

# National Testing Agency

**Question Paper Name:** Chemistry 227 30th May 2019 Shift2 Set1  
**Subject Name:** Chemistry 227  
**Creation Date:** 2019-05-30 19:01:14  
**Duration:** 180  
**Total Marks:** 100  
**Display Marks:** Yes  
**Share Answer Key With Delivery Engine:** Yes  
**Actual Answer Key:** Yes

## Chemistry 227

**Group Number :** 1  
**Group Id :** 128206216  
**Group Maximum Duration :** 0  
**Group Minimum Duration :** 120  
**Revisit allowed for view? :** No  
**Revisit allowed for edit? :** No  
**Break time:** 0  
**Group Marks:** 100

## Part - A

**Section Id :** 128206362  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 20  
**Number of Questions to be attempted:** 20  
**Section Marks:** 40  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 128206595  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Id : 12820612708 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**  
**Correct Marks : 2 Wrong Marks : 0**

A nucleophilic substitution reaction of an alkyl halide is carried out with an azide in a polar protic (MeOH) as well as in a polar aprotic (DMF) solvent. The reaction is:

- (a) Drastically Slower in MeOH
- (b) Very Fast in MeOH
- (c) Rates are same in MeOH and DMF
- (d) Reaction does not proceed in DMF

Options :

- 12820650171. A
- 12820650172. B
- 12820650173. C
- 12820650174. D

Question Number : 2 Question Id : 12820612709 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

*p*-Chloromethylbenzene is reacted with  $\text{NaNH}_2$  in liquid ammonia. The product(s) formed are:

- (a) *p*-Aminomethylbenzene only
- (b) *m*-Aminomethylbenzene only
- (c) *o*-Aminomethylbenzene and *m*-aminomethylbenzene (major)
- (d) *m*-Aminomethylbenzene (major) and *p*-aminomethylbenzene

Options :

- 12820650175. A
- 12820650176. B
- 12820650177. C
- 12820650178. D

Question Number : 3 Question Id : 12820612710 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Arrange the decreasing order of acidity of phenol (I), *o*-nitrophenol (II), *m*-nitrophenol (III) and *p*-nitrophenol (IV):

- (a)  $\text{IV} > \text{III} > \text{II} > \text{I}$
- (b)  $\text{II} > \text{IV} > \text{III} > \text{I}$
- (c)  $\text{IV} > \text{II} > \text{III} > \text{I}$
- (d)  $\text{III} > \text{II} > \text{IV} > \text{I}$

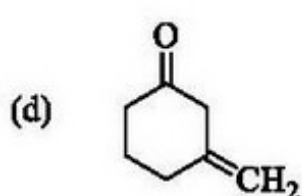
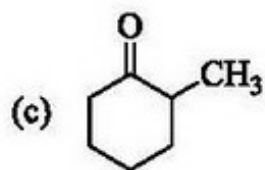
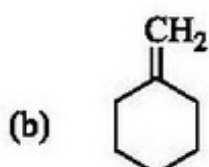
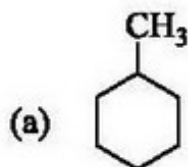
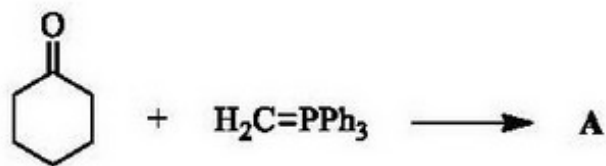
Options :

- 12820650179. A
- 12820650180. B
- 12820650181. C
- 12820650182. D

Question Number : 4 Question Id : 12820612711 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The product A of the following reaction is:



Options :

12820650183. A

12820650184. B

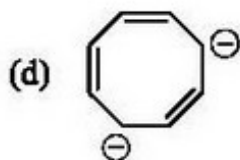
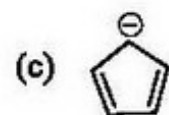
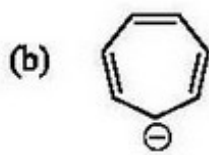
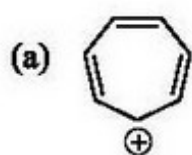
12820650185. C

12820650186. D

Question Number : 5 Question Id : 12820612712 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The compound that is not aromatic is:



