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113. The number of RC sections required in phase shift oscillator is at least
(1) 1 (2) 2 (3) 5 (4) 6
114. Which of the following oscillator uses both positive and negative feedback
(1) RC phase shift (2) Wein bridge
(3) LC oscillator (4) Crystal
115. Cross-over distortion can be eliminated by biasing the circuit in
(1) Class A (2) Class B (3) Class C (4) Class AB
116. Monostable multivibrator requires _____ type of trigger pulse.
(1) positive spikes (2) negative spikes
(3) zero spike (4) no trigger pulse is required
117. If in a rectifier, the ripple voltage is 100 mV and the dc value is 10V, then the ripple factor is given by
(1) 0.01 (2) 0.02 (3) 0.001 (4) 0.0002
118. The larger the value of the filter capacitor
(1) Larger the peak-to-peak value of the ripple voltage
(2) Larger the peak current in the rectifying diode
(3) Longer the time that the current pulse flows through the diode
(4) Smaller the dc voltage across the load
119. In a UJT, with V_{BB} as the voltage across two base terminals, the emitter potential at peak point is given by
(1) ηV_{BB} (2) ηV_D
(3) $\eta V_{BB} + V_D$ (4) $\eta V_D + V_{BB}$

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120. The output of gate is low if and only if all its inputs are equal
(1) Ex-OR (2) AND (3) OR (4) NOR
121. An n-bit register requires _____ number of Flip-Flops.
(1) $2n$ (2) $n + 1$ (3) 2^n (4) n
122. The counters can be used in the measurement of
(1) voltage (2) time (3) distance (4) length
123. The memory which requires a refresh cycle is
(1) PROM (2) Static RAM
(3) Dynamic RAM (4) Magnetic tape
124. Which of the following is known as half-adder
(1) XOR gate (2) XNOR gate
(3) NAND gate (4) NOR gate
125. If a counter is connected using six flip-flops, then the maximum number of states that the counter can count are
(1) 6 (2) 256 (3) 8 (4) 64
126. The number of flip-flops required for a mod-16 ring counter are
(1) 4 (2) 8 (3) 10 (4) 16
127. The digital operations such as AND, OR, NOT etc., can be performed by using
(1) Amplifiers (2) switches
(3) rectifiers (4) oscillators

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128. The resolution of an A/D converter is determined by

- (1) Start conversion time
- (2) The number of bits in the input word
- (3) The number of bits in the output word
- (4) The type of interfacing

129. The reference and output voltages in the ladder type D/A converter are respectively

- (1) Both are positive
- (2) both are negative
- (3) negative and positive
- (4) positive and negative

130. A medium wave transmitter works in the frequency range of

- (1) 100 Hz to 100 KHz
- (2) 500 KHz to 1600 KHz
- (3) 1500 MHz to 3800 MHz
- (4) 4235 MHz to 5000 MHz

131. A carrier of 1200 KHz is amplitude modulated by an AF signal from 200 HZ to 5 KHz. The upper side band frequencies are

- (1) 1205 KHz to 1200 KHz
- (2) 1200 KHz to 1195 KHz
- (3) 1200.2 KHz to 1205 KHz
- (4) 1202 KHz to 1205 KHz

132. One of the following is a disadvantage of VSB system

- (1) It conserves bandwidth resulting in a saving of 2 MHz per channel over a DSB system
- (2) It overcomes the problem of low video frequency attenuation
- (3) It results in power boost of low video frequencies
- (4) It possess the advantages of both DSB and SSB system

133. The _____ is a network of resistors containing only two values.

- (1) binary divider
- (2) binary ladder
- (3) analog divider
- (4) analog ladder

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134. The voltage gain of the voltage follower circuit using op-amp is
(1) $1 + R_f/R_i$ (2) R_f/R_i (3) R_i/R_f (4) one
135. Which of the following circuit does not use a PLL?
(1) FM demodulating (2) frequency multiplying
(3) frequency synthesis (4) voltage regulation
136. The pulse width of a astable multivibrator is given by
(1) $0.48 RC$ (2) $0.48 R/C$ (3) $1.38 RC$ (4) $1.38 R/C$
137. How many op-amp does it take to construct an instrument amplifier
(1) 2 (2) 3 (3) 4 (4) 6
138. The resolution of a four bit DVM is
(1) 0.1V (2) 0.01 V (3) 0.001 V (4) 0.0001 V
139. Successive approximation DVM is also called
(1) dual slope DVM (2) differential voltmeter
(3) potentiometric DVM (4) ramp type DVM
140. A CRO is generally used to measure
(1) temperature (2) pressure
(3) amplitude (4) all the above
141. When two periodic signals of equal voltages and 180 degrees out of phase with each other are applied to CRT, the waveform observed on CRT is
(1) a straight line (2) circle
(3) ellipse (4) parabola

