

PROVISIONAL ANSWER KEY

NAME OF THE POST:

1).Assistant Director Physics Class-I Advt:-116/2016-17(ALH)

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Note:

- 1). All Suggestions are to be sent with reference to website published Question paper with Provisional Answer Key Only.
- 2). All Suggestions are to be sent in the given format only.
- 3). Candidate must ensure the above compliance

101. The degree of mechanical analysis (DMA), quantity measures \_\_\_\_\_.  
 (A) Modulus. (B) Damping.  
 (C) Viscoelastic behaviour. (D) All of the above.
102. LVDT stands for \_\_\_\_\_.  
 (A) Linear Variable Differential Transformer.  
 (B) Linear Viscos Differential Thermometer.  
 (C) Least Variant Differential Transformer.  
 (D) Low Variant Differential Thermometer.
103. A typical DSC cell uses a \_\_\_\_\_ disk as the primary means of transferring heat to the sample.  
 (A) Ni-ti (B) Cu-Ni  
 (C) Cu-Si (D) Si-ti
104. Ten gram of ice at  $0^\circ$  is added to a beaker containing 30 grams of water at  $25^\circ$  C. What is the final temperature of the system when it comes to thermal equilibrium? (The specific heat of water is 1 Cal/gm/ $^\circ$ C and latent heat of melting of ice is 80 cal/gm).  
 (A)  $0^\circ$  C (B)  $7.5^\circ$  C  
 (C)  $12.5^\circ$  C (D)  $-1.25^\circ$  C
105. A random walker takes a step of unit length in a positive direction with probability  $2/3$  and a step of unit length in the negative direction with probability  $1/3$ . The mean displacement of the walker after n step is \_\_\_\_\_.  
 (A)  $n/8$  (B)  $2n/3$   
 (C)  $n/3$  (D) 0
106. A particle is in the ground state of an infinite square well potential given by,  
 $V(x) = \begin{cases} 0 & \text{for } -a \leq x \leq a \\ \infty & \text{otherwise} \end{cases}$   
 The probability to find the particle in the interval between  $-a/2$  and  $a/2$  is  
 (A)  $1/2$  (B)  $1/2 + 1/\pi$   
 (C)  $1/2 - 1/\pi$  (D)  $1/\pi$
107. A hydrogen atom is in the 6g state, what is the energy of the atom?  
 (A)  $E_6 = -\frac{ke^2}{72a_0}$  (B)  $E_6 = -\frac{kv}{72mv^2}$   
 (C)  $E_v = -\frac{n^2vm}{72ke^2}$  (D)  $E_v = -\frac{-6kv}{72m^2v^2}$

108. Group I contains elementary excitations in solids. Group II gives the associated field with these excitations. Match the excitation with their associated field and select your answer as per codes given below.

**Group I**

- (P) Phonon  
(Q) Plasmon  
(R) Polaron  
(S) Polariton

**Group II**

- (i) Photon + lattice vibration  
(ii) Electron + elastic deformation  
(iii) Collective electron oscillations  
(iv) Elastic wave

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

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

109. Electronic Spectra of stable molecules corresponds to \_\_\_\_\_ wave-number range.

- (A)  $10^6 \text{ cm}^{-1}$  and above.  
(C)  $10^8 - 10^2 \text{ cm}^{-1}$

- (B)  $10^5 - 10^6 \text{ cm}^{-1}$   
(D)  $10^{12} \text{ cm}^{-1}$  and above.

110. Ultraviolet visible region corresponds to \_\_\_\_\_ type of transitions.

- (A) Electronic transitions involving valence electrons.  
(B) Nuclear transitions.  
(C) Vibrational of molecules.  
(D) Transitions involving inner shell electrons.

111. Match the phases in Group I and Group II and identify the correct option.

**Group I**

- (a) ESR - Electron spin Resonance.  
(b) NMR - Nuclear Magnetic Resonance  
(c) Transition between vibration states of a molecule.  
(d) Electronic transition.

**Group II**

- (i) Radio frequency.  
(ii) Visible range.  
(iii) Microwave.  
(iv) Far-IR.

- (A) (a-iii), (b-i), (c-iv), (d-ii)  
(C) (a-vi), (b-i), (c-iii), (d-ii)

- (B) (a-ii), (b-iii), (c-iv), (d-i)  
(D) (a-i), (b-ii), (c-iv), (d-iii)

112. The molecule  $^{17}\text{O}_2$  is \_\_\_\_\_ .

- (A) Raman active but not NMR active.  
(B) Only NMR active.  
(C) IR and Raman active but not NMR active.  
(D) Raman and NMR active.