Options :

12820650187. A

12820650188. B

12820650189. C

12820650190. D

Question Number : 6 Question Id : 12820612713 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

$\alpha$ ,  $\beta$ -Unsaturated carbonyl compounds undergo a ring closure reaction with conjugated dienes. This reaction is known as:

- (a) Perkin reaction
- (b) Sandmeyer reaction
- (c) Wittig reaction
- (d) Diels-Alder reaction

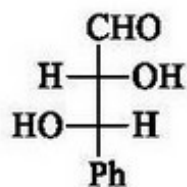
Options :

- 12820650191. A
- 12820650192. B
- 12820650193. C
- 12820650194. D

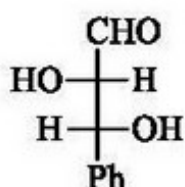
Question Number : 7 Question Id : 12820612714 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Consider the statements on following pair of compounds:



(P)



(Q)

- I. Both are enantiomers
- II. Both are threo form
- III. Both are diastereomers
- IV. Both are D,L-pair

The CORRECT set of statements is:

- (a) I and II
- (b) II and III
- (c) I, II and IV
- (d) III and IV

Options :

- 12820650195. A
- 12820650196. B
- 12820650197. C
- 12820650198. D

Question Number : 8 Question Id : 12820612715 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The largest diameter among the following anions is:

- (a)  $F^-$
- (b)  $Cl^-$
- (c)  $Br^-$
- (d)  $H^-$

Options :

- 12820650199. A
- 12820650200. B
- 12820650201. C
- 12820650202. D

Question Number : 9 Question Id : 12820612716 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The quantitative estimation of calcium is generally performed by:

- (a) Redox titration
- (b) Acid-base titration
- (c) Complexometric titration
- (d) Precipitation titration

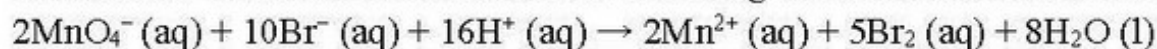
Options :

- 12820650203. A
- 12820650204. B
- 12820650205. C
- 12820650206. D

Question Number : 10 Question Id : 12820612717 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The number of electrons involved in the following balanced redox reaction is:



- (a) 2
- (b) 4
- (c) 5
- (d) 10

Options :

- 12820650207. A
- 12820650208. B
- 12820650209. C
- 12820650210. D

Question Number : 11 Question Id : 12820612718 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

In oxy-hemoglobin, the iron centre is best described as:

- (a) High-spin Fe(III)
- (b) High-spin Fe(II)
- (c) Low-spin Fe(III)
- (d) Low-spin Fe(II)

Options :

12820650211. A

12820650212. B

12820650213. C

12820650214. D

Question Number : 12 Question Id : 12820612719 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

In metal-olefin interaction, the extent of increase in metal  $\rightarrow$  olefin  $\pi$ -back-donation would

- (a) Lead to a decrease in C=C bond length
- (b) Change the formal oxidation state of the metal
- (c) Change the hybridization of the olefin carbon from  $sp^2$  to  $sp^3$
- (d) Increase with the presence of electron donating substituents on the olefin

Options :

12820650215. A

12820650216. B

12820650217. C

12820650218. D

Question Number : 13 Question Id : 12820612720 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The d-d transition in an octahedral  $[\text{NiX}_6]^{2+}$  complexes are:

- (a) Laporte forbidden but spin allowed
- (b) Laporte forbidden and spin forbidden
- (c) Laporte allowed and spin allowed
- (d) Laporte allowed but spin forbidden

Options :

