IMPORTANT COLLECTION OF ELECTRONICS/ ELECTRICAL/ ELECTRONICS & TELE-COMMUNICATION TECHNICAL INTERVIEW QUESTIONS

1. How many interrupts are there in 8085 ?
2. What are hardware & software interrupts ? Give examples
3. What is USART (Universal Synchronous Asynchronous Receiver Transmitter) ?
4. What is the 8085 instruction to wait ?
5. What are the differences between a latch and a flip flop ?
6. What are the differences between a micro-processor and a micro-controller ?
7. What is the instruction if I want to incorporate delay in assembly language program ?
8. Explain what is meant by Boot-Strapping ?
9. What is an opcode ?
10. Write the mnemonics for adding 2 numbers using 8085
11. What are the registers available in a micro-processor ?
12. What is the purpose of an ALU in a micro-processor ?
13. Draw the circuit diagram of a JK Flip Flop and explain its working with a truth table
14. Explain the operation of Multiplexer & De-Multiplexer ? Where are they used ?
15. What is the difference between Zener breakdown & Avalanche breakdown ?
16. What are the ideal characteristics of an Operational Amplifier ?
17. What are the differences between an insulator & a dielectric ?
18. What is biasing of a transistor ?
19. What is sampling theorem ?
20. What is a darlington pair ? Draw the transistor diagram of a darlington pair ? What are the advantages of using a Darlington Pair ?
21. Draw the block diagram of GSM ?
22. What is ISDN ?
23. Whai is PSTN ?
24. What are the types of information used for signalling from one exchange to another ?

25. What is Dual Tone Multi Frequency (DTMF) ?
26. What is Bluetooth ?
27. Compare and contrast Wi-Fi Vs WiMax
28. What is the broadband frequency ?
29. What are the differences between Frequency Division Multiplexing(FDM) & Orthogonal Frequency Division Multiplexing(OFDM) ?
30. Compare & contrast an FET Vs BJT
31. What is meant by Hamming Distance ?
32. What is Inter Symbol Interference(ISI) ?
33. Explain the term modulation
34. What is the difference between Simplex, Duplex and Half-Duplex communication ?
35. What is the difference between International Mobile Equipment Identity(IMEI) and International Mobile Subscriber Identity(IMSI) ?
36. We join two PN junction diodes in a back to back fashion as shown in the figure. Can that act as a transistor?

37. Explain the terms TDMA, FDMA and CDMA
38. What is a High Speed Link (HSL) ?
39. What are the disadvantages of analog communication over digital communication ?
40. What are the disadvantages of Frequency Modulation(FM) over Amplitude Modulation (AM) ?
41. What is Full-Wave Rectifier ? Explain its working ?
42. What is a wheatstone bridge circuit ? How does it work ?
43. Explain the working of an oscillator
44. What are the differences between Analog & Digital Communication ?
45. What are the electronic components that form part of an oscillator ?
46. How does a voltmeter work ?
47. What are the different types of diodes ?
48. Explain the working of a diode
49. Explain the working of a transistor
50. Explain the working of a capacitor

51. Explain the working of a resistor
52. Explain the Color Coding of a Register
53. How does sound amplification work ?
54. What is a Digital Signal Processor ?
55. What is Global Positioning System(GPS) ? How does it work ?
56. What are the basic components of an encoder & decoder ?

57. How can we make pulsating DC to DC ?
58. Draw a full wave bridge rectifier and explain its working ?
59. What are the applications of Power Electronics ?
60. Explain Pulse Width Modulation(PWM) ?
61. How does an electric iron work ?
62. What are the applications of motors in homes ?
63. What happens to resistance when temperature increases ?
64. Resistance at 28 degree centigrade is R28. What will be the resistance if the temperature is increased to say 100 degrees centigrade ?
65. Draw the block diagram of the thermal power plant and explain the process
66. What are the electrical devices used in the chimney for pollution control ?
67. What is an electro static precipitator (ESP)
68. Why NAND and NOR are called the universal gates ?
69. Design an AND and OR gate using universal gates
70. What is the EMF equation of a DC Motor ?
71. Suppose a machine is used as a generator or motor. What is the significance of the back emf ?
72. What does synchronous speed signify in a AC machine ?
73. What is a self-excited machine ? How do you achieve it ?
74. How do you calculate torque in a motor ?
75. Which motor has the highest starting torque ?
76. Most of the generators in a Thermal Power Station are cooled by hydrogen. Why is it ?
77. What is a Turbo-Generator ? Why is it called so ?
78. Given a 5 HP motor where the fuse is blown. How do you find the capacity of the fuse ?
79. Calculate the frequency of a 2-pole machine with 6000 RPM. If it was a 4-pole machine what would be frequency ?

