CBCS SCHEME

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15EE52

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Microcontroller

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain the important features of 8051μc. **(04 Marks)**

b. Explain the working of stack and stack pointer. **(06 Marks)**

c. Explain any 4 addressing modes of 8051μc with an example **(06 Marks)**

OR

2 a. Briefly explain the memory organization of 8051μc. **(07 Marks)**

b. Explain the pin functions of port 3 in 8051μc **(05 Marks)**

c. Compare microcontroller and microprocesses. **(04 Marks)**

Module-2

3 a. Classify the CALL instruction in 8051. Explain each one. **(06 Marks)**

b. Write an ALP to generate 50 odd numbers from one (in BCD) and store them starting from location 30h. **(05 Marks)**

c. Write an ALP to load accumulator with the value 55h and complement the content of accumulator 900 times. **(05 Marks)**

OR

4 a. Explain the working of DA A instruction with an example. Assume that data is 99h and 99h. **(05 Marks)**

b. Explain CJNE and JZ instruction with an example. **(06 Marks)**

c. Explain 5 assembler directives available in ALP. **(05 Marks)**

Module-3

5 a. Explain mode 2 timer programming with neat sketch and specify the programming steps. **(06 Marks)**

b. Write an ALP to generate the following waveform on P1.2.XTAL = 22MHz. Use timer 1 mode 1.

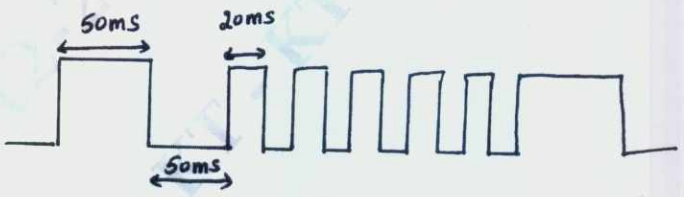

Fig Q5(b) **(10 Marks)**

OR

6 a. Write a C program to get a bit from P1.0 and send it to P2.7 after inverting it. **(05 Marks)**

b. Explain different data types in 8051C. **(05 Marks)**

c. Write a C program to convert ASCII digits of '4' and '7' to packed BCD and display them on P1. **(06 Marks)**

Module-4

7 a. Explain RS232 handshaking signal and specify the purpose of MAX232 while interfacing. **(08 Marks)**

b. Write an ALP to transfer serially the message "VTU BELGAUM" continuously at a band rate of 9600. Also write the importance of SCON register. **(08 Marks)**

OR

8 a. Write a C program using interrupts to do the following :
   i) Receive data serially and send it to P0
   ii) Read port P1, transmit data serially and give a copy to P2.
   iii) Make timer 0 generate a square wave of 5KHz frequency on P0.1.
   Assume XTAL = 11.0592 MHz. set the band rate 4800. **(10 Marks)**

b. Explain the significance of IE and IP register. **(06 Marks)**

Module-5

9 a. Explain interfacing of DC motor to 8051μc with a neat diagram and write a C program to monitor the status of SW and perform the following :
   i) If SW = 0, the DC motor moves with 50% duty cycle pulse.
   ii) If SW = 1, the DC motor moves with 25% duty cycle pulse. **(10 Marks)**

b. Draw the pin diagram of 8255 and briefly explain the signals. **(06 Marks)**

OR

10 a. Draw the block schematic of DAC 0808 interfaced to 8051 and write an C program to generate sine wave. **(08 Marks)**

b. With a neat diagram, show how a stepper motor in interfaced to 8051. Write a program to rotate stepper motor continuously. **(08 Marks)**

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15EE553

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Electrical Estimation and Costing

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. What is the purpose of estimating and costing? **(04 Marks)**

b. Write a short note on : i) Contingencies ii) Overhead charges ii) Catalogues. **(06 Marks)**

c. Write any six rules of Indian Electricity Act. **(06 Marks)**

OR

2 a. Define Tender. Explain modes of tendering. **(05 Marks)**

b. Write a short note on : i) Purchase orders ii) Electrical schedule. **(05 Marks)**

c. Explain the IE rules 29, 30, 45, 46, 47 and 50. **(06 Marks)**

Module-2

3 a. What are the general rules to be followed for internal wiring? **(06 Marks)**

b. The Fig.Q3(b) shows the plan of a low income group Government quarter. Draw the single line diagram for lighting circuit on the sketch. Calculate the total load, length of conduit pipe, estimate the quantity and cost of material. All dimensions are in meters. **(10 Marks)**

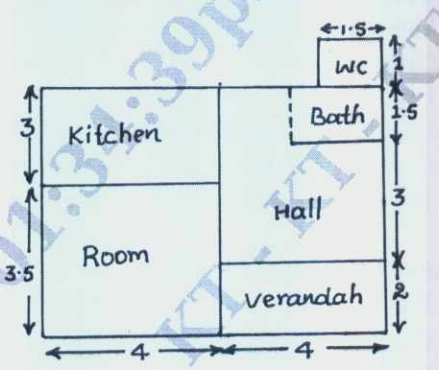

Fig.Q3(b)