12820650219. A

12820650220. B

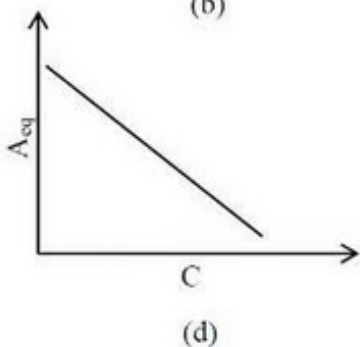
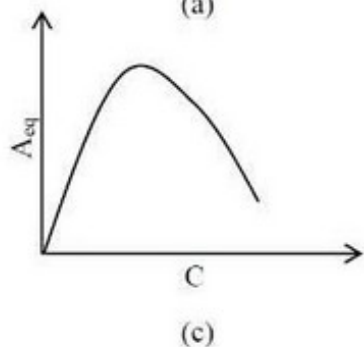
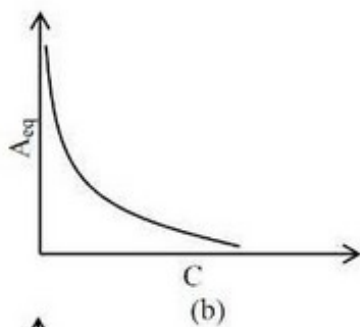
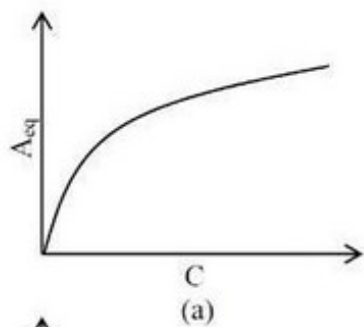
12820650221. C

12820650222. D

Question Number : 14 Question Id : 12820612721 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The variation of equivalent conductance with concentration of a strong electrolyte is best shown by



Options :

12820650223. A

12820650224. B

12820650225. C

12820650226. D

Question Number : 15 Question Id : 12820612722 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The concept of de Broglie's particle-wave is best utilized in the following modern instrument:

- (a) X-ray diffractometer
- (b) UV-Vis Spectrophotometer
- (c) Transmission electron microscope
- (d) Photo voltaic cells

Options :

12820650227. A

12820650228. B

12820650229. C

12820650230. D

Question Number : 16 Question Id : 12820612723 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

At which temperature chemical adsorption occurs?

- (a) At low temperature
- (b) At very low temperature
- (c) At high temperature
- (d) Temperature does not affect

Options :

12820650231. A

12820650232. B

12820650233. C

12820650234. D

Question Number : 17 Question Id : 12820612724 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

A solid has a structure in which 'W' atoms are located at the corners of a cubic lattice, 'O' atoms are at the centre of face edges and 'Na' atoms are at the centre of the cube. The formula of the compound is:

- (a)  $\text{Na}_2\text{WO}_3$
- (b)  $\text{Na}_2\text{WO}_2$
- (c)  $\text{NaWO}_2$
- (d)  $\text{NaWO}_3$

Options :

12820650235. A

12820650236. B

12820650237. C

12820650238. D

Question Number : 18 Question Id : 12820612725 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

For which process would the heat be negative?

- (a) Changing the temperature of ice water to  $50^\circ\text{C}$
- (b) Condensing steam
- (c) Boiling water
- (d) Changing the temperature of water from  $30^\circ\text{C}$  to  $100^\circ\text{C}$

Options :

12820650239. A

12820650240. B

12820650241. C

12820650242. D



Question Number : 19 Question Id : 12820612726 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

What are the units of k for the rate law:  $\text{Rate} = k[A]$ , when the concentration unit is mol/L?

- (a)  $\text{s}^{-1}$
- (b) s
- (c)  $\text{L mol}^{-1} \text{s}^{-1}$
- (d)  $\text{L}^2 \text{mol}^{-2} \text{s}^{-1}$

Options :

12820650243. A

12820650244. B

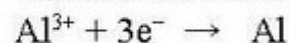
12820650245. C

12820650246. D

Question Number : 20 Question Id : 12820612727 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

What is the reduction potential for the following half-reaction at 25 °C?



Given that  $[\text{Al}^{3+}] = 0.10 \text{ M}$  and  $E^{\circ} = -1.66 \text{ V}$

- (a) -1.84 V
- (b) -1.60 V
- (c) -1.68 V
- (d) -1.66 V

Options :

12820650247. A

12820650248. B

12820650249. C

12820650250. D

Part - B

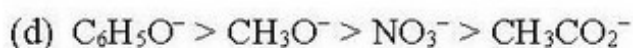
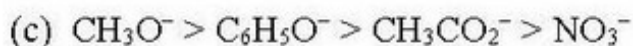
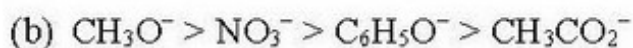
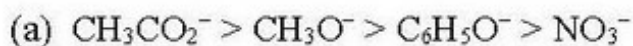
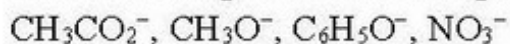
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Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	20
Number of Questions to be attempted:	20
Section Marks:	60
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	128206596

Question Number : 21 Question Id : 12820612728 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The decreasing order of nucleophilicity for the following anions is:



Options :

12820650251. A

12820650252. B

12820650253. C

12820650254. D

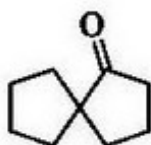
Question Number : 22 Question Id : 12820612729 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Which of the following compounds is optically active?



