## Computer Based Examination System

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Question Paper Answer Key

## GPSC01202115

Assistant Professors in Government College in Chemistry (Organic)
Completed
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| Question Description | What is the observed rotation when 0.1 M solution of $(R)$-butan-2-ol is mixed with an equal volume of a 0.05 M solution of <br> racemic butan-2-ol and the resulting solution is taken in a cell of 5 cm long tube in a polarimeter? The specific rotation of $(R)$ - <br> butan-2-ol is $+13.9^{\circ}$. |
| :--- | :--- |
| A $+0.026^{\circ}$ |  |
| B | $+0.26^{\circ}$ |
| C | $+2.6^{\circ}$ |
| D | $+1.3^{\circ}$ |
| Correct Answer | A |
| Marks | 1 |

The most suitable reagents for synthon ${ }^{\oplus} \mathrm{COOEt}$ is

## HCOOEt

$\mathrm{Et}_{2} \mathrm{CO}_{3}$

ClCOOEt
$\mathrm{CO}_{2} / \mathrm{EtOH}$

Correct Answer
Marks
1

## 3 Question Description

The major product of the following reaction is

|  |  |
| :---: | :---: |
| A | A |
| B | B |
| C | C |
| D | D |
| Correct Answer | C |
| Marks | 1 |
| Question Description | The most suitable reagent for the synthesis of m-nitro aniline from m-dinitro benzene is |
| A | $\mathrm{Sn} / \mathrm{HCl}$ |
| B | $\mathrm{FeSO}_{4} / \mathrm{NH}_{4} \mathrm{OH}$ |
| C | ammonium polysulfide |
| D | $\mathrm{H}_{2} / \mathrm{Pd}-\mathrm{C}$ |
| Correct Answer | C |
| Marks | 1 |

$\qquad$

(A)


(c)


A
A

B
B

C

D
Correct Answer
Marks
1

The final product of the following reaction is $\qquad$
 ?
(A)



(D)


A

B

C

D
A

B

C

D

## Correct Answer

A
Marks 1

## Predict the structure of the major product.



A
A

B
B

C

D

## Correct Answer

Marks
1

| 8 | Question Description | What will be the major product when indole is treated with $\mathrm{CHCl}_{3}$ and |
| :---: | :---: | :---: |
|  | A | 2-chloro indole |
|  | B | 3-chloroquinoline |
|  | C | 2-chloroquinoline |
|  | D | 3-chloroindole |
|  | Correct Answer | B |
|  | Marks | 1 |
| 9 | Question Description | Predict the absolute configuration of the following compound <br> (i) <br> (iii) <br> (iii) |
|  | A | (i) $S$ - (ii) $R$ - (iii) $R$ |
|  | B | (i) $R$ - (ii) $R$ - (iii) $R$ |
|  | C | (i) $S$ - (ii) $S$ - (iii) $R$ |
|  | D | (i) $S$ - (ii) $R$ - (iii) $S$ |
|  | Correct Answer | A |
|  | Marks | 1 |


| 10 | Question Description | An enantioselective reaction predominantly yields $(+)$-2-bromobutane with $10 \%$ contamination of $(-)$-2-bromobutane. If the specific rotation of $(-)$-2-bromobutane is $-23.13^{\circ}$, the observed specific rotation of a sample of the product mixture would be |
| :---: | :---: | :---: |
|  | A | $-20.8{ }^{\text {o }}$ |
|  | B | $+18.5^{\circ}$ |
|  | C | $+20.8{ }^{\circ}$ |
|  | D | $-4.6{ }^{\circ}$ |
|  | Correct Answer | B |
|  | Marks | 1 |
| 11 | Question Description | Among the compounds given below, the one that can be used as a formyl anion equivalent (in the presence of a strong base) is |
|  | A | ethylene |
|  | B | nitroethane |
|  | C | 1,3-dithiane |
|  | D | 1,4-dithiane |
|  | Correct Answer | C |
|  | Marks | 1 |

The structure of the product formed is $\qquad$ , when benzoquinone is allowed to react with 1,2 diphenyl acetylene is allowed to react under photochemical condition.
(A)

(B)

(C) P

(D)

