

PROVISIONAL ANSWER KEY

NAME OF THE POST :

Scientific Officer (Physics) (ADE) (Advt. No. : 46/2016-17)

Date of Preliminary Test : 01/01/2017

Subject : Concerned Subject (Que. 101 to 300)

Upload Date : 03/01/2017

Objection shall be sent upto : 13/01/2017

101. What term usually describes a person who gains access to computer systems illegally?

(A) Breaker

(B) Hacker

(C) Con artist

(D) Shacker

102. An electron can never be found inside nucleus, this statement true according to:

(A) Heisenberg uncertainty principle

(B) Bernoulli's equation

(C) Bohr's model

(D) Both (A) & (B)

103. Nuclear Electron in atom are held in atom due to
 (A) coulombs force (B) force
 (C) atomic force (D) Both (A) & (B)
104. The light from a laser source is monochromatic because all the photons have
 (A) Same energy (B) Same phase.
 (C) Same amplitude (D) Are in same direction.
105. A technique to analyze frequency spectrum of the signal in speech recognition is:
 (A) Raman (B) UV
 (C) X-ray based technique (D) Fast Fourier transform
106. What is the first step for an investigator attempting to preserve glass evidence from a window in a structure?
 (A) Photograph it in detail.
 (B) Move it to the laboratory as soon as possible.
 (C) It is not worth preserving.
 (D) Immediately test for latent prints.
107. Foot prints recovered from crime scene can lead you to:
 (A) Stature of victim or culprit (B) Sex of the victim or culprit
 (C) Personal Identification (D) All of the above
108. are created when fingers touch against some material such as a newly painted surface.
 (A) Latent/invisible prints (B) Plastic prints
 (C) Contaminated/visible prints (D) Points
109. Which of the following does NOT use a 'Cryptographical Technique' to protect data?
 (A) the use of digital signatures
 (B) data encryption
 (C) the use of stored encrypted password files
 (D) using asymmetric keys at 'sender' and 'receiver' nodes
110. What causes a program to trigger damage under certain conditions?
 (A) A scavenger (B) A bomb
 (C) A trapdoor (D) A zapper
111. What characteristic makes the internet so attractive?
 (A) the 'secure' surroundings within which it is implemented
 (B) the ability to provide an open, easy-to-use network
 (C) it eliminates the need for firewalls
 (D) you don't require a fast computer to use the internet
112. The process of population inversion is to increase the number of atoms in the
 (A) Excited state. (B) Ground state.
 (C) Intermediate state. (D) Excited state and ground state.
113. Laser can be used in the
 (A) Fission Reaction (B) Polazeration
 (C) Thermo-Nuclear Fusion. (D) Production of white light

114. The life time of atoms in the excited state is normally
 (A) 10^8 sec (B) 10^3 sec
 (C) 10^5 sec (D) 10^2 sec
115. The oldest Central Forensic Science Laboratory in India was established at
 (A) Hyderabad (B) Kolkata
 (C) New Delhi (D) Chandigarh
116. The Following is a Regenerated Fiber.
 (A) Cotton (B) Artificial Silk
 (C) Rayon (D) Terrylene
117. Foot Prints On Snow may be casted by:
 (A) Plaster of Paris (B) Wax
 (C) Sulphur (D) Alumina
118. According to 4R rule, Radial Fractures on glass sheet initially appears on
 (A) Side Of Impact (B) Opposite side of impact
 (C) Both side (D) The edge
119. Cement prepared from raw materials free from iron oxide is called
 (A) White cement (B) Hardening cement
 (C) Colored cement (D) Low heat cement
120. The insoluble residue in the cement sample which are only analyzed in the forensic context are:
 (A) Silica and lime (B) Lime and magnesia
 (C) Magnesia and Silica (D) Alumina and Magnesia
121. A reliable evidence for sex determination is:
 (A) External Sexual Structures (B) Distribution of hair in the body
 (C) Sex hormones (D) Behavior of an individual
122. Locard's principle of exchange justifies:
 (A) Like should be compared with like (B) Unlike should compared with like
 (C) Feature identification (D) Individual characteristics verification
123. GSR is a acronym used for:
 (A) Gunshot residues (B) General scene reconstruction
 (C) Gun shoot range (D) Gun shoot recoil
124. In a car accident, the speed of vehicle can be tabulated from:
 (A) Pressure (B) Several scratches
 (C) Skid marks (D) V shape
125. A qualitative risk assessment is used to identify:
 (A) Vulnerabilities, threats, and countermeasures
 (B) Vulnerabilities, threats, threat probabilities, and countermeasures
 (C) Assets, risks, and mitigation plans
 (D) Vulnerabilities and countermeasures