113. A laser operating at 500nm is used to excite a molecule. If the stokes lines is observed at  $770 \text{ cm}^{-1}$ , the approx. positions of the stokes and anti-stokes lines are

- (A) 481.45 nm and 520 nm  
(C) 500 nm and 520 nm

- (B) 481.5 nm and 500 nm  
(D) 500 nm and 600 nm

114. The ratio of intensities of the D<sub>1</sub> and D<sub>2</sub> lines of sodium at high temperature is  
 (A) 2:3 (B) 1:2  
 (C) 1:3 (D) 1:1
115. Of the following term symbols of the np<sup>2</sup> atomic configurations <sup>1</sup>S<sub>0</sub>, <sup>3</sup>P<sub>0</sub>, <sup>3</sup>P<sub>1</sub>, <sup>3</sup>P<sub>2</sub> and <sup>1</sup>P<sub>2</sub>. Which is the ground state.  
 (A) <sup>3</sup>P<sub>0</sub> (B) <sup>1</sup>S<sub>0</sub>  
 (C) <sup>3</sup>P<sub>2</sub> (D) <sup>3</sup>P<sub>1</sub>
116. Calculate the fermi energy in electron volt for sodium assuming that it has one free electron per atom. Given density of sodium = 0.97gcm<sup>-3</sup>, atomic weight of sodium is 23.  
 (A) 3.541 ev (B) 3.451ev  
 (C) 5.135ev (D) 3.145ev
117. Oxygen has nuclear spin of 5/2. The NMR of oxygen gas gives  
 (A) 2 lines (B) 3 lines  
 (C) 4 lines (D) 6 lines
118. A mass 'm' is released from height 'H'. Find the hamilton characteristic I<sup>n</sup> of the system.  
 (A)  $\int \sqrt{2m (E - mg^2)^{1/2}} dz$  (B)  $\int \sqrt{2m (E + mg^2)^{1/2}} dz$   
 (C)  $\int \sqrt{2m (E - mg^2)} dz$  (D)  $\int \sqrt{2m (E + mg^2)} dz$
119. When the Director, Deputy.Director, Assistant Director of the forensic science laboratory are summoned by the court, he may depute any officer conversant with the case. This provisions are made under:  
 (A) section 291, Cr.P.C. (B) section 293, Cr.P.C.  
 (C) section 295, Cr.P.C. (D) section 297 Cr.P.C.
120. Analysis of organic constituents of soil can be accomplished with the help of following instrumentation technique.  
 (A) AAS (B) NAA  
 (C) HPLC (D) SEM
121. The present day percussion lock type firearms are the result of the initial discoveries made by  
 (A) Remington (B) Smith and Wesson  
 (C) James Forsyline. (D) Webley and Scott
122. Out of the following , which of the following follows the principle of vibrational spectroscopy  
 (A) Raman (B) NAA  
 (C) NMR (D) All of these

123. Newton activation analysis method was systematically described by  
 (A) Martin and Syngé (B) Piobert and Pascal  
 (C) Clarke and Overman (D) Henry and Pascal
124. Ascertain (A) : A final sketch of the crime scene should be recorded as the scene of occurrence  
 Reason(R) : It would maintain the authenticity of crime scene and record the crime scene.  
 (A) Both A and R are correct. (B) A is correct but R is incorrect.  
 (C) A is incorrect but R is correct. (D) Both A and R are incorrect.
125. Screening test are best performed for  
 (A) Definite identification. (B) Quantitative analysis.  
 (C) Semi Quantitative analysis. (D) Tentative Identification.
126. Cordite, Modified Cordite and Ballistae are types of  
 (A) Black powder (B) TNT  
 (C) PETN (D) Double base powder
127. If you recover a Cartridge Case from Crime Scene on examination, no ejector marks were found. Which would be the possible source of firearm.  
 (A) Carbine (B) Revolver  
 (C) Service rifle (D) Shot gun
128. Diameter of LG Pellet is \_\_\_\_\_ inch.  
 (A) 0.25 inch (B) 0.35 inch  
 (C) 0.40 inch (D) 0.67 inch
129. The term hertzian cone refers to  
 (A) Arson. (B) fiber.  
 (C) Glass Fracture. (D) soil.
130. A EDXRF Instrument can analyze the following.  
 (A) Bullet. (B) Saliva.  
 (C) Urine. (D) All of the above.
131. Which of the following is incorrect for virtual memory?  
 (A) Large programs can be written. (B) more 1/0 is required.  
 (C) more addressable memory available. (D) Faster and easy swapping process.
132. Which of the following is not the type of sequential logic circuits?  
 (A) Event Driven (B) Triggered Driven  
 (C) Clock Driven (D) Pulse Driven

