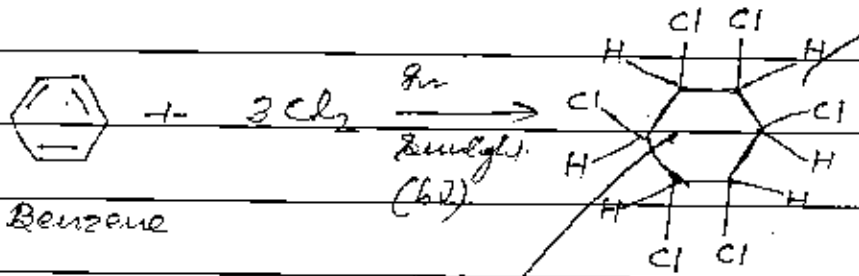
(i) D.D.T. → It's full form is Dichloro diphenyl - trichloroethane. This is made by using chloral and chlorobenzene. They reacted with each other in the ratio of 1:2 respectively as :-



D.D.T.

This is used to kill the microorganisms and it works as an disinfectant but it is also harmful for humans body.

(ii) B.H.C. → It's full form is Benzene hexachloride. It is formed in the presence of strong intensity ~~of~~ sunlight which is doing work as an agent. It is formed by the reaction between Benzene and Chlorine as :-



B.H.C. ($C_6H_6Cl_6$)

It's γ- isomers are known as Gammaxene. This is also used as an insecticide to kill the pests and it is more efficient than D.D.T. but also very harmful for the human beings.

	+		=	
योग पूर्व पृष्ठ		पृष्ठ 17 के अंक		कुल अंक

BSEMP

पृष्ठ के अंकों का योग

योग पूर्व पृष्ठ + पृष्ठ 18 के अंक = कुल अंक

BSEMP

पृष्ठ के अंकों का योग

योग पूर्व पृष्ठ + पृष्ठ 19 के अंक = कुल अंक

BSEMP

पृष्ठ के अंकों का योग

योग पूर्व पृष्ठ + पृष्ठ 20 के अंक = कुल अंक

BSEMP

पृष्ठ के अंकों का योग

	+		=	
योग पूर्व पृष्ठ		पृष्ठ 21 के अंक		कुल अंक

BSEMP

पृष्ठ के अंकों का योग

योग पूर्व पृष्ठ + पृष्ठ 22 के अंक = कुल अंक

BSEMP

पृष्ठ के अंकों का योग

	+		=	
योग पूर्व पृष्ठ		पृष्ठ 23 के अंक		कुल अंक

BSEMP

पृष्ठ के अंकों का योग

योग पूर्व पृष्ठ + पृष्ठ 24 के अंक = कुल अंक

मध्यप्रदेश

BSEMP

पृष्ठ के अंकों का योग