126. An organization suffered a virus outbreak when malware was downloaded by an employee in a spam message. This outbreak might not have happened had the organization followed what security principle:
- (A) Heterogeneity (B) Fortress
(C) Integrity (D) Defense in depth
127. An intruder wishes to break in to an application in order to steal information stored there. Because the application utilizes strong authentication, what is the most likely approach the intruder will take?
- (A) Dictionary attack (B) Malicious code attack
(C) Application bypass attack (D) Password guessing attack
128. A computer programme that is designed to rapidly copy itself from one computer to another, leveraging some network medium like e-mail, TCP/IP, etc. is called
- (A) Computer worm (B) Trojan horse
(C) Trap door (D) Logic bomb
129. Writing a software that automates the process of repeatedly sending e-mail to a large number of recipients is called
- (A) Spoofing (B) Remailing
(C) Mail spamming (D) Stealing
130. The art of concealing messages to introduce secrecy in information security is known as
- (A) Cryptography (B) Pornography
(C) Steganography (D) Software piracy
131. The least dangerous malware which displays ads on your computer is
- (A) Adware (B) Spyware
(C) Virus (D) Worm
132. XSS attack where the injected script is permanently stored on the target servers is called
- (A) Stored XSS attack (B) Reflected XSS attack
(C) DOM based XSS attack (D) All the above
133. Stealing of cookies when the user follows a link sent by an attacker is due to
- (A) Reflected XSS attack (B) Stored XSS attack
(C) DOM based XSS attack (D) Both (A) & (C)
134. A mechanism to protect private networks from outside attack is called
- (A) Antivirus (B) Digital signature
(C) Firewall (D) Formatting
135. The rules complying with the collection of electronic evidence include:
- (A) Admissibility (B) Authenticity
(C) Complete and reliable (D) All the above
136. Which of the following is a social engineering technique?
- (A) Baiting (B) Phishing
(C) Diversion theft (D) All of the above

137. Buffer overflow, SQL injection, and stack smashing are examples of:
 (A) Vulnerabilities (B) Exploits
 (C) Input attacks (D) Injection attacks
138. Which of the analytical technique is based on Bragg's equation?
 (A) XRD (B) Raman
 (C) IR (D) Chromatography
139. Which of the following is used to determine the molecular mass of an organic molecule?
 (A) IR spectrum (B) Mass spectrum
 (C) Proton nmr spectrum (D) Absorption spectrum
140. Which type of scattering results in a longer wavelength than the incident light?
 (A) Rayleigh (B) Stokes
 (C) Antistokes (D) None
141. Which of these properties must change for a mode to be Raman active?
 (A) Polarizability (B) Dipole Movement
 (C) Density (D) Volume
142. Rugoscopy is the study of
 (A) Lip prints (B) Finger prints
 (C) Palatal prints (D) Foot prints
143. Anisotropic materials have
 (A) Single refractive index (B) Two or three principle refractive indices
 (C) No refractive index (D) None of the above
144. Dermatoglyphics is the study of
 (A) Palmer creases (B) Friction ridges
 (C) Flexion ridges (D) All of these
145. In differential scanning calorimetry, the following are recorded:
 (A) Differences in temperature (B) Differences in light
 (C) Differences in energy (D) Differences in frequency
146. Speaker recognition can be best performed by:
 (A) Auditory Analysis (B) Frequency Analysis
 (C) Voice Spectrographic analysis (D) All of the above
147. A fundamental frequency is represented as :
 (A) F_1 (B) F_0
 (C) F_2 (D) None of the above
148. happens when exposure to high temperatures and rates of heating causes the surface tensile strength of concrete masonry or brick to decay resulting in mechanical forces within the material.
 (A) Craze (B) Depth of char
 (C) Alligatoring (D) Spalling