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142. A spectrum analyser is actually a heterodyne receiver in which the local oscillator is a _____ generator.
(1) pulse (2) sweep (3) square wave (4) sine wave
143. Q-Meter is used to determine _____ of a component.
(1) frequency (2) phase angle (3) quality factor (4) all
144. Which of the following method is used to connect the unknown component to the test terminal of a Q-meter?
(1) direct (2) series (3) parallel (4) all
145. In a digital frequency meter, the assembly consisting of two AND gates and the two flip-flops is known as
(1) decade counter (2) gate control setup
(3) Schmitt trigger (4) read counter
146. In instrumentation the parameter being measured is called _____.
(1) error detector (2) source (3) measurand (4) sink
147. The nearest of the indicated value to the true value of the quantity is called
(1) precision (2) error (3) accuracy (4) sensitivity
148. Pirani guage is an example of _____ transducer.
(1) resistive (2) capacitive (3) inductive (4) active
149. The value of impulse signal at $t=0$ is
(1) 0 (2) 1 (3) infinity (4) not defined

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150. Multiturn potentiometer can measure a maximum of _____ degrees.
(1) 30 (2) 300 (3) 360 (4) 3500
151. The poissions ratio for all strain guage material lies between
(1) 0-0.5 (2) 0-1 (3) 0-1.5 (4) 0-2
152. For capacitive transducers the equation for the capacitive of a parallel plate capacitor is given by
(1) $C = d / \epsilon A$ (2) $C = d \epsilon / A$ (3) $C = \epsilon A / d$ (4) $C = \epsilon A d$
153. Microphone is a _____ type of transducer.
(1) capacitive (2) resistive
(3) inductive (4) mechanical
154. The pH of a solution is proportional to _____
(1) $\log[H^+]$ (2) $-\log[H^+]$ (3) $1/\log[H^+]$ (4) $-\log[H^-]$
155. The pH of blood for a normal human being is
(1) acidic (2) basic
(3) neutral (4) highly acidic
156. In a magnetic flow meter the induced voltage due to flow is given by
(1) $E = BC/LV$ (2) $E = BL/CV$
(3) $E = (B+L+C+V)$ (4) $E = BCLV$
157. Which of the following can be used as piezo electric materials?
(1) Rochelle salt (2) ceramics A&B
(3) lithium sulphate (4) all

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58. _____ particles have neutral charge.

- | | |
|-----------|---------------|
| (1) Alpha | (2) Beta |
| (3) Gamma | (4) Positrons |

59. _____ is also called a variable area meter.

- | | |
|------------------|-----------------|
| (1) Rotameter | (2) Mmanometer |
| (3) Venturimeter | (4) Orficemeter |

60. _____ is also a unit of temperature.

- | | | | |
|-------------|------------|----------|-------------|
| (1) Candela | (2) Ampere | (3) Volt | (4) Rankine |
|-------------|------------|----------|-------------|

161. The Reynolds number for turbulent flow is

- | | | | |
|----------|----------|----------|----------|
| (1) 1000 | (2) 2000 | (3) 3000 | (4) 4000 |
|----------|----------|----------|----------|

162. The response of a time constant element for a step change in input is

- | | |
|-----------------|--------------|
| (1) Unity | (2) Zero |
| (3) Exponential | (4) Infinity |

163. Reset action is another name for _____ control mode.

- | | |
|------------------|------------------|
| (1) Two-position | (2) Proportional |
| (3) Derivative | (4) Integral |

164. A PID control mode has

- | | |
|---------------------|---------------------|
| (1) Faster response | (2) Slower response |
| (3) More dead time | (4) High rise time |

165. A P-controller has a gain of 50. Its proportional band is

- | | | | |
|-------|-------|-------|-------|
| (1) 4 | (2) 3 | (3) 2 | (4) 1 |
|-------|-------|-------|-------|

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166. Differentiate gap is intentionally incorporated in some processes to prevent _____ effect.

- (1) Excessive cycling
- (2) Saturation
- (3) Clamping
- (4) Aliasing

167. In process controller which of the following can be used for signals transmission between the controller and the sensor?