A
B
C
A
B
C
D D
Correct Answer A
Marks 1

## 13 Question Description

| A | $\mathrm{CH}_{3} \mathrm{CHO}$ |
| :--- | :--- |
| B | $\mathrm{PhCOCH}_{3}$ |
| C | allyl bromide |
| D | $\mathrm{CH}_{3} \mathrm{COOCH}_{2} \mathrm{Ph}$. |
| Correct Answer <br> Marks | A |

Fill in the blank: The structure of X is $\qquad$ ; name of the reaction is $\qquad$

(A)

(B) $\square$WOLFF KISHNER REACTION
(C)
 SHAPIRO REACTION OH
(D)
 $-\mathrm{CH}_{2} \mathrm{OH}$ WOLFF KISHNER REACTION

A

B

C

D

## Correct Answer

Marks

A
1

# Predict the structure of the major product formed in the following reaction 




c) 0
D) $)^{\text {coome }}$

A
A

B
B

C

D

| Correct Answer | D |
| :--- | :--- |
| Marks | 1 |



## Correct Answer

Marks

## 1R,5R,6S

1R,5R,6R

1R,5S,6S

1S,5R,6S

A
1

17 Question Description

A

B

C

D

Correct Answer B
Marks

18 Question Description

A

B

C

D

## Correct Answer

Marks
R

S

E

Z

1

B
1

The absolute configuration of the compound A is


The primary precursor of NYLON 6 is

1,5-pentane-dicarboxylic acid

1,6-hexane-dicarboxylic acid
tartaric acid
succinic acid

| Question Description | A $\delta$-methyl group of an alcohol can be converted to an aldehyde functionality by converting the alcohol to <br> derivative followed by photo-irradiation and hydrolysis. The main reaction is called__reaction. <br> A <br> B |
| :--- | :--- |
| amine to diazo; Hell-Volhard-Zelinsky Reaction |  |
| C | nitrite; Barton reaction |
| D | orthoformate; McMurry Reaction |
| Correct Answer | B |
| Marks | 1 |

Predict the structure of I and II for the below mentioned reaction.

(A)
$11=$

(B)

$11=$

(C)

IO (D)
(D)

II =


A

B

C

D

## Correct Answer

Marks
A

B

C

D

A

- -1

| 21 | Question Description | A pumpkin shaped and a vaze shaped cavitands are, ___ \& , respectively. |
| :---: | :---: | :---: |
|  | A | Calixarene, cucurbituril |
|  | B | cucurbituril, calixarene |
|  | C | cyclodextrin, calixarene |
|  | D | cyclodextrin, cucurbituril |
|  | Correct Answer | B |
|  | Marks | 1 |
| 22 | Question Description | Reduction of nitrobenzene in $\mathrm{Zn} / \mathrm{HCl}$ gives ------ and in $\mathrm{Zn} / \mathrm{NH}_{4} \mathrm{Cl}$ gives --------, respectively. |
|  | A | $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NH}_{2}$ and $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NHOH}$ |
|  | B | $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NHOH}$ and $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NH}_{2}$ |
|  | C | $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NH}_{2}$ in both cases |
|  | D | $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NHOH}$ in both cases |
|  | Correct Answer | A |
|  | Marks | 1 |

The additional energy cost due to 1,3-diaxial interaction in the more stable conformation of cis-2-trans-4-trimethyl cyclohexane in $\mathrm{Kcal} /$ mole is


Me

A

B

C

D

Correct Answer
Marks
1.8
3.6
2.7

0

A
1

## Predict the major product of the following reaction.




| A | $\mathrm{Me}_{2} \mathrm{CuLi}$ |
| :--- | :--- |
| B | $\mathrm{Me}_{2} \mathrm{Zn}$ |
| C | MeMgBr |
| D | MeLi |
| Correct Answer <br> Marks | A |



Identify the mechanism

[1,3] sigmatropic rearrangement
[1,5]- sigmatropic rearrangement

Claisen rearrangement

Cope rearrangement
C
1

| - | The descending order of the ease of HBr addition on the following compounds is i) <br> ii) <br> iii) <br> iv) |
| :---: | :---: |
| A | i $>$ ii $>$ iv $>$ iii |
| B | ii> $>$ iii $>\mathrm{i}>$ iv |
| C | ii $>\mathrm{i}>$ iv $>$ iii |
| D | i $>\mathrm{ii}>\mathrm{iii}>\mathrm{iv}$ |
| Correct Answer | C |
| Marks | 1 |

