

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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## M. Sc. (Industrial Chemistry) (Second Semester)

### EXAMINATION, July, 2022

#### ANALYTICAL TECHNIQUES (PART-B)

##### Paper Code

MSIC	2	0	3
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Questions Booklet  
Series

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Time : 1:30 Hours ]

[ Maximum Marks : 100

##### Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer any 75 questions in the OMR Answer-Sheet provided and not in the question booklet. If more than 75 questions are attempted by student, then the first attempted 75 questions will be considered for evaluation. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

##### परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को किन्हीं 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। यदि छात्र द्वारा 75 से अधिक प्रश्नों को हल किया जाता है तो प्रारम्भिक हल किये हुए 75 उत्तरों को ही मूल्यांकन हेतु सम्मिलित किया जाएगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।


(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

***(Only for Rough Work)***

1. In infrared spectroscopy, the pair of isomers, which cannot be distinguished is :  
 (A) cis-trans isomers  
 (B) functional isomers  
 (C) position isomers  
 (D) enantiomers
2. Water and alcohol are not suitable solvents for ESR studies because :  
 (A) they strongly absorb in microwave region  
 (B) they strongly absorb in radiowave region  
 (C) Both (A) and (B)  
 (D) None of the above
3. The frequency range of 9000—10000 MHz lies in the region :  
 (A) Visible  
 (B) Ultraviolet  
 (C) Microwave  
 (D) Infrared
4. Electron spin resonance spectroscopy is applicable to :  
 (A) Transition metal ions  
 (B) Transition metal complex  
 (C) Free radicals and biradicals  
 (D) All of the above
5. The most widely used standard reference substance in ESR is :  
 (A) 1, 1-diphenyl-2-picryl hydrazyl free radical  
 (B) TMS  
 (C) 1, 1-diphenyl-2-picryl hydroxyl free radical.  
 (D) All of the above
6. The value of gyromagnetic ratio  $g$  is equal to 2.0023 for :  
 (A) free radicals  
 (B) free electrons  
 (C) transition metal ions  
 (D) all species containing unpaired electrons
7. The klystron tube source produces radiation at a constant frequency of about :  
 (A) 5000 MHz  
 (B) 2000 MHz  
 (C) 9500 MHz  
 (D) 1000 MHz
8. For free radicals with a  $g$ -factor of about 2.0 a field of about ..... gauss is required for resonance with a source of radiation with a frequency of 9000 MHz.  
 (A) 1000  
 (B) 2000  
 (C) 3200  
 (D) 500

9. Hyperfine structure is the result of interaction of ..... and magnetic nuclei in the paramagnetic species.
- (A) paired electrons  
(B) unpaired electrons  
(C) pair and unpaired electrons  
(D) None of the above
10. Interaction of unpaired electrons with ..... equivalent protons produces five hyperfine lines.
- (A) 2  
(B) 6  
(C) 4  
(D) 8
11. Free radicals in ESR may be produced by the following important techniques :
- (A) prolysis and photolytic methods  
(B) absorption or alumina or zeolites  
(C) reduction on oxidation by chemical or electrolytic means  
(D) All of the above
12. Which of the following elements can be used as a target materials for X-ray tube ?
- (A) Cu  
(B) W  
(C) Ag  
(D) All of the above
13. Bragg's equation is :
- (A)  $\lambda = 2d \sin \theta$   
(B)  $n\lambda = d \sin \theta$   
(C)  $n\lambda = 2d \sin \theta$   
(D)  $n\lambda = 2 \sin \theta$
14. A diene has  $\lambda_{\max}$  at 175. The diene may be :
- (A) 1, 3-butadiene  
(B) 1, 4-pentadiene  
(C) 1, 3, 5-hexatriene  
(D) None of the above
15. Which of the following will exhibit  $\lambda_{\max}$  at longer wavelength ?
- (A)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH} = \text{CH}_2$   
(B)  $\text{CH}_2 = \text{CHCH}_2\text{CH}_2\text{CH} = \text{CH}_2$   
(C)  $\text{H}_2\text{C} = \text{CH} - \text{CH} = \text{CH} - \text{CH} = \text{CH}_2$   
(D)  $\text{H}_2\text{C} = \text{CH} - \text{CH} = \text{CH}_2$
16. The lowest energy transition in saturated aliphatic ketones around 280 nm is due to the transition :
- (A)  $n \rightarrow \pi^*$   
(B)  $n \rightarrow \sigma^*$   
(C)  $\pi \rightarrow \pi^*$   
(D) None of the above
17. The ESR frequency in a magnetic field of 25000 gauss, of  $g = 2$  and  $\beta = 9.273 \times 10^{-24} \text{ JT}^{-1}$  is :
- (A) 6000 MHz  
(B) 7000 MHz  
(C) 8000 MHz  
(D) 9000 MHz

