CBRT - 2020
Question Paper Grid

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Subjects Associate Professor(Pharmaceutical Chemistry) ▼

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Associate Professor(Pharmaceutical Chemistry)

Itemcode : **CA1001**

Q1 : Which of the following has largest equilibrium constant for the formation of a cyanohydrin?

(a) Acetaldehyde
(b) Acetone
(c) Propanaldehyde
(d) Benzaldehyde
Key: **A**

Itemcode : **CA1002**

Q2 : Which of the following statements regarding mechanisms of elimination reaction is incorrect?

(a) The E2 mechanism generally occur under highly basic conditions.
(b) The E1 mechanism does not require a base
(c) The E2 mechanism is stereospecific.
(d) The E1cB mechanism is usually unimolecular in the rate determining step but leads to a second order rate law.
Key: **B**

Itemcode : **CA1003**

Q3 : o, m and p-xylenes can be differentiated on basis of proton decoupled 13C NMR spectra; since o, m and p-isomers of xylene exhibits _____ signals respectively-

(a) 4, 5, 3
(b) 3, 4, 5
(c) 5, 4, 3
(d) 4, 3, 5
Key: **A**

Itemcode : **CA1004**

Q4 : The proton on penultimate carbon in the carbon chain of 2-methyl-1-propanol shows a ____peak in high resolution pmr spectrum?

(a) Septet
(b) Quartet
(c) Quintet
(d) Nonet
Key: **D**

Itemcode : **CA1005**

Q5 : The cis-protons of cis-3-chloropropenoic acid exhibits coupling constant for the doublet peak at__

(a) 2 Hz
(b) 5 Hz
(c) 9 Hz
(d) 14 Hz
Key: **C**

Itemcode : **CA1006**

Q6 : β - Phellandrene shows strong absorption in UV region and the maxima calculated on application of Woodward -Fieser rule is at ___nm?

(a) 229 nm
(b) 247 nm
(c) 263 nm
(d) 273 nm
Key: **A**

Itemcode : **CA1007**

Q7 : In which type of projection are staggered and eclipsed conformations used?

(a) Wedge Projection
(b) Newman Projections
(c) Sawhorse Projection
(d) Fischer Projection
Key: **C**

Itemcode : **CA1008**

Q8 : Which of the following is known as Baker-Nathan effect?

(a) Hyperconjugation
(b) Mesomeric effect
(c) Inductive effect
(d) Electromeric effect
Key: **A**

Itemcode : **CA1009**

Q9 : The shape of carbocation is_____

(a) Pyramid
(b) Double Dumble
(c) Trigonal Planar
(d) Linear
Key: **C**

Itemcode : **CA1010**

Q10 : What is the correct order of nucleophilicity in the following process?

(a) $(CH_3)_2CO^- > CH_3^-$

(b) $CH_3CH_2CH_2O^- < (CH_3)_2CO^-$

(c) $CH_3S^- > CH_3SH$

(d) $(CH_3CH_2)_3N > (CH_3CH_2)_3P$

Key: **C**

Itemcode : **CA1011**

Q11 : Among the following compounds, what is the decreasing order of reactivity towards electrophilic substitution?
    I -Toluene
    II - Benzene
    III - Anisole
    IV - Benzotrifluoride

(a) III > I > II > IV
(b) IV > I > II > III
(c) II > III > II > IV
(d) I > III > II > IV
Key: **A**

Itemcode : **CA1012**

Q12 : The formal charge at Carbanion is _____

(a) +1
(b) -1
(c) 0
(d) +2
Key: **B**

Itemcode : **CA1013**

Q13 : Cut-off minimum wavelength for use of chloroform as solvent in UV spectroscopy is ____

(a) 190 nm
(b) 200 nm
(c) 220 nm
(d) 240 nm
Key: **D**

Itemcode : **CA1014**

Q14 : An auxochrome that causes hypsochromic shift is ____

(a) Amino group
(b) Hydroxyl group
(c) Chloro group
(d) Methyl group
Key: **C**

Itemcode : **CA1015**

Q15 : A characteristic ketene peak is generally observed in the infra-red spectrum at-

(a) 1720 cm^{-1}
(b) 1675 cm^{-1}
(c) 2150 cm^{-1}
(d) 1890 cm^{-1}
Key: **C**

Itemcode : **CA1016**

Q16 : 17α-Ethynyl-18-methyl-19-nortestosterone is -

(a) Ethynylestrol
(b) Mestranol
(c) Levonorgestrel
(d) Ethisterone
Key: **C**

Itemcode : **CA1017**

Q17 : β-carotene on symmetrical cleavage in presence of the enzyme β,β-carotene-15-15'-dioxygenase and α-tocopherol forms ?

