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Question Booklet Alpha Code

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Question Booklet Sl. No.

A

Total Number of Questions : 100

Time : 75 Minutes

Maximum Marks : 100

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four versions of Question Booklets with Question Booklet Alpha Code viz. **A, B, C & D**.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the Question Booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a Question Booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator **IMMEDIATELY**.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same alpha code.
6. The Question Booklet will be sealed at the middle of the right margin. Candidate should not open the Question Booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him/her contains all the 100 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the Question Booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices (**A**), (**B**), (**C**) and (**D**) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

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1. What is the actual weight of a body having mass 10 kg ?
A) 9.8 N B) – 9.8 N C) 98 N D) – 98 N
2. What is the velocity of Radio waves in free space ?
A) $3 \times 10^8 \text{ m.s}^{-1}$ B) $6 \times 10^8 \text{ m.s}^{-1}$ C) $1 \times 10^8 \text{ m.s}^{-1}$ D) $2 \times 10^8 \text{ m.s}^{-1}$
3. A half wave rectifier produces 80 watts output power when an a.c. power of 200 watts is applied as input. What is the rectification efficiency ?
A) 80% B) 40% C) 2.5% D) 25%
4. Which of the following electromagnetic radiation is used for producing crystal diffraction patterns ?
A) Visible light B) X-rays
C) Radio waves D) Infrared radiations
5. The self destruction of an unstabilised transistor by thermal run away is caused by
A) Emitter current B) Base current
C) Collector current D) All
6. Oscillator in an electronic circuit is used for
A) Energy conversion B) Energy production
C) Energy destruction D) No effect
7. Identify the reason for getting different colours in the case of oil spread over water.
A) Non-uniform thickness B) Non-uniform inclination
C) Non-uniform thickness and inclination D) None
8. Where do we find maximum cosmic ray intensity ?
A) Between poles and equator B) Equator
C) Geomagnetic poles D) Below sea level
9. Which is the main energy source of sun ?
A) Organic fuels B) Radiation from other galaxies
C) Fusion reaction D) Fission reaction

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10. Identify the weakest force.
- A) Weak nuclear force B) Strong nuclear force
C) Electromagnetic force D) Gravitational force
11. A particle is executing simple harmonic motion. What fraction of the total energy is kinetic, if the displacement is $1/2$ the amplitude ?
- A) $1/2$ B) 0 C) $1/8$ D) $3/4$
12. Which among the following is not the unit of time ?
- A) Parsec B) Millisecond
C) Lunar month D) Solar day
13. Which factor determines the difference between isothermal and adiabatic elasticity ?
- A) Ratio of velocities B) Ratio of densities
C) Ratio of specific heats D) Ratio of pressures
14. Most probable position of a particle in a box for $n = 1$ state is at
- A) $x = 0$ B) $x = L/4$ C) $x = L/2$ D) $x = 3/4 L$
15. How much energy is required to knock out an electron from the innermost orbit ?
- A) $13.6/2$ eV B) 13.6 eV C) 27.2 eV D) 0
16. Which observation led to the discovery of deuterium by Harold Urey in 1932 ?
- A) Difference in mass
B) Difference in wavelength
C) Difference in field effect
D) Difference in magnetic properties
17. Two charges ' $4e$ ' and ' e ' are separated by a distance ' a '. Where a third charge ' q ' should be placed to keep the equilibrium ?
- A) $a/3$ from e B) $a/2$ from e C) $a/4$ from e D) at e
18. Identify the quark having greatest rest mass.
- A) Strange B) Up C) Down D) Bottom

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41. Which of the following molecules have larger bond angle ?

