Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

FACULTY OF SCIENCE

B.Sc. Third Year Practical Examination

ELECTRONICS PAPER XII

Time: Three Hours *Max.Marks:100*

SCHEME OF MARKING

Each practical for B.Sc. Third Year ELECTRONICS carries ***100*** marks, both for Paper XI and Paper XII. The distribution of marks for each practical is as under:

MARKS FOR EXPERIMENT: **75**

MARKS FOR ORAL: **15**

MARKS FOR RECORDBOOK: **10**

TOTAL MARKS: **100**

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ELECTRONICS PAPER XI

Time: Three Hours *Max.Marks:100*

1 Addition of 8 bit Numbers:

(i) Draw the flow chart for addition of two 8 bit numbers.
(ii) Write an assembly language program for it considering the result to be 16 bit numbers.
(iii) Feed the program to 8085 μP kit and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

2 Addition of 16 bit Numbers:

(i) Draw the flow chart for addition of two 16 bit numbers. Consider the result by 24 bit numbers.

(ii) Write an assembly language program for it.

(iii) Feed the program to 8085 μP kit supplied to you and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

3 Subtraction of 8 bit Numbers:

(i) A number_____ is stored at location _____ second number _____ is stored at location_____

(ii) Draw the flow chart and write an assembly language program to subtract second number from the first number.

(iii) Inter the program to 8085 μP kit and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

4 Subtraction of 16 bit numbers:

(i) Two 16 bit numbers_____ and _____ are stored at locations _____, _____ and _____.

(ii) Draw the flow chart, write an assembly language program to subtract _____ from _____.

(iii) Feed the program to 8085 μP kit and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

5 Addition of an array

(i) Draw the flow chart for addition of _____ numbers stored in an array, with starting location _____.
(ii) Write an assembly language program for it.
(iii) Feed the program to 8085 μP kit and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

6 To find largest Number:

(i) An array of _____ elements is stored from starting address _____. Draw the flow chart to find the largest elements from the array.
(ii) Write an assembly language program to find the largest elements from the array.
(iii) Feed the program to 8085 μP kit and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

7 To find smallest Number

(i) An array of _____ elements is stored from starting address _____. Draw the flow chart to find the smallest elements from the array.

(ii) Write an assembly language program to find the smallest elements from the array.

(iii) Feed the program to 8085 μP kit and execute it. Show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

8 Multiplication of two 8 bit numbers

(i) Two 8 bit numbers _____ and _____ are stored at memory address _____ and _____.

(ii) Draw the flow chart ALP to obtain the product of these two numbers. . The product may be 16 bit number.

(iii) Write an assembly language program for it

(iv) Feed the program to 8085 μP kit and execute it and show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

9 Division of two numbers

(i) A number X=_____ is stored at memory location _____ and another number Y=____ is stored at memory location_____.
(ii) Draw the flow chart to divide X by Y.
(iii) Write an assembly language program for it.
(iv) Feed the program to μP kit and execute it and show the result to the examiner.

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Time: Three Hours *Max.Marks:100*

10 Factorial of a number:

(i) Draw the flow chart to obtain the factorial of an 8 bit number, consider the result to be 16 bit number.
(ii) Write an ALP for it. Inter the program to μP kit and execute it. Get your result checked by the examiner.

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Time: Three Hours *Max.Marks:100*

11 Arrange the array ascending order:

(i) An array of _____ elements is stored at the memory location starting from _____.The length of the array is at _____ and the array it self starts from _____ location.
(ii) Draw the flow chart and write and assembly language program to arrange the elements in ascending order.
(iii) Feed the program to 8085 μP kit and execute it. Get your result checked by the examiner.

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Time: Three Hours *Max.Marks:100*

12 Arrange the array descending order:

(i) An array of _____ elements is stored at the memory location starting from _____.The length of the array is at _____ and the array it self starts from _____ location.
(ii) Draw the flow chart and write and ALP to arrange the elements in descending order.
(iii) Inter the program to 8085 μP kit and execute it. Get your result checked by the examiner.

