

Hall Ticket Number :

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R-11 / R-13

Code: 1G468

III B.Tech. II Semester Supplementary Examinations May 2017

Computer System Architecture

(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questions

All Questions carry equal marks (**14 Marks** each)

1. a) Explain the functional units of a computer with a neat block diagram. 7M
b) Explain error detecting code using odd parity. Discuss about Gray Code. 7M

2. a) Explain 4 bit adder-subtractor. 7M
b) Explain one stage of arithmetic logical shift unit. 7M

3. a) Define Stack. Explain 64 word stack. 7M
b) What is interrupt? List and explain the types of interrupts. 7M

4. a) What is the advantage of microprogrammed control? Explain the selection of address for control memory. 7M
b) Explain micro instruction format and micro operations. 7M

5. a) Explain booth algorithm for multiplication of signed 2's complement number. 7M
b) Briefly explain Division algorithm with example. 7M

6. a) What is Cache Memory? Explain Associative and Direct Mapping. 7M
b) Explain with a neat diagram how logical to physical address mapping is performed. 7M

7. a) Discuss about programmed I/O with example. 7M
b) Explain the connection of I/O bus to input-output devices. 7M

8. a) What is pipelining? Explain with an example the pipeline processing. 7M
b) Explain instruction pipeline for a four segment cpu pipeline. 7M

Code: 1GA61*III B.Tech. II Semester Supplementary Examinations May 2017***Managerial Economics and Financial Analysis**

(Common to EEE & CSE)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questionsAll Questions carry equal marks (**14 Marks** each)

1. Define managerial economics? Also explain how it helps in solving managerial problems. 14M
2. What are the various methods of demand forecasting? Explain each of them in detail. 14M
3. Write a short note on the following
 - a) Fixed cost Vs variable cost 07M
 - b) Opportunity cost Vs outlay cost 07M
4. How price is determined in perfect competition? Explain in detail. 14M
5. What do you mean by partnership business? How is it different from Joint Stock Company? Explain. 14M
6. A company is considering two investment alternative proposals that cost Rs.4, 00,000 and Rs.3, 00,000 respectively. The first project generates Rs.1, 00,000 a year for four years. The second generates Rs.60, 000, Rs.1, 00,000, Rs. 80,000, Rs.90, 000 and Rs. 70,000 over a five year period. The company's cost of capital is 8%. Which one do you choose under NPV method? 14M
7. The trail balance of Sasi as on March 31, 2017 revealed the following information. Prepare a trading account, profit & loss account and balance sheet..

Debit balances	Amount in Rs.	Credit balances	Amount in Rs.
Opening stock	5,000	Capital account	20,000
purchases	29,200	Sales	62,500
Sundry debtors	25,000	Sundry creditors	13,400
Bills receivables	2,800	Bills payable	5,000
Plant	10,000	Loan and mortgage	18,000
Interest on loan	300	Bank overdraft	2,400
Wages	15,000		
Buildings	24,000		
Loose tools	600		
Cash on hand	600		
Stationary	500		
Salaries	8,200		
discounts	100		
	1,21,300		1,21,300

Adjustments:

1. Closing stock Rs.5,600
 2. Write off loose tools Rs.540
 3. Interest on mortgage @15% per annum
 4. Provide interest on capital @ 5% per annum
 5. Provide 5% reserve for doubtful debts. 14M
8. How ratio analysis is helpful in understanding financial statements? Explain. 14M

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R-11 / R-13

Code: 1G366

III B.Tech. II Semester Supplementary Examinations May 2017

Microprocessors and Microcontrollers

(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questions

All Questions carry equal marks (**14 Marks** each)

- 1. a) Explain in brief about register organization of 8086 microprocessor 7M
- b) Discuss about memory organization of 8086 microprocessor 7M

- 2. a) Explain the assembler directives ASSUME, EQU, DW and EVEN with suitable examples 7M
- b) Write an Assembly Language Program to sort an array of elements in descending order 7M

- 3. a) Explain the function of Programmable Peripheral Interface PPI in detail 7M
- b) Draw the block diagram to interface seven segment displays with microprocessor 8086 and explain 7M

- 4. a) What is the need for DMA and Explain in detail with neat sketches 7M
- b) Draw the structures of SRAM and DRAM cell and explain in detail 7M

- 5. a) Write in detail about the Interrupt structure and the interrupt vector table of 8086 7M
- b) Sketch the Architecture of Priority Interrupt Controller (PIC) and explain 7M

- 6. a) Draw the USART architecture and explain the operation of each block in detail 7M
- b) Explain about RS-232C and how RS-232C is converted into TTL in detail 7M

- 7. a) Draw the Pin diagram of the 8051 Microcontroller and explain the functions of each pin 7M
- b) Write an ALP for 8051 to send 20 output pulses at P2.0 vary the duration of pulse using NOP 7M

