

PROVISIONAL ANSWER KEY

Lecturer of Biomedical Engineering (REK) (Advt No. 62/2015-16)

Date of Preliminary Test : 11/12/2016

Subject : Concerned Subject (Que 101-200)

- 101.** For 8085 processor, which of the following is not the vectored interrupt?
(A) TRAP (B) INTR
(C) RST 7.5 (D) RST 3

- 102.** In 8085 microprocessor, the RST6 instruction transfer programme execution to following location.
(A) 0030h (B) 0038h
(C) 0000h (D) 0024h

- 103.** In 8085 microprocessor, Following register is of 16 bit
(A) Stack pointer (B) Program counter
(C) Both above (A) and (B) (D) None of the above

- 104.** In 8085 microprocessor, What is SIM?
(A) Set Interrupt Mask (B) Select Interrupt Mask
(C) Sort Interrupt Mask (D) None of the above

- 105.** The first machine cycle for any Instruction of 8085 is
(A) Memory read cycle (B) I/O read cycle
(C) Both above (A) and (B) (D) Opcode fetch cycle

- 106.** Consider the following registers:

- (1) Accumulator and flag register
- (2) B and C register
- (3) D and E register
- (4) H and L register

Which of these 8-bit registers of 8085 microprocessor can be paired together to make a 16-bit register?

- (A) 1, 3 and 4 above (B) 2, 3 and 4 above
(C) 1, 2 and 3 above (D) None above

107. In 8051 micro controller,
If we push data onto the stack then the stack pointer
(A) increases with every push (B) decreases with every push
(C) both of the mentioned (D) none of the mentioned
108. On power up, the 8051 uses which RAM locations for register R0-R7
(A) 00 to 2 Fh (B) 00 to 7 Fh
(C) 00 to 07 h (D) 00 to 0 Fh
109. How many bytes of bit addressable memory is present in 8051 based micro controllers?
(A) 8 bytes (B) 32 bytes
(C) 16 bytes (D) 128 bytes
110. Auto reload mode is allowed in which mode of the timer for 8051.
(A) Mode 0 (B) Mode 1
(C) Mode 2 (D) Mode 3
111. TF1, TR1, TF0, TR0 bits are of which register for 8051.
(A) TCON (B) TMOD
(C) SCON (D) SMOD
112. Which one of the following statement is false?
(A) 8085 has bidirectional data bus
(B) 8085 has unidirectional address bus
(C) 8085 has bidirectional address bus
(D) 8085 has ALU
113. Which one of the following interrupt is edge sensitive only for 8085?
(A) RST 6.5 (B) RST 5.5
(C) TRAP (D) None above

114. 8051 has how many 16 bit timers / counters?
(A) 1 (B) 2
(C) 3 (D) 4
115. An alternate function of port pin P3.0 in the 8051 is:
(A) Serial input port (B) Serial output port
(C) Memory write strobe (D) Memory read strobe
116. Strain gauge, Thermo couple and LVDT are the example of
(A) Active transducer (B) Passive transducer
(C) Analog transducer (D) Primary transducer
117. Self generating transducers are type of transducers
(A) Active (B) Passive
(C) Secondary (D) Inverse
118. The drawback of the strain gauge are
(1) Poor linearity
(2) Low fatigue life
(3) They are brittle and sensitive to temperature
Which one of the above is correct?
(A) 1 only (B) 1, 2 and 3
(C) 1 and 3 only (D) 3 only
119. Principle of operation of LVDT is based on
(A) Self induction (B) Mutual induction
(C) Reluctance (D) Permanence
120. Capacitive transducers are applied for which measurement
(A) Static (B) Dynamic
(C) Both above (D) Transient

121. The resistance of LDR when exposed to radiant energy
(A) increase (B) decrease
(C) reaches maximum (D) remains unaltered
122. Fidelity represents
1. Reproduction of signal
2. Reproduction of phase signal
(A) Only 1 above is true (B) 1 and 2 above is true
(C) 1 and 2 both are false (D) only 2 above is true
123. In an amplifier, the coupling capacitors are used for
(A) Limiting bandwidth
(B) Matching impedance
(C) Controlling output
(D) Preventing DC mixing with input and output
124. Pirani gauge is used for measurement of?
(A) Temperature (B) Density
(C) Vacuum (D) Acceleration
125. For a thermistor, temperature coefficient of resistance is
(A) Positive (B) Negative
(C) Zero (D) None of the above
126. Ionization gauge is used for the measurement of
(A) Very low pressure (B) Very high pressure
(C) Medium pressure (D) None above
127. K type thermo couple is
(A) Chromel Alumel
(B) Copper constantan
(C) Iron constantan
(D) Platinum, Platinum with 13% Rhodium