149. A mass spectrum is a plot of relative abundance versus
 (A) Mass to charge ratio (B) Energy to mass ratio
 (C) Charge to mass ratio (D) Mass to energy ratio
150. The spectroscopic technique which involves illumination of a sample of interest with primary X-rays accompanied by release of secondary X-rays characteristic to the sample is known as
 (A) X-ray emission spectroscopy (B) X-ray fluorescence spectroscopy
 (C) X-ray diffraction (D) X-ray absorption spectroscopy
151. The inert gas used in electrode less discharge lamp in AAS technique is:
 (A) Ne (B) Ar
 (C) He (D) Xe
152. The microscope which produces 2- dimensional images of a sample by detecting primary electrons transmitted from the sample is called
 (A) Simple microscope (B) TEM
 (C) Compound microscope (D) Phase contrast microscope
153. The advantages of TEM over SEM are
 (A) Higher resolution (B) High magnifying power
 (C) Electron beam passes through the sample (D) All the above
154. A microscope used for side by side comparison is known as
 (A) Simple microscope (B) Compound microscope
 (C) Comparison microscope (D) Fluorescent microscope.
155. Encrypted Security Payload (ESP) is an extension that provides
 (A) Stability (B) Extension
 (C) Reliability (D) Confidentiality
156. Which threat is your Web application susceptible to if a user can pass specially crafted input that invokes semantic control codes?
 (A) Injection (B) Insecure direct object references
 (C) Failure to restrict URL access (D) Insufficient transport layer protection
157. Which control construct can be used to perform an SQL injection attack?
 (A) Single quote (') (B) Null (\0) byte
 (C) Less than sign(<) (D) Greater than sign(>)
158. Laboratories seek accreditation from the:
 (A) Home Office (B) Foreign Bodies
 (C) NABL (D) NAAC
159. Corroborative evidence is the term used for:
 (A) Evidence which supports other evidence
 (B) Rejection of evidence
 (C) Evidence that associates certain characteristics
 (D) All of the above
160. What do you mean by corpus delict?
 (A) Essence of crime (B) Place of crime
 (C) Type of crime (D) Person committing crime

161. The national database for identification of fingerprints is:
 (A) IBIS (B) BDAS
 (C) AFIS (D) NJIS
162. RDX belongs to family
 (A) Cyclo-tri methylene-tri amines (B) Cyclo-di amine
 (C) Cyclo amine (D) Cyclo dimethyl di amines
163. What kind of signals are used in speaker recognition?
 (A) Acoustic Radiations (B) Electromagnetic radiations
 (C) Electric Signals (D) Radar Radiation
164. What will be path of the Bullet if fired in vacuum at an angle of 90 degree?
 (A) Parabolic (B) Curvy
 (C) Straight line (D) Upwards
165. Drill marks well defined as:
 (A) Single action striation mark (B) Compression mark
 (C) Repeated action striation mark (D) Mixed marks
166. The resistance of series resistor required to limit the current through a LED (Light Emitting Diode) to 20 mA with a forward voltage drop of 1.6 V when connected to a 10 V supply?
 (A) 120 Ω (B) 220 Ω
 (C) 320 Ω (D) 420 Ω
167. A photo-diode is exposed to light with an illumination of 2.5 mW/cm². If the sensitivity of the photo-diode for the given conditions is 37.4 $\frac{\mu A}{mW} / cm^2$, the reverse current through the device is:
 (A) 83.5 mA (B) 93.5 μA
 (C) 83.5 μA (D) 93.5 mA
168. The characteristic X-ray emission is accompanied by:
 (A) α -particle emission (B) Electron emission
 (C) Positron emission (D) K-electron capture
169. The element for which absorption coefficient is larger for a given wave length in X-ray is
 (A) Lithium (B) Lead
 (C) Copper (D) Aluminium
170. In laser, the relative band width $\frac{\Delta \nu}{\nu}$ varies directly with:
 (A) Directionally (B) Intensity
 (C) Coherence (D) Non-monochromaticity
171. Rootkits can be difficult to detect because:
 (A) They are encrypted
 (B) They are polymorphic
 (C) They reside in ROM instead of the hard drive
 (D) They use techniques to hide themselves

172. A user, Aman, has posted a link on a web site that causes unsuspecting users to transfer money to Bill if they click the link. The link will only work for users who happen to be authenticated to the bank that is the target of the link. This is known as:
- (A) Cross site request forgery (B) Cross-site scripting
(C) Broken authentication (D) Replay attack
173. Which threat can occur when a Web application fails to validate a client's access to a resource?
- (A) Injection (B) Cross-site scripting
(C) Insecure direct object reference (D) Cross-site request forgery
174. The Superblock is required for
- (A) Description of the basic size and shape of this file system.
(B) This is the inode number of the first inode in the file system.
(C) The number of free blocks in the file system
(D) All of the above
175. A computer running the Windows operating system has nearly exhausted available physical memory for active processes. In order to avoid exhausting all available memory, what should the operating system begin doing?
- (A) Swapping (B) Paging
(C) Killing old processes (D) Running the garbage collector
176. The innermost portion of an operating system is known as:
- (A) Kernel (B) Core
(C) Ring (D) Process
177. The size of packets in an ATM network is:
- (A) 53 bytes (B) 1500 bytes
(C) 1544 bytes (D) Variable, from 64 to 1500 bytes
178. The d.c. resistance of a crystal diode is its a.c. resistance
- (A) the same as (B) more than
(C) less than (D) none of the above
179. Stature of an individual is approximately times of foot length of a person
- (A) 6.5 (B) 8.2
(C) 7.5 (D) 5.9
180. Human hair when examined under microscope will reveal
- (A) Thick cortex and thin medulla (B) Thin cortex and thick medulla
(C) Cortex and medulla with equal thickness (D) None of the above
181. The annealing temperature for ordinary glass is
- (A) 200° F to 350° F (B) 100° F to 250° F
(C) 500° F to 650° F (D) 850° F to 900° F
182. Two glass fragments can be compared with the help of :
- (A) Physical matching (B) Refractive index
(C) Density gradient tube (D) All of the above