- 8. Write a short notes on the following:
 - a) MCS-96 Microcontrollers 7M
 - b) ARM Microcontrollers 7M

Code: 1G263

III B.Tech. II Semester Supplementary Examinations May 2017

Power System Operation and Control

(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questionsAll Questions carry equal marks (**14 Marks** each)

1. A power System consists of two, 125 MW units whose input costs are represented by the equations:
 $C_1 = 0.04 P_1^2 + 22 P_1 + 800$ Rupees/hour
 $C_2 = 0.045 P_2^2 + 15 P_2 + 1000$ Rupees/hour
 If the total received power $P_R = 200$ MW. Determine the load sharing between them for most economic operation. 14M

2. Briefly explain about the exact co-ordination equation and derive the penalty factor. 14M

3. a) Discuss the demerits of hydrothermal coordination in optimal generation scheduling. 6M
 b) Develop the hydroelectric power plant model with necessary block diagram. 8M

4. What is the need of Reheat type steam turbines for the modern large power systems? Explain with a neat sketch. 14M

5. An isolated power system has following parameters:
 Turbine rated output: 300 mw
 Nominal frequency: 50 Hz
 Governor speed regulation: 0.05 pu
 Inertia constant: 5
 Turbine time constant: 0.5 sec
 Governor time constant: 0.2 sec
 Load change: 60 mw
 The load varies by 0.8 percent for a 1 percent change in frequency. Determine the steady state frequency deviation in HZ. 14M

6. Draw the block diagram of proportional plus integral controller and show the steady state frequency error is zero. 14M

7. a) Explain the working of shunt capacitor as compensator. Why its effect is uniform throughout the line? 7M
 b) Why the fixed shunt compensation is preferred for base reactive loads? 7M

8. Differentiate the regulated and deregulated power systems with the help of block diagram. 14M

Code: 1G262*III B.Tech. II Semester Supplementary Examinations May 2017***Utilization of Electrical Energy**

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **Five** questionsAll Questions carry equal marks (**14 Marks** each)

1. Suggest with reasons the electric drive used for the following applications.
(i) Rolling mills (ii) textile mills (iii) cement mills (iv) paper mills (v) coal mining (vi) Lift, cranes, lathes and pumps 14M
2. a) What are the properties to be possessed by element used in resistance oven? 6M
b) A resistance oven employing nichrome wire is to be operated from 220 V, 1-phase supply and is to be rated at 16 KW. If the temperature of the element is to be limited to 1170 °C and the average temperature of the charge is 500 °C. Find the diameter and length of the element wire. Given radiating efficiency = 0.57, emissivity = 0.9, specific resistance of Nichrome = 109×10^{-8} ohm-m. 8M
3. a) Describe with a neat sketches, various methods of electric resistance welding. 8M
b) What is the nature of electric supply required for electric arc welding? Also explain the equipment required for electric arc welding. 6M
4. a) Write short notes on polar curves and explain the Rouseau's construction for calculating MSCP of a lamp. 8M
b) Define:
(i) Luminous flux (ii) Illumination (iii) Luminance (iv) Luminous intensity 6M
5. a) Describe with a circuit diagram the working of a florescent lamp. Enumerate its advantages and disadvantages. 7M
b) Estimate the number and wattage of lamps which would require to illuminate a workspace 60x15 m² by means of lamps mounted 5m above the working plane. The average illumination required is about 100 lux. Coefficient of utilization is 0.4, luminous efficiency is 16 lumens/watt. Assume a space height ratio of unity and a candle power depreciation of 20%. 7M
6. a) Discuss why a D.C series motor is ideally suited for traction services. 7M
b) Write short notes on various systems of track electrification. 7M
7. a) For a quadrilateral speed-time curve of an electric train, derive expression for the distance between stops and speed at the end of the coasting period. 7M
b) An electric train is to have an acceleration and braking retardation of 0.8 km/hr/sec and 3.2 km/hr/sec respectively. If the ratio of maximum to average speed is 1.3 and time for stop is 26 sec, find the scheduled speed for a run of 1.5 km. Assume simplified trapezoidal speed time curve. 7M
8. a) Define specific energy output and specific energy consumption. 4M
b) An electric locomotive of 100 tonnes can just accelerate a train of 500 tonnes with an acceleration of 1km/hr/sec on an up gradient of 1%. Adhesive weight of locomotive is 70 % of locomotive weight. Tractive resistance of the track is 45 newtons/tonne and the rotational inertia is 10%. If this locomotive is helped by another locomotive of 130 tonnes with 100% adhesive weight, find
i. The trailing weight that can be hauled up the same gradient, under the same condition.
ii. The maximum gradient, the trailing hauled load remaining unchanged. 10M