128. Thermopile are used for
(A) High temperature measurement (B) Low temperature measurement
(C) Below 200 degree Celsius (D) None above
129. Dummy gauge is mounted on the opposite arm of the active strain gauge to cancel output differentials due to
(A) Temperature variation of resistance
(B) Pressure variation of resistance
(C) pH concentration variation
(D) Change in blood flow
130. Response of a system to sinusoidal input is known as
(A) Unit step response (B) Impulse response
(C) Frequency response (D) None above
131. Which of the following is first order system?
(A) Non interacting system with two tanks in series
(B) Interacting system with two tanks in series
(C) Damped vibrator
(D) Mercury in glass thermometer kept in boiling water
132. Negative gain margin can be characteristic of system.
(A) Stable (B) Unstable
(C) Critically damped (D) None of the above
133. Operation of rota meter is based on
(A) Variable flow area (B) Pressure at stagnation point
(C) Pressure drop across nozzle (D) Rotation of turbine
134. Radiation pyrometer are based on
(A) Stefan Boltzmann law (B) Wiens law
(C) Kirchoff effect (D) Seeback effect

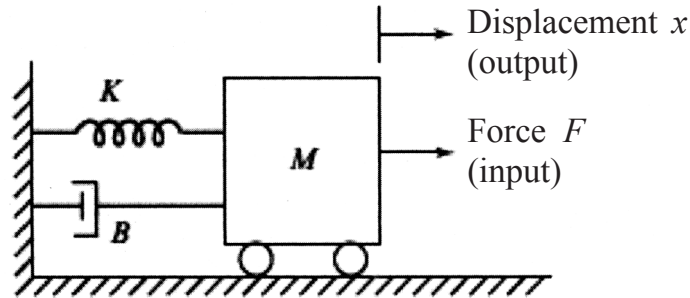
135. Thermal wells are used in the temperature measurement to
(A) Increase sensitivity
(B) Increase fidelity
(C) Reduce measuring lag
(D) Guard against corrosion and oxidizing action
136. Which of the following thermocouples will give the highest output for the same value of hot and cold junction temperature?
(A) Chromel constantan
(B) Iron constantan
(C) Platinum - Platinum Rhodium (10%)
(D) Chromel Alumel
137. J type thermo couple is
(A) Chromel Alumel
(B) Copper Constantan
(C) Iron Constantan
(D) Platinum, Platinum with 13% Rhodium
138. Square root extractor can be required for the measurement of
(A) Flow (B) Density
(C) Pressure (D) Force
139. Which of the following is absolute temperature scale?
(A) Rankine (B) Celsius
(C) Reaumur (D) All of the above
140. Routh test
(A) cannot be used for system with transportation lag
(B) provides information about location of roots
(C) is not applicable to system with polynomial characteristic equation
(D) All above

141. Which orifice installation is widely used?
(A) Concentric (B) Eccentric
(C) Segmental (D) Flange
142. Bode diagram is obtained with which input?
(A) Step (B) Ramp
(C) Sinusoidal (D) Impulse
143. Bare thermocouple below 400°K , most of the heat is transferred by
(A) Conduction (B) Radiation
(C) Convection (D) By all above equally
144. To read maximum temperature of 1000°C with a resolution of 1°C , minimum ADC required is of with temperature range 10 to 1000°C ,
(A) 8 bit (B) 9 bit
(C) 10 bit (D) 12 bit
145. Device which is used for calibrating pressure gauge is
(A) Manometer (B) Diaphragm
(C) Dead weight pressure tester (D) Piezoelectric crystal
146. Ring type gauge is used for
(A) Low differential pressure (B) Vacuum
(C) Absolute pressure (D) Temperature
147. Which of the following is having positive coefficient of resistance with temperature?
(A) Thermistor (B) RTD
(C) Thermocouple (D) Radiation pyrometers
148. Which of the following uses nickel or platinum foil and works similar to RTD?
(A) Thermopile (B) Bolometer
(C) Optical pyrometer (D) None above