(a) Retinal
(b) Retinol
(c) Retinoic acid
(d) β-Apocarotenal
Key: **A**

Itemcode : **CA1018**

Q18 : Vitamin E comprises of a basic nucleus of _____ to which a number of substituents and side chain is attached?

(a) Benzodihydropyran
(b) Benzodihydrofuran
(c) Benzopyran
(d) Benzofuran
Key: **A**

Itemcode : **CA1019**

Q19 : The corrin nucleus comprises of ____ number of Carbon atoms.

(a) 18
(b) 19
(c) 20
(d) 21
Key: **B**

Itemcode : **CA1020**

Q20 : C = O str of β-lactam ring is generally observed as peak in the infra-red spectrum of ampicillin around-

(a) 1825 cm^{-1}
(b) 1780 cm^{-1}
(c) 1745 cm^{-1}
(d) 1700 cm^{-1}
Key: **C**

Itemcode : **CA1021**

Q21 : Proscillaridin is a _____

(a) Cardenolide
(b) Bufadienolide
(c) Isocardienolide
(d) Isobufadienolide
Key: **B**

Itemcode : **CA1022**

Q22 : The hetero unit of Vitamin B$_9$ linked to p-aminobenozic acid is-

(a) Pteridyl
(b) Pyridyl
(c) Pyrazinyl
(d) Pyridazinyl
Key: **A**

Itemcode : **CA1023**

Q23 : Which among the following amino acid is essential for the biosynthesis of a Vitamin B$_3$ compound in liver?

(a) Leucine
(b) Threonine
(c) Tryptophan
(d) Lysine
Key: **C**

Itemcode : **CA1024**

Q24 : McLafferty's rearrangement in 3-methylbutanal yields a strong base peak in the mass spectrum at m/z of ?

(a) 86
(b) 58
(c) 44
(d) 42
Key: **C**

Itemcode : **CA1025**

Q25 : The carbonyl carbon of crotonaldehyde gives a peak in ^{13}C NMR spectrum at δ___ ppm.

(a) 114.3
(b) 139.2
(c) 152.9
(d) 192.2
Key: **D**

Itemcode : **CA1026**

Q26 : Which of the following drug block voltage dependent sodium channels at high firing frequencies to bring about antiepileptic action?

(a) Vigabatrin
(b) Lorazepam
(c) Felbamate
(d) Zonisamide
Key: **C**

Itemcode : **CA1027**

Q27 : Which of the following anticonvulsants, a tricyclic compound acts by modulation of voltage gated channels?

(a) Carbamazepine
(b) Phenytoin
(c) Zonisamide
(d) Vigabatrin
Key: **A**

Itemcode : **CA1028**

Q28 : This tricyclic drug, overall is a NE and 5-HT reuptake blocker with significant anticholinergic and sedative properties and an oxa congener of amitriptyline.

(a) Dothiepin
(b) Doxepin
(c) Nortriptyline
(d) Trimipramine
Key: **B**

Itemcode : **CA1029**

Q29 : In which of the following named reactions DEAD (Di Ethyl Azo Dicarboxylate) is used as a reagent?

(a) Mitsunobu reaction
(b) Michael addition
(c) Doebner Miller reaction
(d) Shapiro and Suzuki reaction
Key: **A**

Itemcode : **CA1030**

Q30 : Which of the following is not a type of covalently binding enzyme inhibitors?

(a) Rapid reversible inhibitors
(b) Affinity label
(c) Mechanism based inhibitors
(d) Pseudo irreversible inhibitors
Key: **A**

Itemcode : **CA1031**

Q31 : Which of the following is an example of a carrier linked tripartite prodrug?

(a) Becampicillin
(b) Carbenicillin sodium
(c) Chloramphenicol palmitate
(d) Sulfisoxazole diacetate
Key: **A**

Itemcode : **CA1032**

Q32 : In which of the following named reactions Tosylhydrazone is used as protecting group for alcohols and amines to obtain chemo selectivity in a multistep reaction?