18. Hypsochromic shift is caused due to :
- removal of conjugation and changing the polarity of solvent
  - addition of conjugation and changing the polarity of solvent
  - no change in conjugation and polarity of solvent
  - None of the above
19.  $\lambda_{\max}$  for  =  $\text{C} - \text{CH} = \text{CH} - \text{CH}_3$   
 $\quad \quad \quad |$   
 $\quad \quad \quad \text{CH}_3$
- is :
- 300 nm
  - 242 nm
  - 200 nm
  - 350 nm
20. Nitrogen rule applies to all covalent compounds containing :
- Phosphorous
  - Boron
  - Oxygen
  - All of the above
21. The intensities of fragments ions in the mass spectrum reflect :
- on the stability of the ion
  - on the energy relationship of the bond required and formed during the reaction leading to the ion
  - Both (A) and (B)
  - None of the above
22. Ions of high mass generally give more useful information than those of lower mass because :
- they are likely to have been formed via a simple rotational fragmentation
  - they are formed via a complex rotational fragmentation
  - formed by a simple or complex rotational fragmentation
  - None of the above
23. Cyclic structures give large parent peak in mass spectrum because :
- breaking of a bond produces the fragment
  - breaking of a bond does not necessarily produce the fragment
  - breaking of a bond does not produce or produces the fragment
  - None of the above
24. The coupling constant reaches its maximum for a dihedral angle of :
- $90^\circ$
  - $180^\circ$
  - $0^\circ$
  - $60^\circ$
25. Precessional frequency of the particle is given by the equation :
- $\nu = \frac{\gamma H_0}{2\pi}$
  - $\nu = \frac{\gamma H_0}{4\pi}$
  - $\nu = \frac{2\gamma H_0}{2\pi}$
  - $\nu = \frac{\gamma 2H_0}{\pi}$

26. X-rays due to transition from the L to the K-shell are called :
- $K_{\beta}$
  - $K_{\alpha}$
  - $K_{\gamma}$
  - None of the above
27. The continuous X-ray spectrum is characterised by :
- well defined, short wavelength limit
  - well defined, large wavelength limit
  - not defined, large wavelength limit
  - well defined short or large wavelength limit
28. The energy difference between L and K levels is significantly larger than between M and L levels. The K lines therefore appear at :
- shorter wavelength
  - longer wavelength
  - shorter and longer wavelength
  - All of the above
29. When a beam of electrons impinges on a target material, the electron in general slows down, due to :
- multiple interaction with the electron of target and energy lost is converted into continuous of X-radiation
  - Single interaction with the electron of target
  - Multiple interaction with the electron of target and gain of energy
  - All of the above
30. The molecular ion peak gives the ..... of the compound.
- atomic number
  - mass number
  - molecular weight
  - None of the above
31. As the amount of conjugation increases, the ability for a charge transfer transition to take place ..... .
- increases
  - decreases
  - increases and decreases
  - remains constant