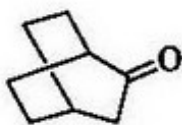
I



II



III



IV

(a) I

(b) II

(c) III

(d) IV

Options :

12820650255. A

12820650256. B

12820650257. C

12820650258. D

Question Number : 23 Question Id : 12820612730 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Choose the reagent system for the following conversion:



- (a)  $\text{OsO}_4$ ;  $\text{LiAlH}_4$
- (b)  $\text{C}_6\text{H}_5\text{CO}_3\text{H}$ ;  $\text{H}_2\text{O}/\text{H}^+$
- (c)  $\text{OsO}_4$ ; Aq.-alc.  $\text{Na}_2\text{S}_2\text{O}_3/\text{Reflux}$
- (d)  $\text{Pb}(\text{OAc})_4$ ;  $\text{H}_2\text{O}$

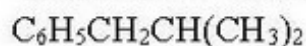
Options :

- 12820650259. A
- 12820650260. B
- 12820650261. C
- 12820650262. D

Question Number : 24 Question Id : 12820612731 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Which set of values belongs to the following structure:



- (a)  $\text{C}_8\text{H}_{10}$ ; 1.2, t, three H's; 2.6 q, two H's; 7.1, s, five H's
- (b)  $\text{C}_{10}\text{H}_{14}$ ; 1.30, s, nine H's; 7.30, s, five H's
- (c)  $\text{C}_{10}\text{H}_{14}$ ; 0.88, d, six H's; 1.86, m, one H; 2.45, d, two H's; 7.2, s, five H's
- (d)  $\text{C}_9\text{H}_{10}$ ; 2.04, p, two H's; 2.91 t, four H's; 7.17, s, five H's

Options :

- 12820650263. A
- 12820650264. B
- 12820650265. C
- 12820650266. D

Question Number : 25 Question Id : 12820612732 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

A red compound is formed by reaction of 2 moles of  $\text{AgBF}_4$  with 1 mole of 1,2,3,4-tetraphenyl-3,4-dibromocyclobut-1-ene. The product is [A] and is:

- (a) [A]: Tetraphenylcyclobutenyl dication and is aromatic
- (b) [A]: Tetraphenylcyclobutenyl dianion and is aromatic
- (c) [A]: Triphenylcyclopropenyl cation and is aromatic
- (d) [A]: Triphenylcyclopropenyl anion and is antiaromatic

Options :

- 12820650267. A
- 12820650268. B

12820650269. C

12820650270. D

Question Number : 26 Question Id : 12820612733 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Cyclohexanone is treated with hydroxylamine to produce [A]. Upon treatment of [A] with an acid [B] is produced. [B] is then heated in presence of a base to generate a textile polymer [C]. [A], [B] and [C] are:

- (a) [A]: Cyclohexanoic acid; [B]: Six membered cyclic acid; [C]:  $[-(\text{CH}_2)_5\text{-CO-}]_n$
- (b) [A]: Cyclohexanone oxime; [B]: Six membered cyclic amide; [C]:  $[-\text{NH}-(\text{CH}_2)_4\text{-CO-}]_n$
- (c) [A]: Cyclohexanone oxime; [B]: Seven membered cyclic amide; [C]:  $[-\text{NH}-(\text{CH}_2)_5\text{-CO-}]_n$
- (d) [A]: Cyclohexanoic acid; [B]: Six membered cyclic acid; [C]:  $[-\text{NH}-(\text{CH}_2)_5\text{-CO-}]_n$

Options :

12820650271. A

12820650272. B

12820650273. C

12820650274. D

Question Number : 27 Question Id : 12820612734 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

According to Valence Shell Electron Pair Repulsion (VSEPR) theory, the shape of  $\text{SnCl}_2$ ,  $\text{XeF}_2$ ,  $\text{NH}_3$  and  $\text{BrF}_3$  are:

- (a) V-shaped, linear, T-shaped, and pyramidal, respectively.
- (b) Linear, V-shaped, T-shaped, and pyramidal, respectively.
- (c) Pyramidal, linear, T-shaped, and V-shaped, respectively.
- (d) V-shaped, linear, pyramidal, and T-shaped, respectively.