133. 8085 microprocessor has \_\_\_\_\_ hardware interrupts.  
 (A) 5 (B) 7  
 (C) 2 (D) 9
134. In UNIX, processes that have finished execution but have not yet had their status collected are known as  
 (A) sleeping process (B) orphan process  
 (C) zombie process (D) stalled
135. A memory management system has 64 pages with 512 bytes page size. Physical memory consists of 32 page frames, No. of bits required in logical and physical address respectively are :  
 (A) 14 and 15 (B) 15 and 14  
 (C) 14 and 29 (D) 16 and 32
136. The instrument efficiency is defined as:  
 (A) the ability of the instrument to read the smallest input change  
 (B) The ratio of the measured quantity of full scale to the power taken by the instrument  
 (C) the ratio of the change in the output signal to the change in input signal  
 (D) the ability of the system to reproduce the output in the same form as the input
137. A hardware that create sound from a mathematical representation is known as \_\_\_\_\_  
 (A) Set top box (B) Stampers  
 (C) Synthesizer (D) Speakers
138. MIDI stands for  
 (A) Musical instrument digital interface (B) Mixer instrument digital image  
 (C) Mixer input data interface (D) Musical input data interface
139. Which of the following relates to standard resolution of videos  
 (A)  $640 \times 360$  (B)  $720 \times 535$   
 (C)  $640 \times 576$  (D)  $720 \times 380$
140. HDTV stands for  
 (A) High definition telegraphic video  
 (B) High definition television  
 (C) Harmonic dynamic telegraphic visualization  
 (D) High differential telephonic video
141. Compression are formed where air pressure is \_\_\_\_\_  
 (A) Higher (B) Lower  
 (C) Normal (D) Zero

142. The sound that the larynx produces is a  
 (A) Vector (B) Harmonic  
 (C) Phoned (D) All of the above
143. The basic principle of aerodynamic theory is based on the \_\_\_\_\_  
 (A) Myoelastic law (B) Newtons law  
 (C) Bernoulli energy law in fluids (D) Viscose energy law in aviation
144. An output device that uses words or message recorded on a magnetic medium to produce audio response  
 (A) Magnetic tapes (B) Voice response unit  
 (C) Voice recognition (D) Voice band
145. VOT stands for  
 (A) Voiceless onset terminology (B) Voiceless outburst of the term  
 (C) Voice outreach term (D) Voice onset time
146. The period of holding a tone on breath with moderate efforts is as  
 (A) Maximum phonation time (B) Voiceless articulation  
 (C) Predominant breathing (D) None of these
147. Wernicke's area is \_\_\_\_\_  
 (A) Posterior part of the outer auditopsychic region  
 (B) Anterior part of larynx  
 (C) Surface structure of vocal cords  
 (D) Sub glottal structure
148. Capturing rate of the high speed motion camera has \_\_\_\_\_ per frames per second.  
 (A) More than 250 frames per second (B) More than 150 frames per second  
 (C) More than 75 frames per second (D) More than 25 frames per second
149. Isoparametric tones have  
 (A) Same fundamental frequency (B) Same sound  
 (C) Same basic sound (D) All of the above
150. A popular, trained statistical model used for speech recognition system is \_\_\_\_\_  
 (A) Hidden Markov Model  
 (B) Maximum likelihood linear regression model  
 (C) Gaussian Aerodynamic model  
 (D) Finite Transducer model

151. In a typical regular harmonic if a vocal fundamental frequency is 100 cycles per second. What would be the value of third harmonic  
(A) 200 cycles per second (B) 300 cycles per second  
(C) 500 cycles per second (D) 700 cycles per second
152. A colour encoding system of the analogue television is known as \_\_\_\_\_  
(A) Phase alternating line (B) Phase contrast line  
(C) Intensity (D) None of these
153. The first NTSC was developed in the year \_\_\_\_\_.  
(A) 1953 (B) 1941  
(C) 1974 (D) 1958
154. Of the following are examples of real security and privacy risks EXCEPT:  
(A) hackers. (B) spam.  
(C) viruses. (D) identity theft.
155. A process known as \_\_\_\_\_ is used by large retailers to study trends.  
(A) data mining (B) data selection  
(C) POS (D) data conversion
156. \_\_\_\_\_ terminals (formerly known as cash registers) are often connected to complex inventory and sales computer systems.  
(A) Data (B) Point-of-sale (POS)  
(C) Sales (D) Query
157. A(n) \_\_\_\_\_ system is a small, wireless handheld computer that scans an items tag and pulls up the current price (and any special offers) as you shop.  
(A) PSS (B) POS  
(C) inventory (D) data mining
158. A software package to implement a data base is  
(A) System analysis (B) DBMS  
(C) DASD (D) Command-driven
159. Which of the following is NOT one of the four major data processing functions of a computer?  
(A) gathering data (B) processing data into information  
(C) analyzing the data or information (D) storing the data or information
160. \_\_\_\_\_ tags, when placed on an animal, can be used to record and track in a database all of the animals movements.  
(A) POS (B) RFID  
(B) PPS (D) GPS