32. Which of the following are important requirements of source units used for adsorption spectrometers ?
- (A) Emitted signals must be continuous radiation in the study range.
- (B) It must be stable.
- (C) Source must emit measurable signal throughout the region.
- (D) All of the above
33. Far ultraviolet or vacuum ultraviolet region generally lies between :
- (A) 300–500 nm
- (B) 400–750 nm
- (C) 10–200 nm
- (D) 200–400 nm
34. The energy required for various transitions follows the order of :
- (A)  $n \rightarrow \pi^* > \sigma \rightarrow \sigma^* > n \rightarrow \sigma^*$   
 $> \pi \rightarrow \pi^*$
- (B)  $\pi \rightarrow \pi^* > n \rightarrow \pi^* > \sigma \rightarrow \sigma^*$   
 $> n \rightarrow \sigma^*$
- (C)  $\sigma \rightarrow \sigma^* > n \rightarrow \sigma^* > \pi \rightarrow \pi^*$   
 $> n \rightarrow \pi^*$
- (D)  $\sigma \rightarrow \sigma^* > \pi \rightarrow \pi^* > n \rightarrow \sigma^*$   
 $> n \rightarrow \pi^*$
35.  $\sigma \rightarrow \sigma^*$  transitions require very ..... energy since  $\sigma$  bonds are ..... bonds.
- (A) high, strong
- (B) high, weak
- (C) low, strong
- (D) low, weak
36. Electronic transitions in organic molecules in majority of cases involve transition of :
- (A)  $\sigma$ -electrons
- (B)  $n$ -electrons
- (C)  $\pi$ -electrons
- (D) All of the above
37. The  $n$ -electrons undergoes the following types of transitions :
- (A)  $n \rightarrow \sigma^*, n \rightarrow \pi^*$
- (B)  $n \rightarrow \sigma, n \rightarrow \pi$
- (C) Both (A) and (B)
- (D) None of the above
38. .... law is the basis of X-ray spectrochemical analysis.
- (A) Moseley
- (B) Lambert's
- (C) Lambert's–Beer's
- (D) Beer's law

39. X-rays are generated by :
- Coolidge tube
  - Goniometer
  - Geiger tube
  - Rotameter
40. Collimators used in XRD are made up of :
- Thin quartz tube
  - Thin metal plates
  - Thin glass plates
  - All of the above
41. XRD provides ..... information about the compounds present in a solid sample.
- qualitative
  - quantitative
  - either qualitative or quantitative
  - both qualitative and quantitative
42. Using powder method of XRD, which of the following can be determined ?
- Percentage of  $\text{Na}^+$  and  $\text{Cl}^-$
  - Percentage of KBr and NaCl
  - Percentage of  $\text{K}^+$
  - Percentage of  $\text{Br}^-$
43. How many number of signals are expected in  $\text{H}_3\text{C} - \text{CH}_2 - \text{C}(\text{O}) - \text{NH}_2$  ?
- 3
  - 2
  - 4
  - 5
44. Which of the following nuclei have spin quantum number as odd integral multiple of  $\frac{1}{2}$  i.e.  $\frac{1}{2}, \frac{3}{2}, \frac{5}{2}$  etc ?
- $^{35}_{17}\text{Cl}$
  - $^{19}_9\text{F}$
  - $^{23}_{11}\text{Na}$
  - All of the above
45. Which of the following can be used as solvent for NMR spectroscopy ?
- Deutrochloroform
  - Methane
  - Water
  - Benzene
46. Write the number of signals and their multiplicities for the NMR spectrum of the compound  $\text{ClF}_2\text{C} - \text{CH}_2\text{Cl}$  ?
- One, triplet
  - Two, singlet
  - Two, triplet
  - None of the above