Arrange the following compounds in increasing order of polarity


I $<$ II $<$ III
$\mathrm{III}<\mathrm{II}<\mathrm{I}$

II $<\mathrm{I}<\mathrm{III}$

III $<$ I $<$ II

Correct Answer
Marks
30 Question Description


(B)

(C)

(D)


A

B

C
A

B

D

Correct Answer
Marks

The IUPAC name of the following compound is $\qquad$
(S)-3-(prop-2-ynyl)hex-5-enoic acid
(R)-3-(prop-2-ynyl)hex-5-enoic acid
(S)-2-(prop-3-ynyl)hex-5-enoic acid
(R)-2-(prop-3-ynyl)hex-5-enoic acid

Correct Answer A
Marks
1

Choose the correct structure of the major product of the below mentioned reaction.


$\qquad$
(A) ${ }_{\mathrm{Br}} \rightarrow$ (B)
(8)
(c)
4
(D) $\square$

A

B

## Correct Answer

## Marks

Which one of the following statements is incorrect?
A pseudoasymmetric carbon $\qquad$ -

## Correct Answer

Marks
is stereogenic
is chiral
is a part of a meso compound
always possess a plane of symmetry

B

1

What is true about the compound calicene?

A

## Correct Answer

Marks


It is highly soluble in water

It exists mainly as dipolar ion with +ve charge in the three membered ring while -ve charge in five membered ring

It exists mainly as dipolar ion with + ve charge in the five membered ring while -ve charge in three membered ring
in solution it shows very high electrical conductivity

B

1
$\qquad$

(A)
(B)

(C)



A
A

B
B

C

D

Correct Answer
A
Marks
1

The product of following coupling reaction is

(4)

(B) CH2CO2
(c)

(0) $\mathrm{H}_{3} \mathrm{CO}$


A

B

C

D

Correct Answer
Marks

A

B

C

D

A

1

Which statement is correct?

A

B

Both A and B are optically active

A can be optically active but not B

B can be optically active but not A

Both A and B are optically inactive.

## Correct Answer <br> C

## Marks

1

## Question Description

A

## Correct Answer

Marks

Compound A on oxidation in presence of $\mathrm{HNO}_{3}$ gives B , which on reaction with C (a water soluble compound which on heating followed by addition of aqueous $\mathrm{CuSO}_{4}$ and NaOH gives violet color) gives 5,5-diphenylhydantoin. Compound A and C are and $\qquad$ respectively.

Benzaldehyde, semicarbazide
benzoin, urea
benzil, urea
benzyl, semicarbazone

B
1

trans-cyclohexane-1,2-dicarboxylic acid
trans-cyclohexane-1,4-dicarboxylic acid

Correct Answer
cis-cyclohexane-1,3-dicarboxylic acid
trans-cyclohexane-1,3-dicarboxylic acid

Marks
1

EtOOC

X

## (iii) Raney Ni

(A)

(B)


(D)


A

B

C

D

Correct Answer
Marks

## A

B

C

D

A
Marks 1

Predict the type of mechanism involved in the following ester hydrolysis reaction.
A
B
C
AAc2
D
Correct Answer
Marks
BAc 2
C
1
$\qquad$ .

| A | $\mathrm{H}_{3} \mathrm{O}^{+}$ |
| :--- | :--- |
| B | $\mathrm{H}_{3} \mathrm{PO}_{2}$ |
| C | dil. $\mathrm{NH}_{4} \mathrm{OH}$ |
| D | benzene |
| Correct Answer <br> Marks | B |

45 Question Description

A

B

C

D

Correct Answer

## Marks

The product of the following reaction is


B) $\sim$ COOH COOH
D) $)_{C H}^{\circ}$

B

## C

D

D


When $\mathrm{NaNO}_{2}$ solution is added to an ice cold solution of $\mathrm{N}, \mathrm{N}$-dimethylaniline in dil. HCl , the product formed is

Correct Answer

## Marks

$\left[\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NMe}_{2} \mathrm{NO}\right]^{+}$
$o$-nitroso $\mathrm{N}, \mathrm{N}$-dimethylaniline
p-nitroso $\mathrm{N}, \mathrm{N}$-dimethylaniline
$\mathrm{Me}_{2} \mathrm{NC}_{6} \mathrm{H}_{4}-\mathrm{N}=\mathrm{N}-\mathrm{C}_{6} \mathrm{H}_{4} \mathrm{NMe}_{2}$

C
1

Following compounds give the same product when treated with a base. Identify the product.