161. Surgeons can perform delicate operations by manipulating devices through computers instead of manually. This technology is known as:  
(A) robotics. (B) computer forensics.  
(C) simulation. (D) forecasting.
162. Technology no longer protected by copyright, available to everyone, is considered to be:  
(A) proprietary. (B) open.  
(C) experimental. (D) in the public domain.
163. Name of the first guided weapon in the world which used a programmable digital computer.  
(A) Tomhawk Missile (B) MK 46 Torpedo  
(C) Sting Ray Torpedo (D) Air-Launched Cruise Missile
164. \_\_\_\_\_ is data that has been organized or presented in a meaningful fashion.  
(A) A process (B) Software  
(C) Storage (D) Information
165. The name for the way that computers manipulate data into information is called:  
(A) programming. (B) processing.  
(C) storing. (D) organizing.
166. The traces of use of microprocessors in the calculators was first developed by  
(A) Intel Corpn & Texas Instruments (B) Dell Corporations  
(C) HP Ltd & Instrument (D) Daisy wheel
167. A data recovery computer program developed by smart projects, a belgian company is known as  
(A) Shareware (B) Isobuster  
(C) Diskware (D) Multibuster
168. Which of the following 4-bit's numbers equals it 2's complement?  
(A) 1010 (B) 0101  
(C) 1000 (D) No such number exists
169. Which of the following memories is not possible  
(A) 10 - bit address, 12 - bit cell size, 1024 cells  
(B) 9 - bit address, 8 - bit cell size, 1024 cells  
(C) 11 - bit address, 1024 - bit cell size, 1024 cells  
(D) None of the above
170. In the memory hierarchy the fastest memory is  
(A) SRAM (B) Cache  
(C) Registers (D) DRAM

171. DMA module can communicate with CPU through  
 (A) Interrupt (B) Cycle stealing  
 (C) Branch Instruction (D) None of the above
172. The term 'MODULA' best refers to :  
 (A) Low - Level Language (B) Machine Language  
 (C) Assembly Language (D) Programming Language
173. What is required when more than one person uses a central computer at the same time?  
 (A) Light Pen (B) Mouse  
 (C) Digitizer (D) Terminal
174. The number of flipflops needed to construct a binary modulo N counter is  
 (A) N (B)  $2^N$   
 (C)  $N^2$  (D)  $\log_2 N$
175. Given is a  $256 \times 4$  RAM chips, how many similar chips are required to provide a memory capacity of 1 KB of RAM  
 (A) 1 (B) 8  
 (C) 4 (D) None of the above
176. The components that process data are located in the:  
 (A) input devices. (B) output devices.  
 (C) system unit. (D) storage component.
177. All of the following are examples of input devices EXCEPT a:  
 (A) scanner. (B) mouse.  
 (C) keyboard. (D) printer.
178. An association of several structure of a database can be expressed graphically by?  
 (A) Tuple (B) Record  
 (C) Field (D) Relationship
179. Hamming distance is:  
 (A) theoretical way of screening errors  
 (B) technique of assigning codes to set items  
 (C) technique of optimizing intermediate code  
 (D) none of the above
180. The \_\_\_\_\_, also called the brains of the computer, is responsible for processing data.  
 (A) motherboard (B) memory  
 (C) RAM (D) central processing unit (CPU)

181. The CPU and memory are located on the:  
(A) expansion board. (B) motherboard.  
(C) storage device. (D) output device.
182. Word processing, spreadsheet, and photo-editing are examples of:  
(A) application software. (B) system software.  
(C) operating system software. (D) platform software.
183. When you see a page fault on your computer screen, what would be the probable reason?  
(A) When the page is not in the memory  
(B) When the page is in the memory but process stops  
(C) When the process enters the blocked state  
(D) When the page is in the ready state
184. System software is the set of programs that enables your computer's hardware devices and \_\_\_\_\_ software to work together.  
(A) management (B) processing  
(C) utility (D) application
185. The PC (personal computer) and the Apple Macintosh are examples of two different:  
(A) platforms. (B) applications.  
(C) programs. (D) storage devices.
186. Apple Macintoshes (Macs) and PCs use different \_\_\_\_\_ to process data and different operating systems.  
(A) languages (B) methods  
(C) CPUs (D) storage devices
187. Servers are computers that provide resources to other computers connected to a:  
(A) network. (B) mainframe.  
(C) supercomputer. (D) client.
188. Smaller and less expensive PC-based servers are replacing \_\_\_\_\_ in many businesses.  
(A) supercomputers (B) clients  
(C) laptops (D) mainframes
189. \_\_\_\_\_ are specially designed computers that perform complex calculations extremely rapidly.  
(A) Servers (B) Supercomputers  
(C) Laptops (D) Mainframes
190. DSL is an example of a(n) \_\_\_\_\_ connection.  
(A) network (B) wireless  
(C) slow (D) broadband