183. Indication of Blue colour shows the Presence of particles in the GSR?
 (A) Lead (B) Nitrate
 (C) Nitrite (D) Antimony
184. LPC stands for:
 (A) Light particle component (B) Least Programming component
 (C) Line prediction composites (D) Linear predictive coding
185. The darkness of wave form of speech samples reflects :
 (A) Time (B) Fundamental Frequency
 (C) Amplitude (D) Intensity
186. Which of the following is most deshielded protons?
 (A) CH₃Cl (B) CH₃I
 (C) CH₃Br (D) CH₄
187. What is the splitting pattern of the methylene protons in propane?
 (A) Doublet (B) Triplet
 (C) Quartet (D) Septet
188. Energy passing through unit area is
 (A) Intensity of x-ray (B) Frequency of x-ray
 (C) Wavelength of x-ray (D) Amplitude of x-ray
189. X-rays are filtered out of human body by using
 (A) Cadmium absorbers (B) Carbon absorbers
 (C) Copper absorbers (D) Aluminium absorbers
190. If fast moving electrons rapidly decelerate, then rays produced are
 (A) alpha rays (B) beta rays
 (C) gamma rays (D) x-rays
191. Striagraphy an instrumental technique; is best used to examine:
 (A) Bite marks (B) Skid marks
 (C) Tool marks (D) Ligature marks
192. A best example for, compressed tool marks is:
 (A) Firing pin (B) Wrench
 (C) Knife (D) Needle
193. The control soil sample for matching the incriminated soil sample of foot print should be collected from
 (A) Foot print itself (B) About 2-3 inches away from foot print
 (C) About 1 feet away from foot print (D) More than 1 feet away from the spot
194. The Cross Section of Human Male beard Hair is
 (A) Elliptical Shape (B) Triangular Shape
 (C) Circular Shape (D) Oval Shape
195. A laser diode normally emits
 (A) Coherent light (B) Monochromatic light
 (C) Coherent and monochromatic light (D) Neither coherent nor monochromatic light

196. The ripple factor of a half-wave rectifier is
- (A) 2 (B) 1.21
(C) 2.5 (D) 0.48
197. What are the two mechanisms of breakdown in a p-n junction?
- (A) Bending and folding breakdown (B) Avalanche and Zener breakdown.
(C) Band banding (D) Zero bias banding
198. Photo diode is used for detection of
- (A) visible light (B) invisible light
(C) no light (D) Both (A) and (B)
199. Determine the values of A, B, C and D that make the sum term $\overline{A} + B + \overline{C} + D$ equal to zero
- (A) A = 1, B = 0, C = 0, D = 0 (B) A = 1, B = 0, C = 1, D = 0
(C) A = 0, B = 1, C = 1, D = 0 (D) A = 1, B = 0, C = 1, D = 1
200. Sensitivity in terms of signal, is defined as:
- (A) Ability of receiver to amplify weak signal
(B) Ability to reject unwanted signals
(C) Ability to convert incoming signal into Image Frequency
(D) Ability to reject noise
201. Who first used the term nanotechnology and when?
- (A) Eric Drexler, 1986 (B) Sumio Iijima, 1991
(C) Norio Taniguchi, 1974 (D) Richard Feynman, 1959
202. How many oxygen atoms lined up in a row would fit in a one nanometer space?
- (A) 1nm (B) One
(C) Seven (D) Seventy
203. The thermal stability of a nano tube is seen up to K in air.
- (A) 100 (B) 1000
(C) 2000 (D) 3100
204. In the structure of fullerene each carbon atom forms covalent bonds with other carbon atoms.
- (A) one (B) two
(C) three (D) four
205. In building procedures, Curing means
- (A) Preserves the properties of concrete (B) Prevents the loss of water by evaporation
(C) Reduces the shrinkage of concrete (D) All
206. Construction joints are provided by
- (A) Where the member is supported by the other member
(B) At 18m apart in huge structures
(C) In concrete wall at sill level of windows
(D) All