(a) Sandmeyer reaction
(b) Dieckmann reaction

(c) Doebner Miller reaction
(d) Shapiro reaction
Key: **A**

Itemcode : **CA1033**

Q33 Which of the following antiviral agents does not act by inhibiting Reverse transcriptase?
:

(a) Abacavir
(b) Zidovudine
(c) Cytarabine
(d) Didanosine
Key: **D**

Itemcode : **CA1034**

Q34 Which of the following antiepileptic, a sulphonamide derivative inhibits T type Ca++ currents and like phenytoin delays
: the recovery of inactivated Na+ channels?

(a) Ethosuximide
(b) Zonisamide
(c) Gabapentin
(d) Lamotrigine
Key: **B**

Itemcode : **CA1035**

Q35 Which of the following is not a type of Stereoisomers
:

(a) Enantiomers
(b) Gauche
(c) Diastereomer
(d) Meso compounds
Key: **B**

Itemcode : **CA1036**

Q36 Which of the following name reactions does not yield homologues of quinoline?
:

(a) Doebner-miller synthesis
(b) Pfitzinger reaction
(c) Conrad-Limpach synthesis
(d) Chichibabin reaction
Key: **D**

Itemcode : **CA1037**

Q37 The number of signals in ^{13}C NMR spectra for 1-butanol, 2-butanol, t-butyl alcohol and isobutyl alcohol are_____
:

(a) 4, 3, 2, 4
(b) 4, 4, 3, 2
(c) 4, 4, 2, 3
(d) 4, 3, 2, 3
Key: **C**

Itemcode : **CA1038**

Q38 The high resolution pmr spectrum of n-butanol exhibits ____ split peak for the aldehyde proton?
:

(a) No
(b) Doublet
(c) Triplet
(d) Quartet
Key: **C**

Itemcode : **CA1039**

Q39 Typical value of coupling constant (J_{ab}) for Geminal system is ethylene is ____
:

(a) 12 H_z
(b) 2 H_z
(c) 7 H_z
(d) 15 H_z
Key: **B**

Itemcode : **CA1040**

Q40 Application of Woodward-Fieser Rule on α -Terpinene showed absorption maxima at-
:

(a) 232 nm
(b) 247 nm
(c) 273 nm
(d) 224 nm
Key: **C**

Itemcode : **CA1041**

Q41 : Acetone shows absorption peak in the UV spectrum at 274 nm attributed to which among the following transition band?

(a) R- band
(b) B - band
(c) E- band
(d) K- Band
Key: **A**

Itemcode : **CA1042**

Q42 : S-H str vibration peak of thiols is observed in the infra-red spectrum approximately around-

(a) 3400 cm^{-1}
(b) 3100 cm^{-1}
(c) 2900 cm^{-1}
(d) 2600 cm^{-1}
Key: **D**

Itemcode : **CA1043**

Q43 : The homolytic bond dissociation energy is inversely proportion to the _____

(a) Bond length
(b) Ease of formation
(c) Dipole moment
(d) Unit charge
Key: **B**

Itemcode : **CA1044**

Q44 : Fuming sulphuric acid is the solution of _____ % SO_3 in conc H_2SO_4.

(a) 10
(b) 9
(c) 8
(d) 7
Key: **D**

Itemcode : **CA1045**

Q45 : Which of the following is correct for alkyl halide?

(a) Alkyl halide will always show S_41 mechanism
(b) In unimolecular reaction, increasing the temperature do not favour E1 mechanism
(c) As branching at carbon increases, E1 mechanism is favoured as compared to S_N1 mechanism
(d) In most unimolecular reactions of alkyl halide E1 reaction is favoured over S_N1
Key: **C**

Itemcode : **CA1046**

Q46 : With which of the following can ethanoic anhydride not undergo a substitution reaction?