191. The difference between people with access to computers and the Internet and those without this access is known as the:  
 (A) digital divide. (B) Internet divide.  
 (C) Web divide. (D) broadband divide.
192. Revolver was invented by?  
 (A) S.Colt (B) Col. Kenz  
 (C) D. Kolt (D) Co. Goddard
193. Multiple Barrel Pistols are known as?  
 (A) Sniper (B) Rifle  
 (C) Derringers (D) Carbine
194. What is the muzzle velocity of INSAS Rifle?  
 (A) 900m/sec (B) 150 m/sec  
 (C) 1300 m/sec (D) 2200 m/sec
195. Which of the following organs would most likely be injured by a stab wound to the 6<sup>th</sup> intercostals space in the mid axillaries line on the right side?  
 (A) Stomach, pancreas, lung (B) Liver, bladder, kidney, small intestine  
 (C) Spleen, diaphragm, lung, kidney (D) Liver, diaphragm, lung, kidney
196. What type of action is generally employed in machine guns?  
 (A) Recoil operated (B) Closed breech  
 (C) Open breech (D) Semi-Automatic
197. What is a mechanical safety?  
 (A) Half cock  
 (B) integral to the design of the weapon  
 (C) must be applied by the user  
 (D) any safety that physically blocks the cycles of operation
198. Which of these is a sub machine gun?  
 (A) Browning High power (B) Ak-47  
 (C) ppsh-41 (D) RPK
199. Pistol are best categorize as \_\_\_\_\_  
 (A) Self-loader (B) Bolt Action  
 (C) Stand guns (D) Automatic
200. \_\_\_\_\_ is hurled out of firearm due to pressure of gases produced:  
 (A) Projectile (B) Propellant  
 (C) Percussion Cap (D) Both A & C

201. NG is induced in NC to increase its \_\_\_\_\_  
 (A) Kinetic Energy (B) Velocity  
 (C) Potential Energy (D) Stability
202. \_\_\_\_\_ powders are especially useful in long barrel firearms  
 (A) Progressive (B) Digressive  
 (C) Constant (D) None of these
203. If a bore number of a barrel is 12, then the diameter (in cms) of barrel will be \_\_\_\_\_  
 (A) 1.23 (B) 2.10  
 (C) 2.97 (D) 1.85
204. A man was shoot from a close distance range by shotgun, what will be the characteristic finding  
 (A) Rat hole (B) Oval hole  
 (C) Muzzle imprint (D) None of these
205. In wound ballistic, pattern of shoots signifies  
 (A) Bore of gun (B) Make of gun  
 (C) Range of firing (D) Type of cartridge fired
206. \_\_\_\_\_ fabric is most widely used for the purpose of Bulletproof?  
 (A) Silicone Gel (B) Kevlar  
 (C) Viscose-elastic (D) Carbide Plates
207. Source of oxygen in a percussion cap is:  
 (A) Potassium Chlorate (B) Mercury Ferminate  
 (C) Lead Azide (D) Carbon
208. Size of entry wound is less than exit wound caused by the same bullet due to:  
 (A) More elasticity of skin at inlet (B) Due to recoil  
 (C) Due to shape of bullet (D) More elasticity of skin at exit.
209. Kinetic energy of the projectile can be calculated by \_\_\_\_\_  
 (A)  $K = \frac{1}{2} MV^2$  (B)  $K = MV$   
 (C)  $K = \frac{1}{2} M^2 V^2$  (D)  $M = KV$
210. In .303 rifle the pitch in one turn is \_\_\_\_\_  
 (A) 3" (B) 10"  
 (C) 5" (D) 17"
211. 7.62 Rifle has \_\_\_\_\_ operated action mechanism.  
 (A) Lever (B) Slider  
 (C) Gas (D) Pump

212. AK-47 was first designed by \_\_\_\_\_ country  
 (A) India (B) Russia  
 (C) Australia (D) Israel
213. LMG stands for  
 (A) Light modern Gun (B) Light Machine Gun  
 (C) Lead Mass Gun (D) Latter Machine Gun
214. INSAS rifles are manufactured at?  
 (A) Khidaki factory (B) Hadaka factory  
 (C) Russian manufacturing unit (D) Ordance factory Tiruchirappalli
215. Is the Example of Primer Charge?  
 (A) Mercury Fulminate (B) Ammonium Nitrate  
 (C) Potassium Chlorate (D) Nitrogaudine
216. Dynamite was discovered by?  
 (A) Lt. Col. Girard (B) Col. Cooper  
 (C) Col. Jeefer (D) A.nobel
217. Under the SEM lead GSR particles show the shape of?  
 (A) Spheroidal (B) Cylindrical  
 (C) Tube shape (D) Disc shaped
218. 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
219. Indication of Blue colour shows the Presence of \_\_\_\_\_ particles in the GSR?  
 (A) Lead (B) Nitrate  
 (C) Nitrite (D) Antimony
220. Threshold velocity to penetrate the skin is?  
 (A) 10-12 m/sec (B) 40-50m/sec  
 (C) 70-75 m/sec (D) 5-7 m/sec
221. Permissible limit of the non-penetrating projectile according to NIJ is?  
 (A) 12mm (B) 6 mm  
 (C) 44mm (D) 63 mm
222. What is the latest standard according to NIJ for the Bullet-proof testing of the Jacket?  
 (A) 01.01.06 (B) 01.01.03  
 (C) 01.09.13 (D) 01.01.10