149. Flange taps in Orifice plates are installed at (D is the diameter of the pipe)
(A) 25 mm from each side
(B) D at upstream and 2.5 D at down stream
(C) Just near orifice plate
(D) Any of the above
150. Vena contracta in Orifice plates are installed at (D is the diameter of pipe)
(A) 25 mm from each side
(B) D upstream and at vena contracta down stream
(C) Vena contracta upstream and D down stream
(D) 2D upstream and vena contracta down stream
151. Which of the following is used for flow in open channel?
(A) Nozzle (B) Weir
(C) Orifice (D) Venturi
152. Chromatographic analyzers are used for measurement of
(A) O₂ content in flue gas
(B) CO₂ content in flue gas
(C) Amount of individual content in flue gas
(D) CO content in flue gas
153. If two 5V DC batteries are connected in series opposition then net voltage is
(A) 10 V (B) 25 V
(C) 0 V (D) Can not say
154. When transistors are used in digital circuit, they are mostly operated in?
(A) Saturation and cut off region (B) Active region
(C) Linear region (D) None of above

155. Which is the β current ratio for a transistor?
(A) I_C/I_B (B) I_B/I_C
(C) I_E/I_C (D) I_C/I_E
156. An ideal Op Amp has
(A) Zero Input impedance (B) Infinite output impedance
(C) Infinite bandwidth (D) All above
157. For an Op Amp ratio between differential gain and common gain is
(A) Differential mode rejection ratio
(B) Common mode rejection ratio
(C) Amplitude ratio
(D) Amplification factor
158. Voltage follower has
(A) Closed loop voltage gain unity
(B) Large closed loop output resistance
(C) Small input resistance
(D) Closed loop bandwidth zero
159. When both the S and R input of RS flip flop is high, output Q is?
(A) High (B) Low
(C) Depends on previous output (D) Forbidden input condition
160. Binary number 110001 represents which decimal number
(A) 25 (B) 26
(C) 31 (D) 49
161. Consider the following statements
(i) Test signals steps, ramp, impulse are not useful for control system analysis if actual signals are not step, ramp or impulse
(ii) Transient and steady step response can adequately be obtained by step response
based on above two statements select appropriate option below
(A) both (i) and (ii) are correct (B) both (i) and (ii) are incorrect
(C) only (i) is correct (D) only (ii) is correct

162. A typical mass, spring and damper system shown below



- (A) Zero order (B) First order
(C) Second order (D) Third order
163. Three different systems with poles at $p_1 = -0.2$, $p_1 = -0.4$, $p_1 = -0.6$, what is the time constant of the fastest system?
(A) 0.2 (B) $1/0.2$
(C) 0.6 (D) $1/0.6$
164. Number of roots of the equation $S^3 + 5S^2 + 7S + 3 = 0$ in the left half of S plane are
(A) Zero (B) One
(C) Two (D) Three
165. In a control system when output overshoots the desired steady state value and transient occurs, system is
(A) critically damped (B) over damped
(C) under damped (D) without damping
166. If length of any resistive wire is doubled and cross section is also doubled, the new resistance will be
(A) Double (B) Half
(C) Four times (D) No change

167. If two capacitor with capacitance C are in series, then resultant capacitance is
- (A) $2C$ (B) $C/2$
(C) C (D) 0
168. In a pnp transistor, p region is
- (A) base and emitter (B) emitter and collector
(C) collector and base (D) base and grid
169. Band pass filter response has
- (A) two critical frequency (B) one critical frequency
(C) a flat curve in pass band (D) a wide band width
170. An XOR gate produces output when its two inputs are
- (A) Same (B) Low
(C) High (D) Different
171. Delay time of a first order system is the time to reach what % of final value in the first attempt
- (A) 10 (B) 90
(C) 50 (D) 100
172. With 8085 micro processor during execution of instruction MOV M, A - the memory address is provided by which register pair?
- (A) B – C (B) D – E
(C) H – L (D) Stack
173. Which of the following is programmable interrupt controller?
- (A) 8259 (B) 8257
(C) 8155 (D) 8255