47. Out of the olefinic, aldehydic and aromatic protons, the decreasing deshielding has the order of :
- olefinic > aldehydic > aromatic
  - olefinic > aromatic > aldehydic
  - aldehydic > olefinic > aromatic
  - aromatic > olefinic > aldehydic
48. The NMR spectroscopy is useful for the detection of :
- Hydrogen bonding
  - Geometrical isomers
  - Aromaticity
  - All of the above
49. NMR is the study of absorption of ..... by nuclei in a magnetic field.
- IR radiation
  - Radioactive radiation
  - Microwaves
  - Radiofrequency radiation
50. Coupling causes the peaks in  $^1\text{H}$  NMR spectra to be split into :
- multiple peaks equal to the number of hydrogen on surrounding atoms
  - multiple peaks equal to the number of surrounding carbon atoms
  - multiple peaks equal to the number of hydrogen on surrounding atoms, plus one.
  - two peaks.
51. In NMR spectrum, the nuclei in up field resonate at :
- Low frequency
  - High frequency
  - Does not depend on chemical shift
  - It is constant throughout the spectrum
52. Signal splitting in NMR arises from :
- spin-spin decoupling
  - spin-spin coupling
  - shielding effect
  - deshielding effect
53. In proton NMR spectroscopy, hydrogen bonding results in :
- Peak splitting
  - Deshielding effect
  - Shielding effect
  - All of the above
54. Which of the following is not included in bending vibrations ?
- Twisting
  - Wagging
  - Stretching
  - Rocking

55. Pressed disk techniques for the sample preparation in IR spectroscopy involve the use of :
- Nujol
  - KBr
  - NaCl
  - All of the above
56. On which factor does the vibrational stretching frequency of diatomic molecule depend ?
- Atomic population
  - Temperature
  - Force constant
  - Magnetic field
57. What is the relation between wave number of IR absorption and the reduced mass ?
- Wave number is directly proportional to square of reduced mass.
  - Wave number is inversely proportional to reduced mass.
  - Wave number is directly proportional to reduced mass.
  - Wave number is independent of the reduced mass.
58. What is the number of vibrational degrees of freedom in  $C_6H_5CH_3$  ?
- 15
  - 18
  - 39
  - 40
59. What is the correct increasing order of stretching frequencies for  $C \equiv C$ ,  $C = C$  and  $C - C$  ?
- $C \equiv C < C - C < C = C$
  - $C \equiv C > C = C > C - C$
  - $C - C > C = C > C \equiv C$
  - $C - C > C = C < C \equiv C$
60. The  $C - H$  and  $O - H$  stretching occur at ..... frequencies than  $C - C$  and  $C - O$  stretching.
- lower
  - higher
  - same
  - All of the above
61. Mid-IR region mainly consist of :
- $4000-400\text{ cm}^{-1}$
  - $4000-100\text{ cm}^{-1}$
  - $400-100\text{ cm}^{-1}$
  - $14000-4000\text{ cm}^{-1}$

62. Overtones are mainly observed in :
- Mid-IR
  - Far-IR
  - Near-IR
  - Not in IR region
63. Which of the following absorb IR radiation ?
- Heteronuclear diatomic molecule
  - Homonuclear diatomic molecule
  - Both (A) and (B)
  - Diatomic molecule will not absorb IR
64. Which compound having molecular formula  $C_5H_{10}$  shows absorption at  $1380\text{ cm}^{-1}$  ?
- Cyclopentane
  - 2-methyl-1-butene
  - Pentyne
  - Methyl cyclobutane
65. Which of the following molecules will not show infrared spectrum ?
- $H_2$
  - HCl
  - $H_2O$
  - $CH_4$
66. Which of the following is not a composition of Nernst glower ?
- Oxides of Zirconium
  - Oxides of Yttrium
  - Oxides of Barium
  - Oxides of Thorium
67. Which of the following is not a technique for preparing solid samples in IR spectroscopy ?
- Solid run in solution
  - Thin films
  - Mull techniques
  - Solid films
68. In polarography the electroactive species will undergo :
- always oxidation
  - always reduction
  - adsorption
  - Either oxidation or reduction
69. The optimal range of potential scan applicable in polarography is :
- + 0.4 V to - 2.0 V
  - 0.4 V to - 10.0 V
  - + 10.0 V to - 2.0 V
  - 8.0 V to + 1.0 V
70. The current due to concentration gradient of electroactive species in polarography is :
- Residual current
  - Migration current
  - Diffusion current
  - Convection current