80. What is the normal power factor of an Induction Motor ?
81. Draw the Vector diagram of a synchronous motor
82. What happens when there is over excitation of a synchronous motor ?
83. What is synchronous reactance ?
84. What are the methods for improving the power factor of an Induction Motor ?
85. What is resonance ? When does it happen ? What is the significance ?
86. Given an Arc Furnace drawing 500 Amps at 50 V. What is the power and energy ?
87. We say the cost of 1 unit of power is Rs. 2. What does it mean ?
88. Can you name any machine that runs on leading power factor ?
89. Draw the V-curve of a synchronous machine ? Explain the diagram
90. What is the definition of Power Factor ? Ideally what should be the Power Factor of a machine ?
91. What are the different kinds of self-excited DC machines ?
92. What is meant vy short circuit impedance of a transformer ?
93. What is a current transformer ? Why are they called as instrument transformers ?
94. What are harmonics ?
95. What is meant by stalling of an Induction Motor ?
96. What are the methods used for reducing transmission losses ?
97. What is meant by stability of Power Sysytems ?
98. A motor has got 37 slots. What kind of winding do you use ?
99. What tests are done before powering up a motor ?
100. What is the significance of rotor resistance on the speed or torque of an Induction Motor ?
101. What is Faraday's law of electro-magnetic induction ?
102. Suppose a load is inductive. Is it desirable ?
103. What are the differences between a cage rotor and a wound rotor ?
104. Draw the equivalent circuit of an Induction Motor
105. What are the drawbacks of a wind power system ?
106. What happens when you add metal particles in a dielectric ?
107. Draw the Load Torque characteristics of an Induction Motor
108. What is a 3-stage turbine ?
109. What is the purpose of the blocked rotor test on an induction motor ?
110. What is proportional control ?
111. What is the effect of feedback on the Control System ?

112. What are the general characteristics of root locus ?
113. Example of a circuit where Inductance and Capacitance are in parallel ?
114. Explain open circuit test and short circuit test on an Induction Motor
115. What is the super-position theorem ? What are its applications ?
116. What is lenz's law ?
117. What is the frequency response of an inductance ?
118. Why can't we start a DC Motor without a starter ?
119. What is a line trap ?
120. What is the significance of the bushing inside the transformer (within Oil) and outside the transformer (in the air)
121. What is ferranti effect ?
122. How do you terminate a transmission line ?
123. What is meant by armature drop ?
124. What are the differences between a cable and a transmission line ?
125. What is meant by falling out of step (synchronous motors and generators)
126. Why is transmission done at very high voltages ?
127. Water is falling from a height h (head) at the rate of Q cubic metres/second. What is the amount of power that can be generated ?
128. What are the main advantages of gas turbines ?
129. What is meant by the short circuit impedance of a transformer ? How is it important when we want to design power systems ?
130. What is a Bode plot ? Explain its significance.
131. What is cross-magnetization ?
132. What kind of a starter is required for a DC series motor ?
133. Why is series motors used in situations where very high torque is required ?
134. Given a motor with the following ratings : Power = 5 KW, Power Factor = 0.8, V = 450 V. How would you find the rating for the fuse ?
135. Describe with the help of a graph the speed torque characteristics of an Induction Motor
136. In the design of a distribution transformer what are the most important parameters ? (Hint : Regulation and Efficiency)
137. What is meant by synchronous reactance ?
138. Draw the Slip Torque characteristics of an Induction machine ?