(A)

(B)

(D)


A

B

C

D

Correct Answer
Marks

A

B

C

D

A
1

The total number of possible stereoisomers in the following molecule are


8

4

2

0

## Correct Answer

Marks

| A | A |
| :--- | :--- |
| B | An |
| C | A |
| D | 1 |
| Correct Answer |  |
| Marks |  |

Comprehension

| Read the following passage and answer the questions given below: |
| :--- |
| The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is |
| ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is |
| happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration |
| of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding |
| himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do |
| in. To help him in answering these questions is the one and only purpose of education. |

Question Description
As an opiate and a poison, the examination system respectively
A
paralyses or slows down natural activities and lulls the healthy mind

| Comprehension | Read the following passage and answer the questions given below: <br> The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education. |
| :---: | :---: |
| Question Description | Complete the following statement using a suitable option from among those provided below: The overall passage implies that the public is impressed with the misconception |
| A | created by the list of scholarships |
| B | that the school is doing its job |
| C | that good education is being imparted |
| D | that something is happening |
| Correct Answer | C |
| Marks | 1 |

Comprehension | Read the following passage and answer the questions given below: |
| :--- |
| The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is |
| ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is |
| happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration |
| of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding |
| himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do |
| in. To help him in answering these questions is the one and only purpose of education. |

Question Description | The statement "The examination system lulls us into believing that all is well when most is ill" implies that it makes us falsely |
| :--- | :--- |
| confident and relaxed that |

A | all is not well with it, some is ill. |  |
| :--- | :--- |
| B | nothing is ill in it, when most is. |
| C | most is well with it, when some is ill. |

D most is ill with it, some is well.

| Comprehension | Read the following passage and answer the questions given below: |
| :---: | :---: |
|  | The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do in. To help him in answering these questions is the one and only purpose of education. |
| Question Description | The term 'opiate' is used in the passage to suggest its ----- effect. |
| A | narcotic |
| B | addictive |
| C | analgesic |
| D | social |
| Correct Answer | A |
| Marks | 1 |

\(\left.$$
\begin{array}{l}\text { Comprehension } \\
\qquad \begin{array}{l}\text { Read the following passage and answer the questions given below: } \\
\text { The examination system is both an opiate and a poison. It is an opiate because it lulls us into believing that all is well when most is } \\
\text { ill. 'Look,' the public says, 'at this list of scholarships; see how many children have got their School Certificates: something is } \\
\text { happening; the school is doing its job.' Something no doubt is happening; but it may not be education: it may be the administration } \\
\text { of a poison which paralyses or at least slows down the natural activities of the healthy mind. The healthy human being finding } \\
\text { himself a creature of unknown capacities in an unknown world, wants to learn what the world is like, and what he should be and do } \\
\text { in. To help him in answering these questions is the one and only purpose of education. }\end{array}
$$ <br>
Question Description <br>

As per the passage, the sole objective of education is to help an individual\end{array}\right\}\)| And himself in the unknown world and enjoy it well. |
| :--- | :--- |

The first multi-purpose river valley project in India has been built on which of the following rivers?

A

B

C

D
Correct Answer
Marks

57 Question Description

A

B

C

D

Correct Answer
Marks

Which of these organizations manages internet protocol numbers and Domain Name Systems roots?