Options :

12820650275. A

12820650276. B

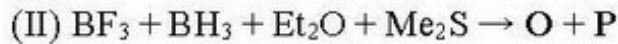
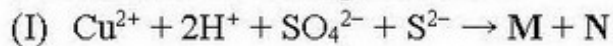
12820650277. C

12820650278. D

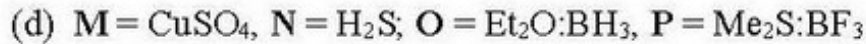
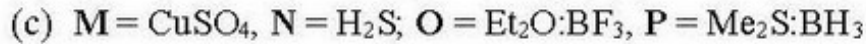
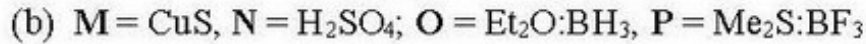
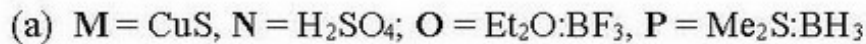
Question Number : 28 Question Id : 12820612735 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Consider the following reactions:



Choose the **CORRECT** set of products from the above reactions using Hard-Soft Acid-Base (HSAB) principle:



Options :

12820650279. A

12820650280. B

12820650281. C

12820650282. D

Question Number : 29 Question Id : 12820612736 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The number of moles of  $\text{CO}_2$  present in 220 mg  $\text{CO}_2$  is:

(a) 0.005 moles

(b) 10 moles

(c) 100 moles

(d) 0.01 moles

Options :

12820650283. A

12820650284. B

12820650285. C

12820650286. D

Question Number : 30 Question Id : 12820612737 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Arrange the following complexes in increasing order of  $\nu_{C-O}$  stretching frequency:

- I.  $[\text{Mo}(\text{CO})_3(\text{PF}_3)_3]$
- II.  $[\text{Mo}(\text{CO})_3(\text{PCl}_3)_3]$
- III.  $[\text{Mo}(\text{CO})_3(\text{PMe}_3)_3]$
- IV.  $[\text{Mo}(\text{CO})_3(\text{PPh}_3)_3]$

- (a)  $\text{IV} < \text{III} < \text{II} < \text{I}$
- (b)  $\text{I} < \text{II} < \text{III} < \text{IV}$
- (c)  $\text{II} < \text{I} < \text{IV} < \text{III}$
- (d)  $\text{III} < \text{IV} < \text{II} < \text{I}$

Options :

- 12820650287. A
- 12820650288. B
- 12820650289. C
- 12820650290. D

Question Number : 31 Question Id : 12820612738 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The visible spectra of salts of following complexes are measured in aqueous solutions. Among these complexes which one would exhibit absorptions spectrum with the highest  $\epsilon_{\text{max}}$  values?

- (a)  $[\text{MnO}_4]^-$
- (b)  $[\text{CoCl}_4]^{2-}$
- (c)  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$
- (d)  $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$

Options :

- 12820650291. A
- 12820650292. B
- 12820650293. C
- 12820650294. D

Question Number : 32 Question Id : 12820612739 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The increasing order of energy levels for the tetragonally elongated hexacoordinated system is:

- (a)  $dxz, dyz, dxy < dz^2, dx^2-y^2$
- (b)  $dxz, dyz < dxy < dz^2 < dx^2-y^2$
- (c)  $dxy < dxz, dyz < dx^2-y^2 < dz^2$
- (d)  $dxz < dyz < dxy < dz^2 < dx^2-y^2$

Options :

- 12820650295. A

12820650296. B

12820650297. C

12820650298. D

Question Number : 33 Question Id : 12820612740 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

Which of the following statement is **TRUE** with respect to  $[\text{Cr}(\text{edta})]^-$ ,  $[\text{Ru}(\text{en})_3]^{2+}$  and  $[\text{Pt}(\text{dien})\text{Cl}]^+$  ?