(a) NaCl in CH_3CO_2H
(b) Aqueous NaOH
(c) CH_3OH
(d) CH_3NH_2
Key: **A**

Itemcode : **CA1047**

Q47 : C = C str vibration in methylene cyclohexane is found at 1651 cm^{-1}, while for methylene cyclobutane, the C = C str vibration peak is found at-

(a) 1657 cm^{-1}
(b) 1690 cm^{-1}
(c) 1651 cm^{-1}
(d) 1645 cm^{-1}
Key: **B**

Itemcode : **CA1048**

Q48 : On hydrolysis Gitoxin yields Gitoxigenin and

(a) 1 molecule of Digitoxose
(b) 3 molecules of Digitoxose
(c) 1 molecule of Digitalose
(d) 3 molecules of Digitalose
Key: **B**

Itemcode : **CA1049**

Q49 : Nine carbon rich side chain of Retinol contains ___ number of unsaturated alkene units-

(a) 1
(b) 2
(c) 3
(d) 4
Key: **D**

Itemcode : **CA1050**

Q50 : The hetero unit of Vitamin B_9 linked to p-aminobenozic acid is ___

(a) Pteridyl
(b) Pyridyl
(c) Pyrazinyl
(d) Pyridazinyl
Key: **A**

Itemcode : **CA1051**

Q51 : Who is the author of 'Dreams of a Billion: India and the Olympic Games'?

(a) Ram Singh
(b) Nalin Mehta
(c) Chetan Bhagat
(d) Baggi Anveil
Key: **B**

Itemcode : **CA1052**

Q52 : How many commercial satellites have been launched by ISRO along with RISAT-2BR1?

(a) 7
(b) 9
(c) 10
(d) 12
Key: **B**

Itemcode : **CA1053**

Q53 : The National Unity Day is celebrated every year on which of the following date?

(a) October 31
(b) October 30
(c) October 29
(d) October 20
Key: **A**

Itemcode : **CA1054**

Q54 : The famous "Chatham Saw Mill" is located in which among the following states / union territories of India?

(a) Daman & Diu
(b) Goa
(c) Andaman & Nicobar
(d) Laskhadweep
Key: **C**

Itemcode : **CA1055**

Q55 : One kilobyte (KB) is equal to

(a) 1,000 bits
(b) 1,024 byte
(c) 1,024 megabytes
(d) 1,024 gigabytes
Key: **B**

Itemcode : **CA1056**

Q56 : The concentration of which gas is highest in our environment?

(a) Oxygen
(b) Hydrogen
(c) Nitrogen
(d) Carbon dioxide
Key: **C**

Itemcode : **CA1057**

Q57 : In which field of Art Jamini Roy make his name?

(a) Music
(b) Drama

(c) Sculpture
(d) Painting
Key: **D**

Itemcode : **CA1058**

Q58 Goa Shipyard Limited (GSL) was established in
:

(a) 1972
(b) 1957
(c) 1962
(d) 196
Key: **B**

Itemcode : **CA1059**

Q59 Which country produces the most rubber in the world?
:

(a) Vietnam
(b) Malaysia
(c) Thailand
(d) India
Key: **C**

Itemcode : **CA1060**

Q60 The venue for Summer Olympics in year 2020 is _____
:

(a) Paris
(b) Tokyo
(c) Qatar
(d) Sydney
Key: **B**

Itemcode : **CA1061**

Q61 In each of the following questions a statement is given, followed by two conclusions. Give answer :
:
   Statement : Today out of the world population of several thousand million, the majority of men have to live under governments which refuse them personal liberty and the right to dissent.

   Conclusion :
   I. People are indifferent to personal liberty and the right to dissent.
   II. People desire personal liberty and the right to dissent.

(a) Only conclusion I follows.
(b) Only conclusion II follows.
(c) Either I or II follows.
(d) Neither I or II follows.
Key: **B**

Itemcode : **CA1062**

Q62 Among Praveen, Pravat, Pankaj, Pratap, and Prakash, each having different weight, D is heavier than only A and C is
:   lighter than B and E. Who among them is the heaviest?

(a) Pravat
(b) Pankaj
(c) Prakash
(d) Data inadequate
Key: **C**

Itemcode : **CA1063**

Q63 From the following numbers given, find the one that does not below to the group.
:

(a) 215
(b) 143
(c) 247
(d) 91
Key: **A**

Itemcode : **CA1064**

Q64 QLR, JPD, RNU, GNC, SPX, DLB, ___
:

(a) ARE
(b) AJA
(c) BTU
(d) TRA
Key: **D**

Itemcode : **CA1065**

Q65 PKC, SPF, XSK, AXN, ___, IFV
:

(a) CAQ
(b) FCS
(c) FAS
(d) CFS
Key: **C**

Itemcode : **CA1066**

Q66 GTB, CYV, YDP, __, QND
:

(a) DIV
(b) UIJ
(c) DDV
(d) UVV
Key: **B**

Itemcode : **CA1067**

Q67 Here are some words translated from an artificial language.
:

godabim means kidney stones

romzbim means kidney beans

romzbako means wax beans

Which word could mean "wax statue"?

