T.E.(Instrumentation Engineering)(SEM-VI)(Choice Base) / DEC 2019/05.12.2019

Time: 3 Hours   Max. Marks: 80

N.B: 1. Question No. 1 is Compulsory.
        2. Attempt any Three from the remaining questions.
        3. Assume suitable data wherever necessary.

Q.1   a)   Define IoT and explain characteristics of IoT.   (05)
       b)   Write about Hub, switch and Router.   (05)
       c)   Explain the need for modulation.   (05)
       d)   Explain different communication modes of HART protocol.   (05)

Q.2   a)   Compare Wi-Fi, GPRS, GPS, Zigbee.   (10)
       b)   Explain RS-232, RS-422 & EIA-485 standards.   (10)

Q.3   a)   Define and Derive expression for AM wave. Also derive the expression for total power   (10)
             transmitted in an AM wave.

       b)   Define Field Bus. What are its different components? Explain how the field bus should be   (10)
             implemented in hazardous and non- hazardous areas?

Q.4   a)   What is Profibus? What are the types of Profibus? Explain their features with a suitable   (10)
             diagram.
       b)   Explain the architecture of HART protocol in detail.   (10)

Q.5   a)   Explain OPC architecture with suitable diagram.   (10)
       b)   In an FM system, when the audio frequency (AF) is 500 Hz and the AF voltage is 2.4 V,   (05)
             the deviation is 4.8kHz. If the AF voltage is now increased to 7.2 V, what is the new
             deviation? Find modulation index in both cases.
       c)   Draw ASK, FSK and PSK waveforms for digital data 1010110.   (05)

Q.6   Write a short note on-   (20)
       a)   Benefits of Foundation FieldBus
       b)   MODBUS
       c)   General Purpose Instrument Bus(GPIB)
       d)   CAN Bus

76861   Page 1 of 1