- (a) Chiral, Chiral and Achiral, respectively.
- (b) Chiral, Chiral and Chiral, respectively.
- (c) Achiral, Chiral and Achiral, respectively.
- (d) Achiral, Chiral and Chiral, respectively.

Options :

12820650299. A

12820650300. B

12820650301. C

12820650302. D

Question Number : 34 Question Id : 12820612741 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The *eigenvalues* of the linear matrix operator  $A = \begin{pmatrix} 9 & 1 \\ 5 & 3 \end{pmatrix}$  are:

- (a) 9 and 3
- (b) 8 and -2
- (c) 4 and 8
- (d) 5 and 7

Options :

12820650303. A

12820650304. B

12820650305. C

12820650306. D

Question Number : 35 Question Id : 12820612742 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The unit vector parallel to the resultant of vectors,  $\vec{r}_1 = 7\hat{i} + \hat{k}$  and  $\vec{r}_2 = -4\hat{i} + 6\hat{j} - 3\hat{k}$  is:

- (a)  $\frac{1}{8}(-4\hat{i} + 6\hat{j} - 3\hat{k})$
- (b)  $\frac{1}{2}(\hat{i} + \hat{j} + \hat{k})$
- (c)  $\frac{1}{2}(11\hat{i} + 6\hat{j} - 2\hat{k})$
- (d)  $\frac{1}{7}(3\hat{i} + 6\hat{j} - 2\hat{k})$

Options :

12820650307. A

12820650308. B

12820650309. C

12820650310. D

Question Number : 36 Question Id : 12820612743 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The half-life of a first order reaction having activation energy  $45 \text{ kcal mol}^{-1}$  at  $300^\circ\text{C}$  and largest frequency constant of  $1.11 \times 10^{11} \text{ Hz}$  can be calculated as:

- (a)  $9 \times 10^{-11} \text{ s}$
- (b)  $9 \times 10^5 \text{ s}$
- (c)  $2 \times 10^9 \text{ s}$
- (d)  $2.2 \times 10^{-2} \text{ s}$

Options :

12820650311. A

12820650312. B

12820650313. C

12820650314. D

Question Number : 37 Question Id : 12820612744 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 3 Wrong Marks : 0

The second line in Paschen series of hydrogen atom spectra appears at:

- (a)  $10.90 \times 10^5 \text{ m}^{-1}$
- (b)  $7.80 \times 10^5 \text{ m}^{-1}$
- (c)  $15.24 \times 10^5 \text{ m}^{-1}$
- (a)  $82.28 \times 10^5 \text{ m}^{-1}$

Options :

12820650315. A



12820650316. B

12820650317. C

12820650318. D

**Question Number : 38 Question Id : 12820612745 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 3 Wrong Marks : 0**

What is the equilibrium constant for a reaction that has a value of  $\Delta G^\circ = -50 \text{ kJ}$  at  $100^\circ\text{C}$ ?

(a) 1.01

(b)  $7.1 \times 10^5$

(c) -5.87

(d)  $9.98 \times 10^6$

**Options :**

12820650319. A

12820650320. B

12820650321. C

12820650322. D

**Question Number : 39 Question Id : 12820612746 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 3 Wrong Marks : 0**

The velocity of electron inside hydrogen-atom in its first Bohr orbit can be calculated using Bohr's formula of quantization of angular momentum as:

(a)  $3.00 \times 10^8 \text{ m s}^{-1}$

(b)  $2.19 \times 10^6 \text{ m s}^{-1}$

(c)  $11.58 \times 10^6 \text{ m s}^{-1}$

(d)  $19.90 \times 10^8 \text{ m s}^{-1}$

**Options :**

12820650323. A

12820650324. B

12820650325. C

12820650326. D

**Question Number : 40 Question Id : 12820612747 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 3 Wrong Marks : 0**

If it takes 5 mL of 1.4 M NaOH to neutralize 150 mL of HCl with an unknown concentration, what was the original concentration of the acid?

- (a) 0.47 M
- (b) 0.047 M
- (c) 0.014 M
- (d) 0.041 M

**Options :**

12820650327. A

12820650328. B

12820650329. C

12820650330. D