

Faculty of Science
B.Sc (Electronics) III-Year, CBCS –V Semester
Backlog Examinations –June/July, 2022
PAPER: Digital Electronics

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any *eight* of the following (8x4=32 Marks)
1. Draw the logic circuit described by $Y = \bar{A}BC + A\bar{B}C + AB\bar{C} + \bar{A}\bar{B}\bar{C}$.
 2. Write a note on Noise immunity.
 3. Write a brief note on CMOS Non-Inverting buffer.
 4. Simplify $Y = \Sigma(0,1,3,4,5,6)$
 5. Explain POS with suitable example.
 6. Write the Boolean expression for the output of a 8-3 encoder.
 7. Explain Serial-in Serial-out shift register.
 8. What is the importance of PRESET & CLEAR inputs in a Flip-flop.
 9. Write a short note on Up/Down Counter.
 10. Explain about address space partitioning.
 11. Discuss logical operations in 8085 microprocessor.
 12. Write a short note on Stack and Subroutines.

Section-B

- II. Answer the following questions (4x12=48 Marks)
- 13.(a) Write an essay on Hexadecimal number systems and conversion of Hex numbers into Binary ,Decimal and Octal with suitable examples.
(OR)
(b) Explain half adder and full adder with suitable diagrams and truth tables.
 - 14.(a) What is a Karnaugh map? Explain how to construct a 4-variable map and solve it with an example.
(OR)
(b) What is a multiplexer? Explain the working of a 4-to-1 mux with the help of a circuit diagram and truth a table.
 - 15.(a) Explain the working of JK Flip-flop with its logical diagram and truth table.
(OR)
(b) What is Johnson Counter? Explain 4-bit Johnson ring counter ,truth table and waveforms.
 - 16.(a) Explain the Architecture of 8085 microprocessor.
(OR)
(b) With examples explain different addressing modes of 8085 and the different types of instructions.

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PAPER: Applied Statistics-I

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any *eight* of the following (8x4=32 Marks)
1. Explain Sampling and Non-Sampling Errors.
 2. Explain Census survey versus Sample survey.
 3. Derive the variance of sample mean under SRSWOR.
 4. Find the Efficiency of Systematic sampling over Simple random sampling.
 5. Prove that Variance of the Systematic sample mean is given by

$$V(\mathbf{y}_{sys}) = S^2_{wst} (k-1)/nk [1+(n-1)\rho_{wst}]$$
 6. A population of size 800 is divided in to 3 strata their sizes & Std. Deviations are given below.

Stata	I	II	III
Size	200	300	300
S.D.	6	8	12

- A Stratified random sample of size 120 is to be drawn from population. Determine the sizes of samples from the three strata in case of (i) Proportional Allocation (ii) Optimum Allocation.
7. Explain the additive and multiplicative models in Time series.
 8. Explain measurement of Trend by Graphical method.
 9. Fitting of modified exponential curve.
 10. Explain statistical basis of Schwartz Control charts.
 11. Explain the statistical basis and construction of np – Chart.
 12. Explain 3- σ control limits.

Section-B

- II. Answer the following (4x12=48 Marks)
13. (a) Explain in detail the principal steps involved in a sample survey.
(OR)
 - (b) In SRSWOR the sample mean square is unbiased estimate of the population mean square. i.e, $E(s^2) = S^2$
 14. (a) Comparison of variances Simple Random Sampling with Stratified random sampling under Proportional allocation and Optimum allocation.
(OR)
 - (b) Compare the efficiency of systematic sampling with that of simple random Sampling Procedure of Populations with linear trend.
 15. (a) (i) Define Time series and explain the various components of Time series.
(ii) Fit a Straight-line trend by the method of least squares.

Year	1993	1994	1995	1996	1997
Sales	25	46	69	60	30

- (OR)
- (b) Explain the measurement of seasonal variations by Ratio to trend method and Ratio to moving average method.
 16. (a) (i) Defining SQC and discuss the role of 4 M's in SQC.
b (ii) Explain the procedure for the construction of R-Chart.
(OR)
 - (b) (i) Distinguish between control charts for variables and control charts for attributes.
(ii) Explain the construction of C-Chart for fixed and variable sample sizes.

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B.Sc (Electronics) III-Year, CBCS-V Semester Backlog
Examinations –June/July, 2022
Paper-EI: 8085 Microprocessor and Applications

Time: 3 hours

Max Marks: 60

Section-A

- I. Answer any **Three** of the following questions (3x5=15 Marks)
1. Explain the bus structure of 8085 processor.
 2. Write about address space partitioning.
 3. Differentiate cascade stack and memory stack.
 4. Write a short note on subroutine.
 5. Write an ALP to pick the largest number from the given array.
 6. Discuss PPI 8212 interface with 8085 microprocessor.

Section-B

- II. Answer the following questions (3x15=45 Marks)
7. (a) Explain the architecture of 8085 microprocessor with a neat block diagram.

(OR)

(b) Explain the I/O read and write operation of 8085 processor with timing diagram
 8. (a) Discuss the different addressing modes of 8085 microprocessor with suitable examples.

(OR)

(b) Explain data transfer instructions and arithmetic instructions of 8085 Microprocessor with suitable examples.
 9. (a) Explain counters and time-delays in 8085 microprocessor.

(OR)

(b) Explain about assembly language programming and write the program of addition.

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Time: 3 hours

Max Marks: 60

Section-A

- I. Answer any **Three** of the following (3x5=15 Marks)
1. Explain how primary Gates (OR, AND, and NOT) can be obtained from NOR gates.
 2. Write short note on TTL logic.
 3. State and prove Demorgan's theorem.
 4. Draw 1:8 De-Multiplexer and explain its working.
 5. Explain the working of Master-Slave J.K. Flip-Flop.
 6. Draw the circuit diagram of 4-bit ripple counter, explain its working.

Section-B

- II. Answer the following (3x15=45 Marks)
7. (a) Explain binary addition using 2's complement method.
Determine X, Y values; $(X)_2 = (Y)_{10} = (BDC)_{16}$
(OR)
(b) Explain the action of Half adder and 3 bit Full adder circuit with neat diagram.
 8. (a) Minimize the four variable logic function using K-Map.
 $f(A, B, C, D) = \sum m(0, 1, 2, 3, 7, 8, 9, 10, 11, 12, 13)$
(OR)
(b) Express $Y = (A+B).(A+C).(B+C)$ into SOP form and realize using gates.
 9. (a) Discuss the operation of different types of Shift Registers.
(OR)
(b) Draw the timing diagrams of Decade Counter and explain its operation.