207. Separation of the coarse aggregate from mortar is called
 (A) Bleeding (B) Segregation
 (C) Compaction (D) none of the these
208. Which of the following statements is *least accurate* regarding the preservation of shoe/footwear evidence?
 (A) Plaster of Paris is not often used to cast impressions.
 (B) About 2 pounds of dental stone and 12 ounces of water are needed to cast a shoe impression.
 (C) The first step in casting is the preparation of the impression.
 (D) Dental stone is never used in casting impressions.
209. All of the following affect the quality of latent prints except
 (A) The surface on which the print is deposited.
 (B) The nature of the material contaminating the print
 (C) Physical or occupational defects of the person making the print.
 (D) The necessary points of individuality
210. All of the following conclusions can be established from hair evidence *except*....
 (A) The direct identity of the guilty party.
 (B) The area of the body from which the hair came.
 (C) The manner in which the hair was removed.
 (D) Whether the hair was bleached or dyed.
211. Which of the following methods can most effectively be used to prevent logical breach of security?
 (A) operating system and other system software
 (B) computer architectural design
 (C) distributed systems design
 (D) network design
212. An organization is surplussing its old desktop computers. Being concerned with data remanence, what measures should the organization take first?
 (A) Erase the hard drives (B) Format the hard drives
 (C) Activate its TEMPEST shielding (D) Clear the computers' RAM
213. What is the best defense against social engineering?
 (A) Spyware filters (B) Firewalls
 (C) Data leakage protection (DLP) (D) Security awareness training
214. Potential energy source for inducing fusion reaction is
 (A) x-ray (B) laser
 (C) ultraviolet (D) microwave
215. Principle of laser is
 (A) spontaneous absorption (B) simulated emission
 (C) induced emission (D) Both (B) and (C)
216. In normal population, the number of atoms in the
 (A) Excited state is more. (B) Ground state is more
 (C) Equal in ground state and excited state (D) Ground state is zero

217. The ratio of speed of light in vacuum to the speed of light in a particular medium is known as the medium's
- (A) Retention time (B) Birefringence
(C) Polarization (D) Refractive index
218. How many normal modes of vibrational are possible for a benzene molecule?
- (A) 6 (B) 12
(C) 15 (D) 30
219. Which one from the following statements is FALSE about the NMR experiment?
- (A) The energy required to flip the spin of a proton is in the infrared region of the electromagnetic spectrum.
(B) The energy difference between the two spin states depends on the strength of the magnetic field.
(C) When energy absorption occurs, the nuclei are said to be in resonance with the electromagnetic radiation.
(D) When a proton is aligned with the magnetic field, its energy is lower than when it is aligned against the magnetic field.
220. Determine the values of A,B,C and D that make the sum term $A+B+C+D$ equal to zero and OR gate with schematic "bubbles" on its Inputs performs the same functions as a(n) gate
- (A) NOR (B) OR
(C) NOT (D) NAND
221. Which type of gate can be used to add two bits?
- (A) Ex-OR (B) Ex-NOR
(C) Ex-NAND (D) NOR
222. The storage element for a static RAM is the
- (A) Diode (B) Resistor
(C) Capacitor (D) Flip-flop
223. Which of the following is not a basic Boolean operation?
- (A) OR (B) NOT
(C) AND (D) FOR
224. For quality control of Portland cement, the test essentially done is
- (A) Tensile Strength (B) Setting Time
(C) Soundness (D) All
225. The type of lime used in lime concrete is:
- (A) Fat lime (B) Poor Lime
(C) Slaked Lime (D) Hydraulic lime
226. The usual proportion of ingredients in reinforced cement concrete is
- (A) Portland cement (1 part), clean sand (2 to 4 parts) and coarse aggregate (1 to 2 parts)
(B) Portland cement (1 part), clean sand (1 to 2 parts) and coarse aggregate (2 to 4 parts)
(C) Portland cement (1 part), clean sand and coarse aggregate (2 to 4 parts)
(D) None of the above

227. Blast furnace slag cement
 (A) Develops low heat of hydration (B) Has less early strength
 (C) Develops high heat of hydration (D) Both (A) and (B)
228. Hydration of cement is due to the chemical action of water with
 (A) dicalcium silicate (B) tricalcium silicate
 (C) tricalcium aluminate (D) all of these
229. When an external magnetic field is applied to a magnetic field, what happens to the protons in the sample?
 (A) All protons align with the field
 (B) All proton align opposite to the field.
 (C) All proton assume a random orientation
 (D) Some proton align with the field and some align opposite.
230. Which of the following compounds has the MOST deshielded methyl protons?
 (A) Tetramethylsilane (B) Methyl fluoride
 (C) Methanol (D) Methyl amine
231. Which is typically the longest :
 (A) Bit (B) Byte
 (C) Nibble (D) Word
232. Convert the following octal number to binary.
 104_8
 (A) 001000100_2 (B) 100000001_2
 (C) 0010100_2 (D) 1000001_2
233. The base of the hexadecimal system is:
 (A) Eight (B) Sixteen
 (C) Ten (D) Two
234. The Indian standard code specifies that the crushing strength for which the mix should be designed in the laboratory should be
 (A) 1.25 (B) 1.5
 (C) 2 (D) 2.5
235. Magnification power of light microscope is
 (A) 1500X (B) 2000X
 (C) 1000X (D) 2500X
236. Li nucleus has three protons and four neutrons. Mass of Li is 7.0.6005 a.m.u., Mass of proton is 1.007277 a.m.u. and Mass of neutron is 1.008665 a.m.u. Mass defect of Lithium nucleus in a.m.u. is:
 (A) 0.4050 a.m.u. (B) 0.04052 a.m.u.
 (C) 0.04055 a.m.u. (D) 0.04048 a.m.u.
237. ${}_6\text{C}^{12}$ absorbs an energetic neutron and emits a β -particle. The resulting nucleus is:
 (A) ${}_7\text{N}^{14}$ (B) ${}_6\text{C}^{13}$
 (C) ${}_7\text{N}^{13}$ (D) ${}_7\text{B}^{13}$