223. \_\_\_\_\_ is the study of molecules and structures whose size ranges from 1 to 100 nanometers.
- (A) Nanoscience (B) Microelectrodes  
(C) Computer forensics (D) Artificial intelligence
224. Which of the following is NOT considered penetrating trauma?
- (A) A laceration on the forehead as a result of being struck with a metal pipe  
(B) Receiving a wood splinter in the foot while walking on an unfinished deck  
(C) A laceration from a kitchen knife  
(D) A superficial wound resulting from a pellet gun being lodged under the skin
225. What weapons are commonly referred to as small arms according to NATO
- (A) Any weapon with barrel length less than 18.5"  
(B) Any shoulder or hand controlled weapon  
(C) Any Weapon with a caliber less than 20 mm  
(D) .50 caliber BMG and under
226. What does RPG means?
- (A) Rocket propelled grenade (B) Rocket powered grenade  
(C) Rounds per Gun (D) Riverine patrol group
227. Edmond Locard a renowned scientist was born in \_\_\_\_\_.
- (A) USA (B) UK  
(C) France (D) Vienna
228. Pyrolysis Gas chromatographic technique can be best used for:
- (A) Paint (B) Plastic  
(C) Soil (D) All of these
229. A detector with p-n junction that converts light photons into current is called as \_\_\_\_\_.
- (A) Photodiode (B) Photo detector  
(C) Spectrometer (D) Spectrophotometer
230. Which bridge is used for measuring audio and high frequency oscillation?
- (A) Wein bridge (B) Maxwell bridge  
(C) Schering bridge (D) None of these
231. An ohmmeter is a
- (A) Moving iron instrument (B) Moving coil instrument  
(C) Dynamometer instrument (D) none of the above

232. SERS stands for
- (A) Silver enhanced Ray-stroke Spectroscopy
  - (B) Surface enhanced Raman Spectroscopy**
  - (C) Surface enhanced Ray stroke spectroscopy
  - (D) Silver enhanced Raman signals
233. The depolarization ratio is defined as \_\_\_\_\_
- (A)  $p = P_{\parallel}/P_{\perp}$**
  - (B)  $p = P_{nr}/p\pi$
  - (C)  $p = P_{\mu_1}/P_n$
  - (D)  $p = P^2 n/P_{\perp}$
234. Unit of radioactivity is \_\_\_\_\_
- (A) Curie**
  - (B) Ohm
  - (C) Milliliter
  - (D) Gram
235. In which region of the IR spectroscopy would you expect to find a peak characteristics of a triple bond stretch?
- (A)  $4000-3000\text{ cm}^{-1}$
  - (B)  $2500-2000\text{ cm}^{-1}$**
  - (C)  $2000-1500\text{ cm}^{-1}$
  - (D)  $1500-750\text{ cm}^{-1}$
236. Deuterated solvent in a NMR sample is used to
- (A) Stabilize the magnetic field
  - (B) Set the chemical shift reference
  - (C) Obtain good field homogeneity across the sample
  - (D) both (A) and (C)**
237. Grease Collar can be observed on entry wound, when fired from:
- (A) Contact firing
  - (B) Near distance firing
  - (C) Far distance fire**
  - (D) All of these
238. The dwell time is defined as
- (A) the total time needed to acquire an FID
  - (B) the time difference between two adjacent time domain data points**
  - (C) the time delay between the last pulse and acquisition
  - (D) the time delay before the first pulse.
239.  $^3J_{HH}$  coupling constants may have a value of
- (A) 140 Hz
  - (B) 35 Hz
  - (C) 8 Hz**
  - (D) 70 Hz



240. Star wounds are produced when  
 (A) A shot gun is fired from near distance  
 (B) A rifled weapon is fired from blank shot  
 (C) a knife is injected  
 (D) A shot gun is fired from a distance of 2 km (approx)
241. What percent of atoms of magnesium have a mass of exactly 24 amu?  
 (A) 100 % (B) 70%  
 (C) 30 % (D) 0%
242. Which element has the largest atomic radius?  
 (A) Fluorine (B) Carbon  
 (C) Tin (D) Iodine
243. The 'plum pudding' model of the atom was devised by :  
 (A) Dalton (B) Democritus  
 (C) Rutherford (D) None of the above
244. '8' - is the representation of which type of orbit?  
 (A) p-orbit (B) k-orbit  
 (C) s-orbit (D) L-orbit
245. What limits the resolution of a diode array spectrophotometer?  
 (A) Intensity (B) Bandpass filters  
 (C) No. of Detectors (D) Voltage
246. A continuous visible radiation produce by a solid is known as \_\_\_\_\_.  
 (A) Black body radiation (B) Visible radiation  
 (C) Optical radiation (D) Photomultiplier radiation
247. Karl Pearson is the method to study \_\_\_\_\_.  
 (A) Degree of correlation (B) For calculating probability  
 (C) For sampling (D) All of the above
248. The actions taken at the crime scene immediately following the detection and reporting of the crime scene constitute the:  
 (A) essential part of police work (B) follow-up investigation  
 (C) Cold search (D) Preliminary investigation
249. Of the following options, which is the least reliable source of evidence?  
 (A) DNA Data (B) Latent Fingerprints  
 (C) Eyewitness Account (D) Glass bearing lip prints