71. In polarography, DME is used as :
- Reference electrode
  - Polarizable electrode
  - Non-polarizable electrode
  - Gas electrode
72. Polarographic cells are not sensitive to which of the following gases ?
- Nitrous oxide
  - Carbon monoxide
  - Carbon dioxide
  - Oxygen
73. The current due to the supporting electrolyte is called :
- Residual current
  - Migration current
  - Diffusion current
  - None of the above
74. In which state of matter mass spectroscopy is being performed ?
- Solid
  - Liquid
  - Gaseous
  - Plasma
75. What is the main criteria on which mass spectrometer used for ?
- Composition in sample
  - Concentration of elements in the sample
  - Properties of sample
  - Relative mass of atoms
76. Which one of the following is used to bombard with the sample for which mass spectroscopy has been performed ?
- Protons
  - Electrons
  - Alpha particles
  - Neutrons
77. Which type of ionic species are allowed to pass through the slit and reach the collecting plate ?
- Positive ions of all masses
  - Positive ions of the specific mass
  - Negative ions of all masses
  - Negative ions of the specific mass
78. Which of the following compounds are polarographically active ?
- O-dinitrobenzene
  - Nitrobenzene
  - Benzophenon
  - All of the above
79. In which type of solution the most polarographic analysis are performed ?
- Aqueous
  - Organic
  - Both (A) and (B)
  - None of the above

80. McLafferty rearrangement ion peak in mass spectrum is usually basic peak for :
- Ketones
  - Aldehydes
  - Acids (straight chain)
  - All of the above
81. Following peaks are obtained in the mass spectrum of organic compound : m/e values 88 73 60(MR ion), 45 the organic compound should be :
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
  - $\text{CH}_3\text{CH}_2\text{COOCH}_3$
  - $\text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_3$
  - $\text{CH}_3\text{COOCH}_2\text{CH}_3$
82. In alkyl substituted hydrocarbons, the most abundant peak is observed at :
- at 65 due to  $\text{C}_5\text{H}_5^+$
  - 91 due to tropylium ion
  - m/e equal to molecular mass
  - All of the above
83. Which one is the most intense peak in the mass spectrum ?
- Base peak
  - Metastable ion
  - Both (A) and (B)
  - None of the above
84. The characteristic of metastable peaks are :
- do not necessarily occur at the integral m/e values
  - are much broader than normal peaks
  - are of relatively low abundance
  - All of the above
85. Which is the correct order of decreasing stability of the molecular ion peak ?
- Aromatics > Carboxylic acids > Alcohols > Ketones
  - Aromatics > Ketones > Carboxylic acids > Alcohols
  - Aromatics > Alcohols > Ketones > Carboxylic acids
  - Ketones > Aromatics > Alcohols > Carboxylic acids
86. An auxochrome is :
- extending conjugation
  - colour enhancer
  - a group or atom with lone pairs of electrons
  - All of the above
87. The ultraviolet radiation effect on organic compound causes :
- electronic transition
  - rotation in the molecule
  - bond vibration in the molecule
  - All of the above