139. What are the damages that can occur in a transformer ?
140. What is meant by basic impulse insulation level ?
141. What is the transformer equation ?
142. What is the unit of flux ?
143. Why is the transformer core made up of thin sheets ?
144. What is phase control ? How do you change the output voltage using phase control ?
145. How do you separate Eddy current & Hysterisis losses in a transformer ?
146. What is an automatic voltage regulator ?
147. If we want to correct the output voltage of a generator what should we do ?
148. How can we convert a generator to a motor ?
149. What are the components of an AC synchronous machine ?
150. What is meant by excitation ? What is flux ?
151. Suppose we want to start a Gas turbine or Steam turbine ? Which would take longer and why ?
152. For a 4-pole machine running at 50 Hz frequency calculate the speed ?
153. What is armature reaction ?
154. Explain the working of a dual slope A/D converter ?
155. In a DC machine suppose the air gap is constant between the poles. What kind of wave do you get ?
156. What is the relationship between magneto motive force (MMF) and flux ?
157. What is reluctance ?
158. How can you relate the speed of a machine to its back emf ?
159. What is the type of a Series AC motor which has a commutator ?
160. What is thestarting torque of a Mixie ?
161. What is the speciality of a 1-phase induction motor winding ?
162. Why is the length of the bushing outside the transformer more than the length of the bushing inside the transformer ?
163. The bushings are fixed in an Aluminium plate and not a Mild Steel plate. Why ?
164. What is Synchronous Power ? Can you relate it with sending end voltage, receiving end voltage and line impedance ?
165. When does a machine fall out of synchronization ?
166. Say a synchronous motor is fully loaded. Suddenly the load is thrown. What happens ?
167. How do you cool a transformer ?
168. What is the relationship between KVA and KW ?

169. What is meant by Reactive Power ?

170. Say you have a generator where the generated voltage fluctuates from time to time. How do you build an energy system for the same ?

171. Suppose you have a transformer with 99% efficiency, 0.8 PF and 3.85 KVA. Ow much would be the losses ?

172. Keeping flux constant what is the relationship between EMF and speed ?

173. MM/Flux = constant. What is this constant ?

174. How is flux produced ? How do you keep it constant in a DC machine ?

175. How do you measure the speed of a motor ?

176. What is a tacho generator ? Why is it called so ?

177. What is meant by regulation of a transformer ? Why is it important ?

178. What is meant by short circuit impedance of a transformer ?

179. What is breaking capacity of a Circuit Breaker ?

180. Why do we perform Open circuit test and Short circuit test of a transformer ?

181. Why is a nuclear power plant located close to the sea ?

182. What caused the Chernobyl disaster ?

183. What are all the important aspects to keep in mind when you want to manufacture a starter motor ?

184. What kind of brushes in used in low voltage machines ?

185. What happens in a winding when the brush moves from one commutator segment to another ?

186. What kind of rotor does a salient pole generator have ?

187. Explain how capacitors can be used to improve power factor. Find the capacitors required to change the Power Factor from 0.8 to 0.9

188. How do you achieve Frequency Modulation ?

189. What is a tuned amplifier ? How do you tune it ?

190. What modulation scheme is used in TV ?

191. What are the advantages & disadvantages of Amplitude Modulation ?

192. Why is it that FM cannot be used for tranmission over longer distances ?

193. What is a Voltage Controlled Oscillator (VCO) ?

194. What is a fourier transform(FT) ?

195. What are the various processing that can be done to a digital signal ?

196. Compare and contrast Amplitude Modulation(AM) & Frequency Modulatin(FM)

197. What is the relationship between wavelength and length of the antenna ?

198. What is meant by Suppressed Carrier Modulation ?
199. What information can you gather from a Spectrum ?
200. How do you find the highest frequency component in a signal ?
201. What is the need for taking the FT of a signal ?
202. What is the inverse FT of a rectangle (Low Pass Filter) ?
203. What is meant by spreading of the spectrum ?
204. What is impedance matching ?
205. How can you transfer maximum power from one circuit to another ?
206. A wire carrying current is connected to a 75 ohm resister and then earthed. Why do we connect it to 75 ohms specifically ?
207. What is phase locked loop ? Where is it used ?
208. What are the differences between Frequency and Phase(Angle) Modulation ?
209. What is a vestigial Side Band ?
210. What is the frequency range of the VHF band ?
211. Why do we go for optical communication ?
212. What is meant by mixing & multiplying of a signal with the carrier ? Where is mixing used and where is multiplication used ?
213. What is a Moore & Mealy machine ?
214. Explain the working of a Binary counter ?
215. What is decade counter ?
216. Draw the Common Emitter amplifier using a BJT
217. It is said that Class A amplifier requires biasing ? What does it mean ?
218. If alpha is given how would you calculate Beta (in terms of alpha) in a Common Emitter amplifier ?
219. Draw RS Flip Flop using universal gates ? What are its applications ?
220. Draw the circuit diagram of a 555 Timer used to generate a monoshot of 5 msec duration
221. How would you convert an amplifier into an oscillator ?
222. What is a Class A amplifier ?
223. Name the oscillator that uses a tranformer for the feedback ?
224. Draw the circuit diagram of an Instrumentation amplifier and explain its working
225. Explain the working of a 555 timer. How would you measure
226. How can you design an astable multivibrator using a 555 timer ?
227. Why do you have analog comparators in 555 timer ?