(a) godaromz
(b) lazbim
(c) wasibako
(d) romzpeo
Key: **C**

Itemcode : **CA1068**

Q68 Here are some words translated from an artificial language.
:

granamelke means big tree

pinimelke means little tree

melkehoon means tree house

Which word could mean "big house"?

(a) granahoon
(b) pinishur
(c) pinihoon
(d) melkegrana
Key: **A**

Itemcode : **CA1069**

Q69 Here are some words translated from an artificial language.
:

lelibroon means yellow hat

plekafroti means flower garden

frotimix means garden salad

Which word could mean "yellow flower"?

(a) lelifroti
(b) lelipleka
(c) plekabroon
(d) frotibroon
Key: **B**

Itemcode : **CA1070**

Q70 Here are some words translated from an artificial language.
:

myncabel means saddle horse

conowir means trail ride

cabelalma means horse blanket

Which word could mean "horse ride"?

(a) cabelwir
(b) conocabel
(c) almamyn
(d) conoalma
Key: **A**

Passage:

Read the following passage and answer the questions below

In the Roman times, defected enemies were generally put to death as criminals for having offended the emperor of Rome. In the middle ages, however, the practice of ransoming of returning prisoners in exchange for money became common. Though some saw this custom as a step towards a most humane society, the primary reasons behind it were economic rather than humanitarian.

In those times, rulers had only a limited ability to raise taxes. They could neither force their subject to fight nor pay them to do so. The promise of material compensation in the form of goods and ransom was therefore the only way of inducing combatants to participate in a war. In the middle ages, the predominant incentive for the individual soldiers was the expectation of spoils. Although collecting ransom clearly brought financial gain, keeping a prisoner and arrange for his exchange had its cost. Consequently, procedures were devised to reduce transaction costs.

One such device was a rule asserting that the prisoner had to assess his own value. This compelled the prisoner to establish a value without too much distortion; indicating too low a value would increase, the captive's chances of being killed, while indicating too high a value would either ruin him financially or create a prohibitively expensive ransom that would also result in death

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Itemcode : **CA1071**

Q71 It can be inferred from the passage that a medieval soldier
:

(a) was less likely to kill captured members of opposing armies than was a soldier of the Roman Empire
(b) was similar to a 20th century terrorist in that he operated on a basically independent level and was motivated solely by economic incentives
(c) had few economic options and chose to fight because it was the only way to earn an adequate living
(d) was motivated to spare prisoners' lives by humanitarian rather than economic ideals
Key: **A**

Itemcode : **CA1072**

Q72 Which of the following best describes the change in policy from executing prisoners in Roman times to ransoming
:   prisoners in the middle ages?

(a) The emperors of Rome demanded more respect than did medieval rulers and thus Roman subjects went to greater lengths to defend their nation
(b) it was a reflection of the lesser degree of direct control medieval ruler had over subjects
(c) It became a show of strength and honour warrior of middle ages to be able to capture and return their enemies
(d) Medieval soldiers were not as humanitarian as their ransoming practices might have indicated
Key: **B**

Itemcode : **CA1073**

Q73 The primary purpose of the passage is to
:

(a) discuss the economic basis of the medieval practice of exchanging prisoners for ransom
(b) examine the history of the treatment of prisoner of war
(c) emphasize the importance of a warrior's code of honour during the middle ages
(d) explore a way of reducing the cost of ransom
Key: **A**

Itemcode : **CA1074**

Q74 The author uses the phrase "without too much distortion" in order to
:

(a) Indicate that prisoners would fairly assess their worth
(b) emphasize the important role medieval prisoners played in determining whether they should be ransomed
(c) explain how prisoners often paid more than an appropriate ransom in order to increase their chances of survival
(d) suggest that captors and captives often had understanding relationships
Key: **A**

Itemcode : **CA1075**

Q75 Bring out the meaning of the word 'spoils' in the context of the passage.
:

(a) Destroys
(b) Ruins
(c) Rewards
(d) wastes
Key: **C**