- (1) Electric
- (2) Pneumatic
- (3) Hydraulic
- (4) All

168. In pneumatic controllers _____ are used for applying the signals from the sensors.

- (1) Op-Amps
- (2) Gears
- (3) Bellows
- (4) Piston

169. The forces that act on an actuator are

- (1) Inertia forces
- (2) Static friction forces
- (3) Thrust forces
- (4) All of the above

170. Which of the following disturbances occur in a process control?

- (1) Transient
- (2) Set-point changes
- (3) Load changes
- (4) All of the above

171. Generally in a cascade control _____ mode is used in a secondary loop.

- (1) P
- (2) PI
- (3) PD
- (4) PID

172. In a ratio control system, the ratio factor 'K' lies between _____ and _____

- (1) 1.3
- (2) 0.3,3.0
- (3) 3,30
- (4) 1,100

173. In distillation columns _____ are separated.

- (1) Two liquids
- (2) One solid & one liquid
- (3) Two gases
- (4) None

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174. An element used to provide necessary linear rotary motion for a control valve stem is called

- (1) Actuator
- (2) Plug
- (3) Spring
- (4) Bellows

175. Spectroscopy deals with the study of interaction of _____ with matter.

- (1) Electromagnetic radiations
- (2) current
- (3) frequency
- (4) density

176. Duetarium lamps are better suited sources in the _____ region.

- (1) UV
- (2) visible
- (3) IR
- (4) microwave

177. In a gas-liquid-chromatography the carrier phase is

- (1) Solid
- (2) liquid
- (3) gas
- (4) all

178. The efficiency of a distillation column is expressed in terms of

- (1) Sample injection
- (2) detector response
- (3) theoretical plates
- (4) type of sample used

179. The paramagnetic gases are

- (1) Helium
- (2) Hydrogen
- (3) Nitrogen
- (4) Oxygen

180. Single focusing magnetic sector analyser is _____ degree analyser.

- (1) 90
- (2) 180
- (3) 270
- (4) 360

181. Paper chromatography is also called _____ chromatography.

- (1) partition
- (2) gas
- (3) liquid
- (4) adsorption

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182. Electromyogram potentials are associated with _____ activity.
(1) brain (2) muscle (3) heart (4) kidney
183. PQRS wave is associated with
(1) EEG (2) ECG (3) EMG (4) EGG
184. The principle ions present in the body fluids are
(1) Sodium (2) Potassium
(3) Chloride (4) All
185. 8051 control has _____ register banks.
(1) One (2) Two
(3) Three (4) Four
186. The following bits in IE register disable all interrupts simultaneously
(1) ETO (2) EA (3) ES (4) ACC
187. Ladder diagram are used in
(1) PLC's (2) Computers
(3) Microprocessor (4) Actuator
188. In microcontroller 8051, the total no. of three byte instructions are
(1) 17 (2) 45 (3) 49 (4) 111
189. _____ called a PPI controller.
(1) 8251 (2) 8255
(3) 8257 (4) 8259

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190. The scratchpad area of RAM of 8051 has _____ bytes.
(1) 20 (2) 40 (3) 80 (4) 100
191. Three equal resistors of $3\ \Omega$ each are star connected. Their equivalent delta connected resistance is
(1) $1\ \Omega$ (2) $12\ \Omega$
(3) $6\ \Omega$ (4) $9\ \Omega$
192. While finding thevenin's resistance, voltage sources if any are set to zero by
(1) short circuiting (2) Open circuiting
(3) connecting in series with load (4) connecting in parallel with load
193. In a self excited degenerator, the initial flux is produced due to
(1) the saturation of core (2) eddy currents
(3) hysteresis (4) residual magnetism
194. Which of the following is a cause for the production of back emf.
(1) generator action (2) motor action
(3) armature reaction (4) eddy currents
195. The effective value of the induced voltage in a transformer winding is represented by
(1) $4.44 f N^2 \phi_m$ (2) $4.44 f N \phi_m$
(3) $4.44 f N B_m$ (4) $4.44 f N \phi_m A$
196. Which of the following statement is true with respect to synchronous motor
(1) it is not self-starting
(2) it is self-starting
(3) it can run at any speed
(4) it can run at a speed close to the synchronous speed

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197. Photodetectors are used in _____ switching circuits.
- (1) magnetic
 - (2) electric
 - (3) current
 - (4) twilight
198. A LED prepared with $\text{GaAs}_{1-x}\text{P}_x$ with $x=0.4$ gives _____ color.
- (1) blue
 - (2) green
 - (3) yellow
 - (4) red
199. Photo voltaic cells are two-terminal devices that vary their _____ with exposure to light.
- (1) input voltage
 - (2) input current
 - (3) output voltage
 - (4) output current
200. The following all are true except one with respect to the advantages of projection welding over spot welding
- (1) More than one weld can be done at a time to obtain more output
 - (2) The life of electrodes is less because of low current density
 - (3) The finish is good as the surface remains unindented by electrodes
 - (4) Welds are automatically located by the position of projections