238. The noise margin for a standard TTL gate is
 (A) 1.0 V (B) 0.4 V
 (C) 1.4 V (D) 0.8 V
239. In the differential amplifier circuit, which of the following terminals are connected together?
 (A) Bases (B) Emitters
 (C) Collectors (D) One base to another collector
240. The 2's complement of the number 1101101 is
 (A) 0101110 (B) 0111110
 (C) 0110010 (D) 0010011
241. The binary equivalent number of the octal number 132_8
 (A) 1101110 (B) 1011010
 (C) 1010110 (D) 1011001
242. DeMorgan's first theorem shows the equivalence of
 (A) OR gate and Exclusive OR gate. (B) NOR gate and Bubbled AND gate.
 (C) NOR gate and NAND gate. (D) NAND gate and NOT gate
243. Efficiency of the full wave rectifier is
 (A) 40.6% (B) 81.2%
 (C) 42.6% (D) 85.25%
244. Microscopes that are will remain nearly focused after the low power objective lens is changed to the high power objective lens.
 (A) Monocular (B) Parcentered
 (C) Parfocal (D) Properly adjusted
245. A microscope has a 4x ocular lens and a 10x objective, what is this microscope's total magnification
 (A) 4x (B) 14x
 (C) 40x (D) 400x
246. Besides silica, the main constituent of Gypsum soil is
 (A) Calcium carbonate (B) Calcium sulphate
 (C) Ferric oxide (D) Aluminium oxide
247. Arrange in Sequence :
 Soil Examination can be done by following methods:
 (i) Mineral Analysis
 (ii) Density determination
 (iii) Color Examination
 (iv) Enzymatic analysis
 Codes :
 (A) (i), (iv), (iii) and (ii) (B) (iii), (ii), (i) and (iv)
 (C) (ii), (i), (iii) and (iv) (D) (iv), (ii), (iii) and (i)
248. Heat Resistant Glass contains more Silica (75%- 80%) and upto 15% :
 (A) Lead Oxide (B) Aluminium Oxide
 (C) Boron Trioxide (D) Magnesium oxide

249. Which of the following material can be used for casting the detailing of tool marks?
 (A) Plaster Of Paris (B) Plasticine
 (C) Wax (D) Woodsmetal
250. Which of the following microscopy techniques relies on the specimen interfering with the wavelength of light to produce a high contrast image without the need for dyes or any damage to the sample?
 (A) Conventional bright field light microscopy
 (B) Phase contrast microscopy
 (C) Electron microscopy
 (D) Fluorescence microscopy
251. All of the following are examples of special stain except:
 (A) Ziehl-Neelsen acid-fast stain (B) Endospore stain
 (C) Flagellar stain (D) Negative stains
252. X-ray is an:
 (A) Electronic Magnetic Radiation (B) Elastic Wave
 (C) Stress wave (D) None
253. Which of the following wavelength fall in the range of X-ray:
 (A) 0.1A (B) 1A
 (C) 10A (D) 100A
254. For the production of X-ray target material should have?
 (A) High Conductivity (B) Medium Conductivity
 (C) Low Conductivity (D) Non-conductor
255. X-ray with low Penetrating power are called?
 (A) Hard X-ray (B) Soft X-ray
 (C) Both (D) None
256. Frequency of K series X-ray lines than that of L series X-ray line is
 (A) Greater (B) Lower
 (C) Zero (D) None
257. Which of the analytical technique is more suitable for the identification purpose?
 (A) MS (B) GC
 (C) TLC (D) Paper chromatography
258. The characteristic feature of any form of Chromatography is:
 (A) Use of molecules that are soluble in water.
 (B) Use of mobile and stationary phase.
 (C) Use of an inert carrier gas
 (D) Using Rf value to determine the compound
259. Which of the following is most suitable gas to use as a carrier gas in gas chromatography?
 (A) Methane. (B) Helium
 (C) Oxygen (D) Carbon dioxide