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Time: Three Hours *Max.Marks:100*

13 Square root of numbers:

(i) Draw the flow chart and write an assembly language program to find the square of the 8 bit numbers _____. The result may be 16 bit number.
(ii) Feed the program to 8085 μP kit and execute it. Get your result checked by the examiner.

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Time: Three Hours *Max.Marks:100*

14 Square root of numbers:

(i) Draw the flow chart and write an assembly language program to find the square root of the 8 bit numbers _____. The result may be 16 bit number.
(ii) Feed the program to 8085 μP kit and execute it. Get your result checked by the examiner.

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15 Evaluation of expressions:

(i) Draw the flow chart and write an assembly language program to find the value of following expressions

(*a*) (a+b) (c+a)
where a =_____, b =_____, c =_____ and d =_____.

(b) $X^2 + Y^2 + Z^2 +$ where X=_____, Y=_____,and Z=_____,

(ii) Feed the program to 8085 μP kit and execute it. Get your result checked by the examiner.

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Time: Three Hours *Max.Marks:100*

16 Inter facing LED panel for up/ down counter:

(i) Draw the block diagram for interfacing of LED panel for 8 bit up/ down counter.
(ii) Write an assembly language program for the same.
(iii) Feed the program to 8085 μP kit, execute it.
(iv) Write your conclusion.

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Time: Three Hours *Max.Marks:100*

17 Interfacing 8 switches:

(i) Draw the block diagram to interface 8 switches to 8085 μP kit,
(ii) Write an ALP for interfacing the 8 switches to 8085 μP kit, and detection of the active switch.
(iii) Feed the program to 8085 μP kit, and execute it.
(iv) Show your results to the examiner.

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Time: Three Hours *Max.Marks:100*

18 Interfacing of stepper motor:

(i) Draw the block diagram to interface stepper motor to 8085 μP kit.
(ii) Write an assembly language program to control the rotation of stepper motor.
(iii) Feed the program to 8085 μP kit, and execute it.
(iv) Write your conclusion.

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Time: Three Hours *Max.Marks:100*

19 Interfacing of DAC to Generate Staircase/ Triangular Waveforms:

(i) Draw the block diagram to interface DAC to generate staircase/ triangular waveforms to 8085 μP kit.
(ii) Draw the flow chart and write an assembly language program for the same.
(iii) Feed the program to 8085 μP kit, and execute it.
(iv) Write your conclusion.

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Time: Three Hours *Max.Marks:100*

20 Interfacing of 7 Segment Display for Decade Counter:

(i) Draw the block diagram to interface 7 segment display to 8085 μP kit.
(ii) Draw the flow chart and write an assembly language program for the same.
(iii) Feed the program to 8085 μP kit, and execute it.
(v) Write your conclusion.

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Time: Three Hours *Max.Marks:100*

21 Sum and Difference of Two Bytes using 8086:

(i) Write a program to find Sum and Difference of two bytes stored on memory locations _____ and _____ respectively.
(ii) Copy the result Sum in BL register and Difference in CL register respectively.

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Time: Three Hours *Max.Marks:100*

22 Average of block of Data Using 8086:

(i) Write a program to find Average of given block of data containing _____ elements.
(ii) Store the Average on memory location _____.

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Time: Three Hours *Max.Marks:100*

23 Determination of Even or Odd Number Using 8086:

(i) Write a program to determine whether the number is even or odd.
(ii) Copy **00H** on memory location _____ otherwise **EEH** on it.

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Time: Three Hours *Max.Marks:100*

24 Division of Two Numbers Using 8086:

(i) Write a program to Divide the number_____ by _____ stored on memory locations _____ and _____ respectively.
(ii) Store the result on memory location _____.

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Time: Three Hours *Max.Marks:100*

25 Masking of a Nibble Using 8086:

(i) Write a program to mask lower nibble of a given block of data. The block contains _____ bytes.
(ii) Store the result on memory location.

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Time: Three Hours *Max.Marks:100*

SCHEME OF MARKING

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ELECTRONICS PAPER XII
Time: Three Hours *Max.Marks:100*

1 SCR characteristics

(i) Draw the circuit diagram to study the SCR characteristics
(ii) Make the connections
(iii) Find the firing potential for lg=
(iv) Plot graphs to show the firing characteristics
(v) Find the holding current.