OR

4 a. Write a short note on : i) fuse ii) cable. **(04 Marks)**

b. The Fig.Q4(b) shows the plan of a small house as it is be wired in concealed system for providing lighting outlets only. Calculate the total load, length and size of wire and estimate the required materials and cost. All dimensions are in meters. **(12 Marks)**

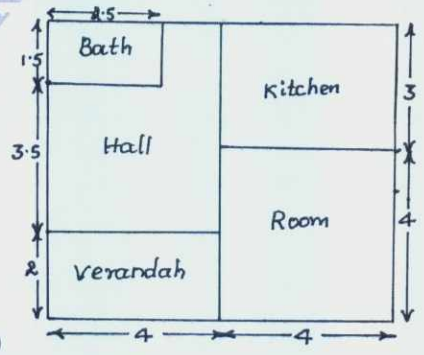

Fig.Q4(b)

Module-3

5 a. Write the reasons for excess recording of energy meter. **(04 Marks)**

b. List any 6 general rules regarding motor installation wiring. **(06 Marks)**

c. Find the material required for 1-phase underground system connection to feed power supply to an AEH installation having a lighting load of 1020W and a power load of 3 KW for a distance of 10M. **(06 Marks)**

OR

6 a. What are the different types of service connection, list advantages and disadvantages? **(06 Marks)**

b. A small workshop has to be equipped with the following machines of inner dimensions 8m × 6m.

i) A 1Hp, 400V, 3-phase motor for drilling machine
ii) A ½ HP, 230V, 1-phase motor for grinding machine
iii) A 3HP, 400V, 3-phase motor for Lathe machine
iv) A 5KVA, 400V, Welding transformer.

Assume efficiency as 85% and power factor 0.8 for all machines. Draw the wiring diagram for electrical connection starting from main switch and prepare the estimate of cost for the power distribution arrangement. **(10 Marks)**

Module-4

7 a. Explain the following :

i) Guys and Stays
ii) Cross Arm
iii) Lightening arrester. **(06 Marks)**

b. A pole for an overhead 11KV, 3-phase, 50Hz line is required to be earthed and a stay is to be provided. Prepare a list of materials required and estimate the cost. **(10 Marks)**

OR

8 a. Explain the following :

i) Span length
ii) Guarding of overhead lines
iii) Bird guards. **(06 Marks)**

b. Estimate the quantity of materials required for adding 132KV bay at 132KV grid substation. **(10 Marks)**

Module-5

9 a. Write a short note on main electrical connection. **(06 Marks)**

b. Estimate the quantity of material and cost for installation of 10MVA, 33/11KV substation. **(10 Marks)**

OR

10 a. Write a short note on substation Earthing. **(06 Marks)**

b. Estimate the quantity of material required for the installation of a 400KVA indoor type, 11/0.433KV transformer. **(10 Marks)**

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15EE54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Signals & Systems

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Categorize the following signal as energy signal or power signal. Find out corresponding value:

$$x(t) = \begin{cases} t & 0 \le t \le 1 \\ 2-t & 1 \le t \le 2 \\ 0 & \text{Otherwise} \end{cases}$$ **(04 Marks)**

b. What are different elementary signals? Explain them with neat sketch. **(04 Marks)**

c. Sketch and label for each of the following for given signal x(t) shown in Fig. Q1 (c):

(i) $x(2t+1)$ (ii) $x(-2t+3)$ (iii) $x\left(2\left(\frac{t}{3}-2\right)\right)$

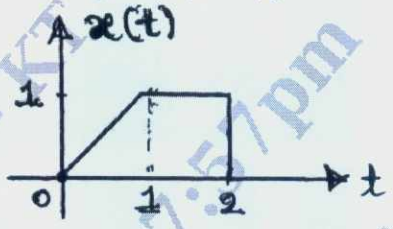

Fig. Q1 (c)

(08 Marks)

OR

2 a. Explain different classification of signals. **(05 Marks)**

b. Given discrete time system $y(n) = 2x(2^n)$. Determine whether the system is,
(i) Linear (ii) Time variant (iii) Memoryless (iv) Stable. **(05 Marks)**

c. Find the even and odd part of the following signal,
(i) $x(t) = e^{-2t}\cos(t)$ (ii) $x(t) = e^{jt}$ **(06 Marks)**

Module-2

3 a. Find the following convolution sum $y(n) = \left(\frac{3}{4}\right)^n u(n) * u(n-2)$ and evaluate the value for $n = \pm 5$. **(06 Marks)**

b. Find out the total response of the system given by,

$$\frac{d^2}{dt^2}y(t) + 3\frac{d}{dt}y(t) + 2y(t) = 2x(t)$$

with $y(0) = -1$, $\left.\frac{dy(t)}{dt}\right|_{t=0} = 1$ and $x(t)=\cos(t)u(t)$ **(10 Marks)**

OR

4 a. The impulse response of an LTI system is given by $h(t) = u(t) - u(t-2)$. Find the output of the system for a given input $x(t) = u(t) - u(t-3)$. Draw the output response. **(10 Marks)**

b. Draw the direct form I and direct form II implementations for the following difference equation.