228. What is the left and right shift register ? How are the operations multiplication and division actually performed ?
229. What is the relationship between back emf and terminal voltage ?
230. How do you transfer a signal from time domain to frequency domain ?
231. Draw the circuit diagram of a filter
232. What is convolution ?
233. What is segmentation ?
234. What are the properties of a Fourier Transform ?
235. What is duality theorem ?
236. Suppose we have a carrier signal and a base band signal. What do we get by multiplying the 2 signals ? How do you demodulate the signal
237. What is meant by impedance matching ?
238. In a circuit where we terminate using a resistor to ground we use a 75 ohm resistor. What is the significance of choosing a 75 ohm resistor ?
239. What is suppressed carrier modulation ?
240. What is the relationship between Frequency modulated wave and Phase(Angle) modulated wave ?
241. How do we make a signal travel in a particular direction ? Hint : Wave Equation
242. What is a clock ?
243. In the FT of a image where is the DC component ?
244. Draw the representation of a MOSFET ?
245. What is the fundamental equation relating voltage and charge ?
246. What is Parseval's theorem ?
247. What is sampling theorem (also known as Nyquist theorem) ?
248. What is CDMA ?
249. How is the modulation done in CDMA ?
250. What is modulation index ?
251. Are you aware of any transmission method which uses single side band ?
252. Why is the Vestigial Side Band(VSB) technique used for TV broadcasting ?
253. How is distortion avoided when we consider only one side band ?
254. Given a phase (Angle) modulated signal how would you convert it into a frequency modulated signal ?
255. What is a laminator ?
256. How do you convert a silicon wafer into a solar cell ?

257. What is the surge impedance of a cable ?
258. What is the highest impedance that a cable can have ?
259. How would you demodulate a frequency modulated signal ?
260. What is the capacity of 1 solar cell ?
261. How would you connect from one solar cell to another ?
262. What is Software Defined Radio(SDR) ?
263. Draw the diagram of an instrumentation amplifier ?
264. What are the differences between FET and BJT ?
265. How would you measure the frequency of a signal using Cathode Ray Oscilloscope (CRO) ?
266. Draw the diagram of phase shift oscillator using a transistor ?
267. Are you aware of any analog chip that uses SR Flip Flop ?
268. How would you convert an RS flip flop to a T flip flop ?
269. How would you convert RS flip flop into a D dlip flop ?
270. What is Binary Coded Decimal (BCD) ?
271. What are the differences between a Decade and a Binary Counter ?
272. In 555 IC what is the application of SR flip flop ? How does it measure time using SR flip flop ?
273. Draw the diagram of RS Flip Flop using universal gates
274. Draw the diagram of a phase shift oscillator using transistor
275. How would you generate the 2's complement of a number using gates ?
276. What is frequency at which GSM operates ? Uplink and Downlink frequencies
277. What is the mechanism by which frequencies are divided ?
278. What are the differences between Wi-Fi and Wi-Max ?
279. What is the difference between Accuracy & Precision ?
280. What is the difference between a Voltmeter and a Galvanometer ?
281. How would you convert a galvanometer into a voltmeter ?
282. What are the different interpolation techniques in Image Processing ?
283. What is the inverse FT of an all-pass filter ?
284. Draw the diagram of a D flip flop using logic gates ?
285. How would you multiply 2 binary numbers ?
286. What are min-tems ? Given a circuit how would you find the min-terms ?
287. Provide the truth table of XOR gates
288. Gien a delta network with 3 resistors ? How would you convert into an equivalent star network ?