250. A crime has been committed at a certain location. Which of the following best describes the name designated to this scene?
- (A) Macroscopic (B) Microscopic  
(C) Secondary (D) Primary
251. Which of the following supplies should be available for processing the crime scene?
- (A) Video Recorder (B) Tweezers and Forceps  
(C) Copier and Printers (D) Crime Scene Barrier Tape
252. What kit is important for a Forensic Investigator to bring to every crime scene?
- (A) Manicure Kit (B) Computer Repair Kit  
(C) Fingerprint Kit (D) Sewing Kit
253. A rough sketch should include all of the following EXCEPT:
- (A) sketch of the suspect(s).  
(B) date, location, and time of the incident  
(C) location of all recovered physical evidence.  
(D) Location of Door, windows and walls in the scene
254. Physical evidence is considered to have \_\_\_\_\_ as that of eyewitness (testimonial) evidence
- (A) Same Value (B) Less value  
(C) Greater Value (D) None of these
255. With reference to the investigation of a crime scene, what would normally be the correct chronological order of events?
- (A) Emergency first aid, protection, documentation, search  
(B) Protection, search, documentation, emergency first aid.  
(C) Emergency first aid, documentation, protection, search.  
(D) Protection, emergency first aid, documentation, search
256. A body was found burnt in a bed. The CSI team found clues to suggest the fire was set on purpose. Which of these clues would indicate purposeful arson?
- (A) Char Burns on the Walls  
(B) Disintegration of furniture in the room  
(C) Candles in the room next to this room  
(D) High concentration of flammable liquid trace in one location

257. A Forensic team found evidence in a case from 1973 that lead to the conviction of Joey for murder. In 2009, Joey requested a thorough test of all physical evidence from his case, which leads to his exoneration. What specific testing, that did not exist in 1973, could have proven him innocent in 2009?
- (A) Ballistics Testing (B) DNA Testing  
(C) GPS Location (D) Mobile Testing
258. NABL is autonomous body in India under the aegis of \_\_\_\_\_.  
(A) Council of Industrial and scientific Research  
(B) Department of Science and Technology  
(C) University Grant commission  
(D) Indian Standardized Institute
259. The ISO 9000 series for Quality control and Quality management was established in \_\_\_\_\_.  
(A) 1991 (B) 1995  
(C) 1987 (D) 2000
260. The small pressure receptor charge in a ammunition is known as \_\_\_\_\_.  
(A) Firing pin (B) Propellant  
(C) Primer (D) Cap
261. Refractive index of materials is approximately equal to square root of  
(A) electrical permittivity  
(B) magnetic permeability  
(C) electrical permittivity x magnetic permeability  
(D) None
262. Fluorescence occurs within \_\_\_\_\_.  
(A)  $10^{-5}$  s. (B)  $10^{-5}$  ms.  
(C)  $10^{-5}$   $\mu$ s. (D)  $10^{-5}$  ns.
263. The wash out time for analyte from ICP spray chamber is approximately \_\_\_\_\_.  
(A) 1 L/min (B) L/min  
(C) 0.05 ml/ms (D) 8 L/min.
264. ISO/ IEC 17025 leads to  
(A) General Requirements for the Competence of Testing and Calibration Laboratories  
(B) Equipment testing and calibration  
(C) Safety and waste management system  
(D) All of these

265. APLAC stands for  
(A) Asia Pacific Laboratory Accreditation Co-operation  
(B) Asian Portland laboratory accreditation Co-operation  
(C) Artificial Port Laboratory Accessories Certification  
(D) American Pacific Laboratory Accreditation Co-operation
266. Which piece of glassware would not give critical measurement:  
(A) volumetric flask (B) beaker  
(C) erlenmeyer cylinder (D) graduated cylinder
267. The third level of external QC materials testing is to perform:  
(A) Equilibrium Quality Control (B) Pest Control  
(C) Equivalent Quality Control (D) Testing and Calibration control
268. \_\_\_\_\_ developed a method for statistical process control in the 1920s, forming the basis for quality control procedures in the laboratory.  
(A) Swiss Richard (B) Sweden Iriman  
(C) Safferstein (D) Shewhart
269. In a air crash, which method for searching would you deploy?  
(A) Strip method (B) Spiral method  
(C) Wheel method (D) Zonal method
270. Electrode less Discharge Lamp (EDL) is used in  
(A) Atomic Absorption Spectrometer (B) Atomic Emission Spectrometer  
(C) Infra-red Spectrometer (D) X-ray Fluorescence Spectrometer
271. Amatol contains ‘  
(A) TNT and RDX (B) TNT and Tetryl  
(C) TNT and PETN (D) TNT and Ammonium Nitrate
272. To lift a dust foot print the following method can be used  
(A) Electrostatic method (B) powder dusting  
(C) tape lifting (D) Swabbing
273. A wound with a muzzle imprint is sure sign of  
(A) Close distance firing (B) Fabricated firing  
(C) Contact firing (D) near distance firing
274. The book entitled ‘criminalistics’ is written by  
(A) B R Sharma (B) Richard Saferstein  
(C) Orday Hilton (D) Wilson Harrison