260. A new youth drink contains Sugar, Salt, Alcohol and Vitamin C. A gas chromatogram could be used to determine the:
- (A) Concentration of all ingredients in the drink
 (B) Alcohol and sugar content only.
 (C) Alcohol, sugar and vitamin C content only.
 (D) Alcohol content only.
261. Which of the following is used to determine the elemental content?
- (A) AAS (B) EDXRF
 (C) AES (D) All
262. Which of the following is the non-destructive technique?
- (A) EDXRF (B) C-Scan
 (C) Microscopy technique (D) All
263. Origin of X-ray is due to the process of
- (A) Ionization (B) Inner orbital transition
 (C) Bremsstrahlung (D) None
264. The abbreviation 'FMJ' used for bullets stands for
- (A) Full movement jet (B) Full metal jacket
 (C) Free movement jacket (D) Free mining jest
265. INSAS stands for
- (A) Indian Small Arms System (B) Indonesia Small Arms System
 (C) Infantry Small Arms System (D) Indian Semi-auto System
266. An ideal powder should produce smoke
- (A) Minimum (B) Maximum
 (C) Stable (D) All of the above
267. A firearm, which uses trombone action for loading & unloading is known as
- (A) Bolt Action (B) Lever Action
 (C) Repeaters (D) Hammer Action
268. Recoil is measured by?
- (A) Galvanometer (B) Dynamometer
 (C) Densitometer (D) Micrometer
269. A journey of projectile ends at
- (A) Target (B) Firearm
 (C) GSR (D) Ricochet
270. Electromagnetic waves are
- (A) Longitudinal.
 (B) Transverse.
 (C) Both longitudinal and transverse.
 (D) None of the above.

271. An electromagnetic wave is radiated by a straight wire antenna that is oriented vertically. What should be the orientation of a straight wire receiving antenna? It should be placed
- (A) Vertically.
 (B) Horizontally and in a direction parallel to the wave's direction of motion.
 (C) Horizontally and in a direction perpendicular to the wave's direction of motion.
 (D) None of the above.
272. An electromagnetic wave is traveling to the east. At one instant at a given point its E vector points straight up. What is the direction of its B vector?
- (A) North (B) Down
 (C) East (D) South
273. Which of the following correctly lists electromagnetic waves in order from longest to shortest wavelength?
- (A) Gamma rays, ultraviolet, infrared, microwave
 (B) Microwaves, ultraviolet, visible light, gamma rays
 (C) Radio waves, infrared, gamma rays, ultraviolet
 (D) Television, infrared, visible light, X-rays
274. What is the wavelength of light waves if their frequency is 5.0×10^{14} Hz?
- (A) 0.60 m (B) 6.0 mm
 (C) 0.060 mm (D) 0.60 micro-m
275. Match the following :
- | List – I | List – II |
|----------------|--|
| (P) Glass | (i) Complex mixture of diverse particles. |
| (Q) Soil | (ii) In the chip form. |
| (R) Paint | (iii) Two surfaces come in contact with force. |
| (S) Tool marks | (iv) Quite brittle and easily broken. |
- Codes :
- (A) (P) - (i), (Q) - (ii), (R) - (iii), (S) - (iv) (B) (P) - (iv), (Q) - (i), (R) - (ii), (S) - (iii)
 (C) (P) - (ii), (Q) - (iii), (R) - (iv), (S) - (i) (D) (P) - (iii), (Q) - (iv), (R) - (i), (S) - (ii)
276. Mohs scale developed by German Mineralogist, Friedrich Mohs in 1822 can be used in the analysis of glass for measuring :
- (A) Hardness (B) Refractive index
 (C) Density (D) Thickness
277. Foot prints on wooden floor may be collected by
- (A) Electrostatic method (B) Plaster of paris
 (C) Sulphur (D) All of the above
278. The Wave Like Fracture in glass Sheet is found by
- (A) Impact (B) Bullet Penetration
 (C) Heat (D) Compression