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Time: Three Hours *Max.Marks:100*

2 Firing of one SCR using IJT (Half wave)

(i) Draw the circuit diagram to study the firing of one SCR using UJT
(ii) Assemble the circuit .
(iii)Display wave forms on CRO for three different firing angles, draw them.
(v) Calculate the output power in each case.

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Time: Three Hours *Max.Marks:100*

3 Power Inverter

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Determine the output frequency and voltage, across the load.
(iv) Determine its efficiency.

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Time: Three Hours *Max.Marks:100*

4 Full wave controlled rectifier

(iv) Draw the circuit diagram.
(v) Assemble the circuit.
(vi) Display the wave forms on CRO for three different firing angle. Draw them.
(v) Calculate output power in each case.

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Time: Three Hours *Max.Marks:100*

5 Over voltage protection

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Demonstrate the over voltage protection to the examiner.

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ELECTRONICS PAPER XII

Time: Three Hours *Max.Marks:100*

6 TRIAC as light dimmer

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Demonstrate the slow turn on action to the examiner.

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Time: Three Hours *Max.Marks:100*

7 Phase Control using TRIAC

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Display the wave form on CRO for three different firing angles. Draw them.
(vi) Calculate the output power in each case.

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Time: Three Hours *Max.Marks:100*

8 Firing characteristic of LASCR

(i) Draw the circuit diagram to study the firing characteristic of LASCR.
(ii) Make the connections.
(iii) Demonstrate the action of the circuit by changing intensity of light.

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Time: Three Hours *Max.Marks:100*

9 IC regulated power supply

(i) Draw the circuit diagram for 78 XX and 79XXIC regulators.

(ii) Assemble the circuit.
(iii) Study the load and line characteristics in each case.

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Time: Three Hours *Max.Marks:100*

10 Instrumentation Amplifier Using Transducer Bridge
(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Make necessary observations.
(iv) Write your conclusion.

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Time: Three Hours *Max.Marks:100*

11 Zero Crossing switch (Half Wave)
(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Show that the switch operates at zero level of AC, using CRO.
(iv) Study the timing of closing the switch and SCR turning ON, using CRO. Draw the waveforms

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Time: Three Hours *Max.Marks:100*

12 Resolution and Sensitivity of 3 ½ Digit DVM
(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Calibrate it for the range of 200 mV and 2V.
(iv) Find resolution of the DVM.
(v) Find sensitivity of the DVM in each range.

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Time: Three Hours *Max.Marks:100*

13 Semiconductor Sensor LM–335

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iv) Measure output voltage at different temperatures from zero to 60 ^{o}C.
(v) Plot the graph, calculate volts/^{o}C for LM–335 and measure unknown voltage.

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Time: Three Hours *Max.Marks:100*

14 PT–100 for Temperature Measurement

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Measure current through PT–100 for different temperatures at constant voltage and calculate resistance of PT–100 for each temperature.
(iv) Plot a graph of resistance (R) against temperature (^{o}C). Measure unknown voltage from it.

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Time: Three Hours *Max.Marks:100*

15 Frequency Meter Using 74926

(i) Draw the circuit diagram.
(ii) Assemble the circuit and show its working to the Examiner.
(iii) Use the circuit to measure events per second and as frequency meter.

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Time: Three Hours *Max.Marks:100*

16 Analog Voltmeter Using LM–3914

(i) Draw the circuit diagram.
(ii) Assemble the circuit and calibrate it for two different input ranges.
(iii) Apply input and study the behavior of output.

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Time: Three Hours *Max.Marks:100*

17 Electronic capacitance meter

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iv) Take observations for five different capacitors and plot calibration curve.
(iv) Find the value of unknown capacitor.

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ELECTRONICS PAPER XII

Time: Three Hours *Max.Marks:100*

18 Speed Control of AC/DC Motor

(i) Draw the circuit diagram.
(ii) Assemble the circuit.
(iii) Demonstrate the speed control of AC/DC motor.
(iv) Write your conclusion.