$$y[n] + \frac{1}{2}y[n-1] - y[n-3] = 3x[n-1] + 2x[n-2]$$ **(06 Marks)**

Module-3

5 a. Find the Fourier Transform (FT) of the following signals:

(i) $x(t) = e^{-a|t|}$ (ii) $x(t) = \frac{1}{a^2 + t^2}$ (iii) $x(t) = \cos\omega_0 t$ **(10 Marks)**

b. State and prove the following properties in Fourier Transforms:
   (i) Differentiation property (Time)
   (ii) Time shift property **(06 Marks)**

OR

6 a. Find the frequency response of the system and impulse response if differential equation of the system is given by,

$$\frac{d^2}{dt^2}y(t) + 5\frac{d}{dt}y(t) + 6y(t) = -\frac{d}{dt}x(t)$$ **(08 Marks)**

b. The RC filter is characterized by following impulse response find out corresponding frequency response:

$$h(t) = \frac{1}{RC}e^{-t/RC}u(t)$$

For the above LTI system plot the magnitude curve. **(08 Marks)**

Module-4

7 a. Find the Discrete Time Fourier Transform (DTFT), of a rectangular pulse sequence given by $x[n] = u[n] - u[n-N]$ **(08 Marks)**

b. A causal discrete LTI system is described by,

$$y[n] - \frac{3}{4}y[n-1] + \frac{1}{8}y[n-2] = x[n]$$

   (i) Determine frequency response of the system $H(\Omega)$.
   (ii) Find the impulse response $h[n]$ of the system. **(08 Marks)**

OR

8 a. Use appropriate properties to find DTFT of the following signal:

(i) $x[n] = \left[\frac{1}{2}\right]^n u[n-2]$.

(ii) $x[n] = n\left[\frac{1}{2}\right]^{|n|}$ **(08 Marks)**

b. A discrete LTI first order system is given by,

$$y[n] = x[n] + x[n-1]$$

Find out the frequency response of the system and impulse response. **(08 Marks)**

Module-5

9 a. Determine the z-transform, ROC and the location of poles and zeros of X(z) for the given x(n),

$$x(n) = -\left(\frac{1}{2}\right)^n u(-n-1) - \left(-\frac{1}{3}\right)^n u(-n-1).$$ **(08 Marks)**

b. Use the method of partial fractions to obtain time domain signal corresponding to the given X(z).

$$X(z) = \frac{z^2 - 3z}{z^2 + \frac{3}{2}z - 1} \quad \text{ROC } \frac{1}{2} < |z| < 2$$ **(08 Marks)**

OR

10 a. What are the properties of Region Of Convergence (ROC) in z-transform? **(04 Marks)**

b. Find the inverse – z transform of $X(z) = \ln(1 + z^{-1})$ using power series expansion. **(04 Marks)**

c. Solve the following difference equation using unilateral z-transform:

$$y(n) - \frac{3}{2}y(n-1) + \frac{1}{2}y(n-2) = x(n) \quad \text{for } n \geq 0$$

$$y(-1) = 4,\ y(-2) = 10 \text{ and } x(n) = \left(\frac{1}{4}\right)^n u(n)$$ **(08 Marks)**

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15ES51

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Management and Entrepreneurship Development

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define the term management and its functions. **(06 Marks)**
b. List and explain the roles of a manager. **(05 Marks)**
c. In brief explain whether management is a science or an art. **(05 Marks)**

OR

2 a. What is planning? List out its importance. **(05 Marks)**
b. Explain the types of planning. **(06 Marks)**
c. List and explain the steps employed in decision making. **(05 Marks)**

Module-2

3 a. Define the meaning of an organization and steps in process of organizing. **(05 Marks)**
b. What is staffing? Explain its importance. **(05 Marks)**
c. List and explain the techniques in the selection process. **(06 Marks)**

OR

4 a. What is motivation? Explain Maslow's need hierarchy theory. **(05 Marks)**
b. Define the word coordination and its types. **(05 Marks)**
c. Explain the term leadership and its types. **(06 Marks)**

Module-3

5 a. Explain the meaning of social responsibilities of business towards various groups. **(06 Marks)**
b. Define the business ethics and corporate governance. **(05 Marks)**
c. What is social audit? Explain its importance. **(05 Marks)**

OR

6 a. Define the meaning of an Entrapreneur and their characteristics. **(06 Marks)**
b. List and explain types of Entrapreneurs. **(05 Marks)**
c. Explain the Entrapreneurial development cycle. **(05 Marks)**

Module-4

7 a. What are SSI's and the impact of globalization and WTO on SSI's? **(08 Marks)**
b. Define Ancillary industry and tiny industries. **(08 Marks)**

OR

8 a. List and explain two institutional support of central level institutions. **(08 Marks)**
b. Explain the services provided by Small Industries Development Organization (SIDO). **(08 Marks)**

Module-5

9 a. Define product planning and development strategy. **(08 Marks)**
b. Explain the ways of project identification. **(08 Marks)**

OR

10 a. Write a note on network analysis. **(05 Marks)**
b. Explain PERT and CPM. **(06 Marks)**
c. Define importance for network techniques. **(05 Marks)**

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