- A) NF_3 B) PF_3 C) AsF_3 D) SbF_3

42. Among the following iso-electronic ions which have larger ionic radius ?

- A) N^{3-} B) O^{2-} C) F^- D) Na^+

43. Among the following compounds :

- (i) $\text{CH}_3 - \text{COOH}$
(ii) $(\text{CH}_3)_2\text{CH} - \text{COOH}$
(iii) $(\text{CH}_3)_3\text{C} - \text{COOH}$
(iv) $\text{H} - \text{COOH}$

The acidity order is

- A) (i) > (ii) > (iv) > (iii) B) (iv) > (i) > (ii) > (iii)
C) (iv) > (ii) > (i) > (iii) D) (ii) > (i) > (iii) > (iv)

44. Match the following :

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- (i) Lyman series
(ii) Paschen series
(iii) Balmer series
(iv) Pfund

B

- (i) Far Infra-red
(ii) Infra-red
(iii) Near Infra-red
(iv) Ultra-violet
(v) Visible

- A) (i) – (i), (ii) – (iii), (iii) – (iv), (iv) – (ii)
B) (i) – (iii), (ii) – (i), (iii) – (iv), (iv) – (ii)
C) (i) – (iv), (ii) – (ii), (iii) – (v), (iv) – (i)
D) (i) – (v), (ii) – (iv), (iii) – (iv), (iv) – (ii)

45. How many α and β particles are lost when ${}_{92}\text{U}^{238}$ is converted to ${}_{88}\text{Ra}^{226}$?

- A) 3α -particles and 2β -particles B) 2α -particles and 3β -particles
C) 1α -particle and 3β -particles D) 4α -particles and 3β -particles

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46. Packing fraction is related to
- A) Nuclear spin
B) Mass defect
C) Radioactivity
D) Atomic number
47. Which of the following is the correct order of bond dipole moment ?
- A) $C-Cl > C-Br > C-I$
B) $C-I > C-Br > C-Cl$
C) $C-Cl < C-I < C-Br$
D) $C-Br < C-I < C-Cl$
48. Among the following molecule which has the longest C-H bond length ?
- A) Ethene
B) Ethyne
C) Ethane
D) All have same C-H bond length
49. Trimethyl amine is a weaker base than dimethyl amine due to
- A) Inductive effect
B) Electromeric effect
C) Resonance effect
D) Steric effect
50. Identify an electrophile.
- A) SO_2
B) SO_3
C) NF_3
D) H_2O
51. Entropy is a measure of
- A) Heat content
B) Free energy
C) Enthalpy
D) Randomness
52. Diels-Alder reaction is an example of which type of reaction ?
- A) Electrophilic addition
B) Nucleophilic addition
C) Pericyclic reaction
D) Sigmatropic reaction
53. Compounds HCN and HNC are
- A) Tautomers
B) Metamers
C) Functional isomers
D) Conformers

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54. Baeyer's reagent is
- A) Aqueous KMnO_4 solution
 - B) 1% Alkaline KMnO_4 solution
 - C) Acidic KMnO_4 solution
 - D) Aqueous solution of KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$
55. The compound which does not show Friedel-Craft's reaction is
- A) Chlorobenzene
 - B) Toluene
 - C) Nitrobenzene
 - D) Phenol
56. Which of the following molecule can exhibit geometrical isomerism ?
- A) $\text{CH}_3 - \text{CH} = \text{CH}_2$
 - B) $(\text{CH}_3)_2\text{C} = \text{CH}_2$
 - C) $\text{CH}_3 - \text{CH} = \text{C}(\text{CH}_3)_2$
 - D) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$
57. The reagent which may be used to distinguish between starch and cellulose is
- A) Tollen's reagent
 - B) Iodine solution
 - C) Acetic anhydride
 - D) Fehling's solution
58. The polysaccharide on hydrolysis give only fructose is
- A) Cellulose
 - B) Amylopectin
 - C) Amylose
 - D) Inulin
59. Glucose and Mannose may be obtained by Kiliani synthesis from
- A) D-arabinose
 - B) D-xylose
 - C) D-ribose
 - D) D-lyxose
60. The oxides of nitrogen which is isoelectronic with CO_2 is
- A) NO
 - B) N_2O_2
 - C) NO_2
 - D) N_2O