174. What is the percentage resolution available with 8 bit ADC?
(A) 1.0 (B) 4.0
(C) 0.1 (D) 0.4
175. What is normal frequency range of ECG signal?
(A) 0 – 50 Hz (B) 0 – 25 Hz
(C) 0.05 to 120 Hz (D) 25 to 250 Hz
176. Resting potential of human cell is
(A) + 90 mV (B) – 90 mV
(C) + 20 mV (D) – 20 mV
177. What is the frequency range of EMG signal?
(A) 5 – 2000 Hz (B) 0 – 100 Hz
(C) 50 – 500 Hz (D) 0 – 100 kHz
178. Which part of the heart pumps oxygenated blood to whole body?
(A) RV (B) LV
(C) LA (D) RA
179. What is the function of central nervous system with respect to outside world data?
(A) Gathering (B) Assimilation
(C) Integration (D) All above
180. Which system controls chemical composition in human body?
(A) Nervous (B) Endocrine
(C) Circulatory (D) Respiratory
181. Wavelength of X ray is represented in
(A) Rontgen (B) Angstrom
(C) MHz (D) Curie

182. Which one is considered as safe, real time, noncontact and reliable aid for detection of female breast cancer?
- (A) NMR (B) Ultrasound
(C) X Ray (D) Thermography
183. PET in medical imaging stands for
- (A) Patient emission tomography (B) Positron emission tomography
(C) Positron endo trophy (D) Partial emission test
184. Which device is used by general practitioners for blood pressure measurement?
- (A) Barometer (B) Anemometer
(C) Sphygmomanometer (D) Well type manometer
185. Conventional ECG recorder uses
- (A) Multi channel recorder
(B) Heated stylus and heat sensitive paper
(C) Inked pen recorder
(D) Circular chart recorder
186. Gauge factor of strain gauge is
- (A) $(\Delta R / R) / (\Delta L / L)$ (B) $(\Delta L / L) / (\Delta R / R)$
(C) $(\Delta R / R) / L$ (D) $(\Delta R / R) / (\Delta L)$
187. In biomedical instrumentation, which one of the following is useful for dynamic pressure measurement?
- (A) Metallic strain gauge (B) Manometer
(C) Barometer (D) Piezoelectric
188. Cardiac pacemaker is one form of
- (A) Amplifier (B) Rectifier
(C) Impulse generator (D) Heart rate monitor

189. In a short wave diathermy unit output frequency is
(A) 27.12 kHz (B) 27.12 MHz
(C) 100 MHz (D) 270 MHz
190. In a lithotripter, the kidney stones are broken by
(A) High frequency AC current (B) Acoustic shock waves
(C) High value DC pulses (D) Low frequency AC currents
191. X and X' will result in
(A) X (B) X'
(C) 0 (D) 1
192. Calibrated accuracy of most of the industrial thermometer is about
(A) $\pm 2\%$ (B) $\pm 0.5\%$
(C) $\pm 5\%$ (D) $\pm 10\%$
193. Which one of the following thermometer can give fast response?
(A) Bulb with 1/8" thermal wall well
(B) Bulb with 1/0.8" thermal wall well
(C) Bare bulb
(D) Bulb with 1" thermal wall well
194. When right atrium of the heart is full, it contracts and forces blood through which valve in right ventricle.
(A) Tricuspid valve (B) Mitral valve
(C) Aortic valve (D) None above
195. Slower heart rate is known as
(A) Bradycardia (B) Tachycardia
(C) Arrhythmia (D) None above

196. Common Ultrasonic flow meter uses
(A) Doppler principle (B) Transit time
(C) High frequency range (D) None above
197. EMG uses which electrode for gross measurements
(A) Surface electrodes (B) Needle electrodes
(C) Fine wire electrodes (D) Glass electrodes
198. For 8051, which one of the following statement is correct?
(A) 128 bytes of RAM (B) 4 I/O ports
(C) 16 bit timers (D) All above
199. Which one of the following material has highest resistivity for RTD?
(A) Copper (B) Nickel
(C) Aluminum (D) Platinum
200. Which one of the following has highest boiling point for expansion thermometer?
(A) Pentane (B) Toluene
(C) Water (D) Mercury