88. Which of the following effects strongly affect the polarographic behaviour of organic functional group ?
- Resonance
  - Steric hindrance
  - Conjugative effect
  - All of the above
89. Mercury due to its ....., can be utilized as far as  $-1.8\text{V}$  in acid and  $-2.3\text{V}$  in basic medium.
- high overvoltage for hydrogen
  - low overvoltage for hydrogen
  - high overvoltage for oxygen
  - low overvoltage for oxygen
90. While studying keto-enolic tautomerism, the extension coefficient is much higher for :
- enolic form
  - ketonic form
  - not sure
  - same for both
91. An absorption band around  $170\text{-}190\text{ nm}$  is observed in unconjugated alkenes due to the transition :
- $n \rightarrow \sigma^*$
  - $n \rightarrow \pi^*$
  - $\sigma \rightarrow \pi^*$
  - $\pi \rightarrow \pi^*$
92. What is the  $\lambda_{\text{max}}$  of.
- $$\text{CH}_3 - \text{CH} = \text{CH} - \text{CH} = \text{CH} - \text{CH}_3$$
- $230\text{ nm}$
  - $227\text{ nm}$
  - $220\text{ nm}$
  - $215\text{ nm}$
93. Absorption spectra is a plot of :
- Absorbance vs. wavelength
  - % T vs. wavelength
  - Absorbance vs. concentration
  - % T vs. concentration
94. Two compounds A and B have molar absorptivity as  $1200$  and  $15,000\text{ mol lit}^{-1}\text{cm}^{-1}$  respectively. Which of the following statements is correct regarding them ?
- Compound B can be detected at very low concentration than compound A
  - Compound A can be detected at very low concentration than compound A
  - Molar absorptivity have no influence on the detection of compound.
  - Both compound can be detected at very dilute concentration.

95. Which of the following shows Bathochromic shift in polar solvent ?
- (A) Chloroform  
(B) Water  
(C) Ethanol  
(D) Ethylene
96. Which of the following detectors has fast response time ?
- (A) Photomultiplier tube  
(B) Phototube  
(C) Photodiode tube  
(D) Barrier layer cell
97. Which of the following expressions is false ?
- (A)  $A = 2 - \log (\% T)$   
(B)  $A = -\log T$   
(C)  $A = -\log \left( \frac{I_o}{I_t} \right)$   
(D)  $T = \frac{I_t}{I_o}$
98. A 0.01 M solution of a compound transmits 20% of the radiation in a container with path length equal to 1.5 cm. What is the molar extinction coefficient of the compound ?
- (A)  $46.598 \text{ M}^{-1} \text{ cm}^{-1}$   
(B)  $56.598 \text{ M}^{-1} \text{ cm}^{-1}$   
(C)  $50.126 \text{ M}^{-1} \text{ cm}^{-1}$   
(D)  $40.720 \text{ M}^{-1} \text{ cm}^{-1}$
99. Applying Woodward Fieser rules, the basic value of 215 nm is given to :
- (A) Six-membered cyclic ketone  
(B) Acyclic ketone  
(C)  $\alpha$ - $\beta$ -unsaturated aldehyde  
(D)  $\alpha$ - $\beta$ -unsaturated ester
100. The force constant of HF is listed at  $880 \text{ Nm}^{-1}$ . At what wave number is the fundamental  $\nu = 0 \rightarrow \nu = 1$  vibrational absorption expected ?
- (A)  $3000 \text{ cm}^{-1}$   
(B)  $3960.7 \text{ cm}^{-1}$   
(C)  $2500 \text{ cm}^{-1}$   
(D)  $4520.8 \text{ cm}^{-1}$

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the most correct/appropriate answer and mark the same in the OMR Answer-Sheet as per the direction :

**Example :**

**Question :**

Q. 1 (A) ☒ (B) (C) (D)

Q. 2 (A) (B) ☒ (C) (D)

Q. 3 (A) ☒ (B) (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

**Impt. :** On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही अथवा सबसे उपयुक्त उत्तर छोटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

प्रश्न 1 (A) ☒ (B) (C) (D)

प्रश्न 2 (A) (B) ☒ (C) (D)

प्रश्न 3 (A) ☒ (B) (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

**महत्वपूर्ण :** प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।