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61. Gamma rays are
- A) Extremely small and fast moving particles of matter
 - B) High speed positrons
 - C) Electromagnetic radiations
 - D) High speed neutrons
62. Among the following which electromagnetic radiation has maximum wavelength ?
- A) Ultraviolet
 - B) Radio waves
 - C) X-rays
 - D) Infrared
63. The half-life period of a radioactive element is 140 days. After 560 days, one gram of the element will reduce to
- A) 1/2 g
 - B) 1/4 g
 - C) 1/8 g
 - D) 1/16 g
64. Splitting of spectral line when atoms are subjected to strong electric field is called
- A) Stark effect
 - B) Zeeman effect
 - C) Photoelectric effect
 - D) Decay
65. Which of the following has the largest atomic radius ?
- A) Li
 - B) K
 - C) Ra
 - D) Sr
66. Which among the following is the strongest acid ?
- A) HF
 - B) HCl
 - C) HBr
 - D) HI
67. Halogen which shows highest electropositive character is
- A) F
 - B) I
 - C) Cl
 - D) Br

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81. Which of the following is a computer code ?
A) UPS B) IEEE C) ASCII D) HTTP
82. What is FTP ?
A) File Translation Process B) File Transfer Process
C) Folder Transfer Protocol D) File Transfer Protocol
83. A computer can store data on all of the following devices except
A) Keyboard B) Floppy disk C) HDD D) CD-RW
84. Authentication of any electronic record by means of an electronic procedure is called
A) Two factor authentication B) Digital signature
C) Biometric authentication D) Cryptography
85. A markup language used for creating web pages and web applications
A) COBOL B) HTML C) PL/1 D) HTTP
86. Choose the output device.
A) Sensors B) Microphone C) Scanner D) Monitor
87. An attack that tricks people into providing sensitive information
A) Ransomware B) Adware C) Phishing D) DOS attack
88. A _____ is a network security system that uses rules to control incoming and outgoing network traffic.
A) Key logger B) Telnet C) Spyware D) Firewall
89. Section 66A of Information Technology Act, 2000 is concerned with
A) Preventing posting of harmful and offensive information
B) Preventing unauthorised access of computer resources
C) Controlling domain name service
D) Controlling internet service providers
90. Which of the following is a Cyber Crime ?
A) Testing B) Ethical hacking
C) Child grooming D) Debugging

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91. Indian Independence Act, 1947 granted what sort of status to India ?
A) Republic
B) Swaraj
C) Dominion
D) Poorna Swaraj
92. The principle of communal representation in India was first introduced in which Act ?
A) The Indian Council Act, 1909
B) The Indian Council Act, 1861
C) Government of India Act, 1935
D) Indian Council Act, 1892
93. Who said these words about Cripps Proposals : "Post-Dated cheque on a failing Bank" ?
A) Mahatma Gandhi
B) Sardar Patel
C) M. N. Roy
D) G. Ayyangar
94. Under which Act, Union Public Service Commission was formed ?
A) 1919 Act
B) 1909 Act
C) 1858 Act
D) 1935 Act
95. When the Constituent Assembly was formed ?
A) 1944
B) 1946
C) 1947
D) 1945
96. The emergency powers of the President are modelled on the Constitution from which country ?
A) U.S.A.
B) Germany
C) U.K.
D) South Africa
97. Powers, Privileges and Immunities of Parliament and its members are protected by
A) President
B) Speaker
C) Prime Minister
D) Election Commissioner
98. The final interpreter of the Constitution of India
A) Cabinet
B) President
C) Parliament
D) Supreme Court
99. Which Amendment Act lowered the voting age from 21 to 18 years ?
A) 61st
B) 64th
C) 65th
D) 60th
100. All disputes in connection with elections to Lok Sabha is submitted to
A) High Court
B) Supreme Court
C) Returning Officer
D) Election Commission

Space for Rough Work