279. Cheiloscopy is the study of
 (A) Iris Print (B) Earprint
 (C) Lip print (D) Bite Mark
280. is a super cooled liquid which has attained so high viscosity as to be considered as solid.
 (A) Plastics (B) Glass
 (C) Acrylic fiber (D) Rayon
281. Rifling marks on fired bullet are of the following type :
 (A) Cut marks (B) Compression marks
 (C) Striation marks (D) Integrated marks
282. Which of the following statements is most accurate regarding blood evidence?
 (A) Laboratory examination alone can determine the identity of the person from which the sample was drawn.
 (B) Laboratory examination can determine the presence of all illnesses.
 (C) It is acceptable to lock blood evidence in trunks during warm weather.
 (D) Laboratory examination can determine a person's blood type.
283. is any impression, cut, gouge, or abrasion made when a tool comes into contact with another object.
 (A) Freehand forgery (B) Striations
 (C) Tool mark (D) Fracture match
284. A study of speech sounds within the language or different languages is termed as:
 (A) Phonology (B) Phonetics
 (C) Sociolinguistics (D) Dialectology
285. Section 23 of evidence act deals with:
 (A) Relevance of admission in civil cases
 (B) Relevance of oral evidence as to the contents of documents
 (C) Relevance of oral admissions as to the contents of electronic evidence
 (D) None of the above
286. When searching for human remains, what type of search is the most beneficial and thorough?
 (A) Aerial Photography (B) Metal detection
 (C) Line Searches (D) Ground penetration
287. Level 2 Details in Fingerprinting, does not Include.
 (A) Dots (B) Bifurcation
 (C) Line Searches (D) Ridge Width
288. The method of ionization of a vaporized sample in a mass spectrometer by electron bombardment is called
 (A) Field Ionization (B) Electron Ionization
 (C) Chemical Ionization (D) All the above
289. Hammer Marks well explained as
 (A) Striation Marks (B) Cut Marks
 (C) Compression Marks (D) None of the Above

290. Match The Following.

LIST-1

- (P) Wool
(Q) Nylon
(R) Cotton
(S) Asbestoss

LIST-2

- (i) Plant Fibre
(ii) Mineral Fibre
(ii) Synthetic Fibre
(iv) Animal Fibre

Codes :

- (A) (P) - (i), (Q) - (iv), (R) - (iii), (S) - (ii) (B) (P) - (ii), (Q) - (iv), (R) - (i), (S) - (iii)
(C) (P) - (iv), (Q) - (iii), (R) - (i), (S) - (ii) (D) (P) - (iv), (Q) - (ii), (R) - (iii), (S) - (i)

291. Match the instruments with the material analysed :

LIST-1

Instrument

- (P) Electron Microscope
(Q) Electrophoresis
(R) GLC
(S) Comparison Microscope

LIST-2

Material

- (i) Bullet
(ii) Alcohol
(iii) Hair
(iv) Blood

Codes :

- (A) (P) - (iii), (Q) - (iv), (R) - (ii), (S) - (i) (B) (P) - (i), (Q) - (ii), (R) - (iv), (S) - (iii)
(C) (P) - (ii), (Q) - (i), (R) - (iii), (S) - (iv) (D) (P) - (iv), (Q) - (iii), (R) - (ii), (S) - (i)

292. X-ray diffraction can be seen in crystal grating as the lattice constant is

- (A) Comparable to be wavelength to the wavelength of light
(B) Greater than the wavelength of light
(C) Both (A) & (B)
(D) None

293. All electromagnetic waves travel through a vacuum at

- (A) The same speed.
(B) Speeds that are proportional to their frequency.
(C) Speeds that are inversely proportional to their frequency.
(D) None of the above

294. In hair growth, the telogen phase may last upto

- (A) one hundred days (B) six months
(C) two years (D) six years

295. Match the following

List – I

- (P) Single action striation mark
(Q) Punch mark
(R) Repeated action tool marks
(S) Cutting mark of wire

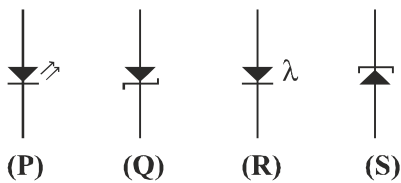
List – II

- (i) Hammer
(ii) Pliers
(iii) Screw drive
(iv) Drill

Codes :

- (A) (P) – (iii), (Q) – (ii), (R) – (i), (S) – (iv) (B) (P) – (iii), (Q) – (i), (R) – (iv), (S) – (ii)
(C) (P) – (iv), (Q) – (iii), (R) – (i), (S) – (ii) (D) (P) – (ii), (Q) – (iv), (R) – (i), (S) – (iii)

296. In ICP-MS, the ICP torch serves as a
 (A) Ionizer (B) Atomizer
 (C) Both (A) & (B) (D) Detector
297. According to the Beer Lambert's law, the absorbance of an analyte is directly proportional to
 (A) Transmittance (B) Frequency
 (C) Concentration (D) Power
298. The region of 400 nm - 800 nm corresponds to:
 (A) UV-A region (B) UV-B region
 (C) Visible region (D) IR region
299. Nernst glower is an example of source of radiation of
 (A) IR light (B) UV light
 (C) X-rays (D) Visible light
300. Which symbol is correct for an LED?



- (A) (P) (B) (Q)
 (C) (R) (D) (S)