289. What is a Shift Register ?
290. Can we do filtering in the frequency domain ? What would be the shape of a low-pass filter in frequency domain ?
291. Given voltage and current which is the independent variable ? And why ?
292. What is a thyrister ?
293. Draw the equivalent circuit of a thyrister ?
294. What is an IGBT ?
295. Draw the equivalent circuit of an N-channel IGBT ?
296. An IGBT is like an FET ? How ?
297. Given a MOSFET how will you find it is an enhancement type or depletion type ?
298. How does an FET work ? Explain with the help of a diagram
299. What is proportional controller ?
300. What is the advantage of using BODE plot ?
301. What is a pole in a transfer functions ?
302. What is the use of factorization of a polynomial ?
303. Given the number of poles and the number of zeroes how would you plot the root locus ?
304. Why is FT also called Harmonic analysis ?
305. Can you design a monoshot multivibrator using analog IC ?
306. How many op-amps are required to build an instrumentation amplifier ?
307. How can we measure time electronically ?
308. Design a decoder that converts BCD to 7-Segment display
309. What is sampling frequency ?
310. What is the FT of a rectangular function ?
311. What are the characteristics of a digital signal ?
312. What kind of an antenna is found in the nose of an airplane ?
313. What is a Binary counter ? How does it work ? Why is it called so ?
314. Diff between Comm. & Transmission -
315. What are the possible ways of data exchange. Simplex/Half Duplex/Duplex
316. What is meant by Beacon – Fault
317. Bandwidth – Frequency range between lower and upper limit.
318. What are the two types of transmission media – wire (guided)/wireless(unguided)
319. Why wires are twisted in the twisted pair-

320. Diff between a timer and a counter –
321. Why 50Hz is used as a std in Indian Power line-
322. Diff between dielectric and insulator –
323. Diff between a cell and a battery –
324. Why diode is called a diode?
325. Diff between BJT and FET -
326. Where do you use a polarized capacitor ?.
327. RS 232 – recommended standard
328. Diff between a latch and flip flop –
329. Diff between zener diode and avalanche breakdown.
330. 8085 which interrupt is highest priority- TRAP(
331. Compare SCR and diode rectifier –
332. What is biasing – Connect a DC voltage to setup the operating region.
333. What is the largest prime number that can be stored in an 8 bit Mem- 127
334. Number of faces /vertices/edges of a cube -6,8&12
335. Why -48V is used in telephone switches
336. GSM 48 connection/CDMA theoretically 131.
337. CDMA is more secure due to unique code being used for spread spectrum(Interim Stand 95)
338. Why cellular represented by hexagonal-
339. Typical speech is 40% time and 60% time is silence.
340. GPS – 24 satellite- At a time three are monitoring the point (Earth acts as a 4 th circle)
341. GEO – 36000km – Roll-X/Pitch-Y/Yaw-Z
342. HDTV – 1920x1080 with aspect ratio of 16:9
343. Tele density in India – 43.5
344. What is a Broadband – > 256kbps
345. Wifi (wireless Fidelity) -802.11 and Wimax(World wide interoperability microwave access) 802.16
346. CD-DVD -à Blue ray Disc- 25MB/50MB data with a speed of 1x/2x-36/72 mbps read. Uses blue violet Laser (405 nm instead of 650nm red). HD Video of 9 hours in double density.
347. What is FSO – Free space Optics –speed terraHz/few km/10-2000mbps/
348. What is the channel BW in GSM- 200khz (124 RF carries) 890-915(uplink) 935-960(dn link)
349. GPRS- general packet radio service – 144kbps
350. EDGE(enhanced data rates for GSM Evolution) -384kbps

351. 3G – 2mbps in office /384 for pedestrian /144kbps for moving vehicle.1920-80 uplink2110-70 dn
352. HSDPA –(High speed downlink packet access)14mbps
353. What is MIMO (smart antenna)- spatial multiplexing to increases data throughput w/o additional power or bandwidth. Used in ofdma
354. What is ISI(Inter symbol Interference)-
355. What are the FEC(forward error correction)-block code/convolution code/interleaving
356. Hamming distance – disagreement between two words
357. Hamming weight – largest number of 1 s in a valid codeword.
358. What is modulation –converting an information so that it can be sent through a medium
359. What is EDFA- erbium doped fiber amp- optical Amp
360. What is IMEI- international Mobile eqpt Identity.
361. What is IMSI- International Mobile sub Identity
362. ISDN- Integrated service digital services
363. OSI-Physical-data-network-transport-session-presentation-application
364. What is a fuel cell- Hydrogen
365. ISDN- integrated services digital network- BRI 2B+D=144Kbps and PRI 30B+D=2048
366. CCS and CAS

(Note: Kindly avoid if some questions are repeated)