IUCN

ICANN

IUPAC

IAEA

B

1

| 58 | Question Description | How many languages does the Indian Constitution recognise? |
| :---: | :---: | :---: |
|  | A | 18 |
|  | B | 22 |
|  | C | 24 |
|  | D | 25 |
|  | Correct Answer | B |
|  | Marks | 1 |
| 59 | Question Description | Pradhanmantri Suraksha Bima Yojana launch in which year? |
|  | A | 2014 |
|  | B | 2015 |
|  | C | 2020 |
|  | D | 2019 |
|  | Correct Answer | B |
|  | Marks | 1 |


| 60 | Question Description | Which is the largest tiger reserve in India? |
| :---: | :---: | :---: |
|  | A | Corbett |
|  | B | Nagarjuna |
|  | C | Manas |
|  | D | screw |
|  | Correct Answer | A |
|  | Marks | 1 |
| 61 | Question Description | Which state is known as 'Scotland of the East' in India? |
|  | A | Assam |
|  | B | Tripura |
|  | C | Manipur |
|  | D | Meghalaya |
|  | Correct Answer | D |
|  | Marks | 1 |



| 64 | Question Description | National Library, the largest library in India is in which state? |
| :---: | :---: | :---: |
|  | A | Rajasthan |
|  | B | Bihar |
|  | C | West Bengal |
|  | D | Tamil Nadu |
|  | Correct Answer | C |
|  | Marks | 1 |
| 65 | Question Description | Fulhar lake is located in which state of India? |
|  | A | Uttarakhand |
|  | B | Bihar |
|  | C | Madhya.Pradesh. |
|  | D | Uttar Pradesh |
|  | Correct Answer | D |
|  | Marks | 1 |


| Question Description | Di |
| :--- | :--- |
|  | Di |
|  | Di |
|  | If |
| A | Tr |
| B | Fal |
| C | Un |
| D | B |
| Correct Answer | 1 |
| Marks |  |


| Question Description | $\mathrm{R} 1, \mathrm{R} 2, \mathrm{R} 3, \mathrm{R} 4, \mathrm{R} 5, \mathrm{R} 6, \mathrm{R} 7$ are seven places on a map. The following places are connected by two-way roads: R1 and R2; R1 and <br> $\mathrm{R} 6 ; \mathrm{R} 3$ and $\mathrm{R} 6 ; \mathrm{R} 3$ and $\mathrm{R} 4 ; \mathrm{R} 6$ and $\mathrm{R} 7 ; \mathrm{R} 4$ and $\mathrm{R} 5 ; \mathrm{R} 2$ and $\mathrm{R} 3 ; \mathrm{R} 5$ and R7. No other road exists. The shortest route (the route with <br> the least number of intermediate places) from R1 to R7 is:- |
| :--- | :--- |
| A | $R 1-R 3-R 7$ |
| B | $R 1-R 5-R 7$ |
| C | $R 1-R 2-R 3-R 6-R 7$ |
| D | $R 1-R 6-R 7$ |
| Correct Answer | D |
| Marks | 1 |


| Correct Answer | D |
| :--- | :--- |
| Marks | 1 |

## Correct Answer

Ruby has 4 children. Two of the children have blue eyes and two of the children have brown eyes
Half of the children are girls
Which of the following statement is true

Among any three children, at least one girl has brown eyes
Among any three children, at least two girls has blue eyes

At least on girl has blue eyes

At least one boy has brown eyes

Marks
A

1

A

Four packets $\mathrm{P}, \mathrm{Q}, \mathrm{R}$ and S , three wallets $\mathrm{A}, \mathrm{B}$ and C are kept on a table one after the other in a row from left to right. Wallet C has as many items to its left as to its right. No packet is at any extreme end of the row. Packet $P$ is kept to the immediate left of packet R.

Packet P is to the immediate right of wallet A .
What is kept third from left end of the row on the table?

```
C
```

R

A

C
1

If $a+b$ means $a$ is sister of $b$,
$a-b$ means a is brother of b ,
$a x b$ means $a$ is daughter of $b$,
$a \div b$ means a is mother of b ,
Which of the following relationship shows that p and r are wife and husband?

## Correct Answer

$$
p \div q x r
$$

$$
p-q x r
$$

$$
p+q \times r
$$

$$
p+q-r
$$

Marks
1

|  | Lapikaki means fruitcake <br> Kakibali means cakewalk <br> Malapalav means buttercup |
| :--- | :--- |
|  | Which word could mean "Fruitcup" |$|$| Palavkaki |  |
| :--- | :--- |
| A Kakipalav |  |
| C | Lapibali |
| D | Lapipalav |
| Correct Answer | D |
| Marks | 1 |



Find a pair that has similar relationship to frame: picture

A

B

C

D

## Correct Answer <br> A

Marks

Binding: book

Teacher: read

Artist: drawing

Mother: child

1