275. Ricochet marks can be encountered on  
(A) Pellets entering a body  
(B) Fired Cartridge  
(C) Bullet striking through a stone obstruction  
(D) Bullet directly entering human body
276. Anisotropic material pose  
(A) Single Refractive index  
(B) Two or three principle refractive indexes  
(C) No refractive index  
(D) None of the above
277. Snap haunt relates to the following weapon  
(A) Electric pick lock (B) Wheel Lock  
(C) Percussion lock (D) Flint lock
278. Section 75 of the Indian Evidence Act, 1872 deals with:  
(A) Public documents  
(B) Private documents  
(C) Certified copies of Public documents  
(D) Proof of other official documents
279. In cathode ray oscilloscope, spots are formed on screen having  
(A) anode. (B) cathode.  
(C) grid. (D) matrix.
280. The mean of sampling distribution is  
(A) less than mean of process distribution  
(B) more than mean of process distribution  
(C) equal to mean of process distribution  
(D) any of the above
281. The concept of 'Trilogy of Quality' was introduced by  
(A) Philip B. Crosby (B) Edward Deming  
(C) A. Shewart (D) Dr Juran
282. Section 88A of Evidence Act provides for  
(A) presumption as to the electronic message forwarded corresponds with the message as fed in the computer  
(B) presumption as to the person by whom the message is sent  
(C) both (A) & (B)  
(D) only (B) but not (A).

283. Which section of the Indian Evidence Act was amended by the Criminal Law (Amendment) Act, 2005  
 (A) section 32 (B) section 118  
 (C) section 154 (D) section 90A
284. Examination of witnesses in criminal cases through video conferencing is  
 (A) permissible  
 (B) impermissible  
 (C) permissible at the option of the witness  
 (D) permissible at the option of the accused.
285. Estoppel deals with  
 (A) question of facts (B) question of right  
 (C) both (A) & (B) (D) neither (A) nor (B)
286. In the nuclear shell model the spin parity of  $^{15}\text{N}$  is given by  
 (A)  $1^{-}/2$  (B)  $1^{+}/2$   
 (C)  $3^{-}/2$  (D)  $3^{+}/2$
287. Choose the CORRECT statement from the following  
 (A) Neutron interacts through electromagnetic interaction  
 (B) Electron does not interact through weak interaction  
 (C) Neutrino interacts through weak and electromagnetic interaction  
 (D) Quark interacts through strong interaction but not through weak interaction
288. An unpolarized light wave is incident from air on a glass surface at the Brewster angle. The angle between the reflected and the refracted wave is  
 (A) 0 degrees (B) 45 degrees  
 (C) 90 degrees (D) 120 degrees
289. To detect trace amounts of gaseous species in a mixture of gases, the preferred probing tool is  
 (A) Ionization spectroscopy with X-rays (B) NMR spectroscopy  
 (C) ESR spectroscopy (D) Laser spectroscopy
290. In India, Central Forensic Science laboratories is not located at:  
 (A) Pune (B) Bhopal  
 (C) Guwahati (D) Ahmedabad
291. National Institute of Criminology & Forensic Science was established at New Delhi in the following year:  
 (A) 1968 (B) 1970  
 (C) 1972 (D) 1974

292. Derringers are single shot pistols, which possess  
 (A) Single barrel (B) Multiple barrels  
 (C) Choke in the barrel (D) Magazine
293. A numerical aperture of objective lens, is determined by:  
 (A)  $N.A. = 2n \sin \theta$  (B)  $N.A. = 2 \sin^2 \theta$   
 (C)  $N.A. = \sin 2\theta$  (D)  $N.A. = \tan 2\theta$
294. Which of the following courts is not a court of trial?  
 (A) Chief Judicial Magistrate  
 (B) First Class Judicial Magistrate  
 (C) Additional District and Session Judge  
 (D) High Court
295. Forensic science as a academic subject was first introduced in  
 (A) Dharwad (B) Delhi  
 (C) Sagar (D) Chennai
296. Assertion (A) : Nose of the bullet is rubbed to increase its penetration power  
 Reason (R) : Mushrooming occurs when they hit the target  
 (A) (A) is correct & (R) is incorrect (B) Both (A) and (R) are incorrect  
 (C) Both (A) and (R) is correct (D) (A) is incorrect and (R) is correct
297. When a vehicular accident takes place, the speed of the vehicle can be calculated with the help of:  
 (A) Condition of the damage (B) Make of the vehicle  
 (C) Weigh of the vehicle (D) Skid marks on the scene of occurrence
298. Lint is  
 (A) a C compiler (B) an inter active debugger  
 (C) a c interpreter (D) a tool for analyzing C programmes
299. The most significant bit will be lost in which of the following operations?  
 (A)  $>>$  (B) complementation  
 (C)  $<<$  (D) None of the above
300. If 7 bits are used to store a character, the percentage reduction of the needed storage will be  
 (A) 22.5 (B) 2.5  
 (C) 8 (D) 12.5