



AU VTU Question Paper Set 2017

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10AU82

Eighth Semester B.E. Degree Examination, June/July 2016

Autotronics

Time: 3 hrs.

Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

- 1 a. Explain the meaning of the term mechatronics. With respect to multi disciplinary scenario. Briefly discuss the origin and evolution of mechatronics. (10 Marks)
- b. Explain with the block diagram how a microprocessor control system is used to control the focusing and exposure in an automatic camera. (10 Marks)
- 2 a. Explain how sensing is achieved by an incremental optical encoder. (08 Marks)
- b. Briefly explain the working principle of the following:
 - i) Light sensor
 - ii) Hall effect sensor (12 Marks)
- 3 a. Explain the principles of brushless D.C. permanent magnet motor with a neat sketch. (10 Marks)
- b. Differentiate between a diode, thyristor and transistor. (06 Marks)
- c. With a neat sketch, explain the solenoid. (04 Marks)
- 4 a. With a block diagram, explain the working principle of data acquisition system. (10 Marks)
- b. Explain the principle of ADC of signals. (10 Marks)

PART - B

- 5 a. Explain the evolution of microprocessors. (06 Marks)
- b. What are logic gates? Discuss AND and OR gates with their truth tables for two inputs. (08 Marks)
- c. Convert the following:
 - i) $(10.7)_{10} = (\quad)_2$
 - ii) $(1A5D)_{16} = (\quad)_{10}$
 - iii) $(436)_8 = (\quad)_2$ (06 Marks)
- 6 a. Explain with a neat sketch, pin configuration of Intel 8085 microprocessor. (10 Marks)
- b. What are microcontrollers? Explain the general form of a microcontroller. (10 Marks)
- 7 a. With a neat flow chart, discuss the programming process. (10 Marks)
- b. Write a program to find the largest of a byte in the array of numbers. (10 Marks)
- 8 a. Distinguish between instruction cycle, machine cycle and T-state. (10 Marks)
- b. Draw and explain the timing diagram memory operation. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.



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10AU844

Eighth Semester B.E. Degree Examination, June/July 2016
Maintenance Engineering

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART - A

- 1 a. What is maintenance? Explain different types of maintenance. (10 Marks)
 b. What are the objectives of maintenance? (05 Marks)
 c. Differentiate between predictive and preventive maintenance. (05 Marks)
- 2 a. Explain repair cycle and repair complexity. (10 Marks)
 b. Average number of break down per month is equal to 3 in only one inspection. Mean time to perform a repair is 24 hrs. Mean time to perform an inspection is 8 hrs. The value of output per uninterrupted time equals to Rs.3 lakhs. Cost of repair per uninterrupted time is equal to Rs.3000 cost of inspection per uninterrupted is Rs.1250. Determine the optimal number of inspection/months in order to maximize the profit. Assuming that the breakdown rates varies inversely with number of inspection. (10 Marks)
- 3 a. Explain the various types of failures that occur in machinery. (05 Marks)
 b. Write about performance evaluation. (05 Marks)
 c. Write about maintenance procedure for complete overhaul of shaper/planer. (10 Marks)
- 4 a. Write about estimation of maintenance work. (06 Marks)
 b. Write detailed note on long range and short range planning. (04 Marks)
 c. Write brief about maintenance scheduling. (10 Marks)

PART - B

- 5 a. Explain how computers can be effectively used in maintenance management. (10 Marks)
 b. Write about features and benefits of computers in maintenance management system. (10 Marks)
- 6 a. Define industrial safety. Explain different types of safety organization. (05 Marks)
 b. Write about accident investigation. (05 Marks)
 c. Write about safety standards for mechanical equipment. (10 Marks)
- 7 Write short notes on:
 - a. Safety standards for material handling equipment
 - b. Plant housekeeping building
 - c. Safety standards for chemical hazards
 - d. Safety standards for electrical equipments and systems
 - e. Safety standards for exhaust system
 (20 Marks)
- 8 a. Write a note on noise control technique. (06 Marks)
 b. Write a note on vibration control technique. (06 Marks)
 c. With neat sketch, explain packed type scrubber. (08 Marks)

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Eighth Semester B.E. Degree Examination, June/July 2016
Hydraulics of Pneumatics

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. State Pascal's law and explain its applications. (05 Marks)
b. Sketch and explain basic components required in a hydraulic power system. (06 Marks)
c. Explain the important parameters considered while selecting type of pump (09 Marks)
- 2 a. Sketch and explain balanced vane motor. (06 Marks)
b. Explain with sketch working of a gear motor. (06 Marks)
c. Sketch and explain in-line-piston (swash plate) motor. (08 Marks)
- 3 a. Draw the symbolic representation of :
i) Pressure sequence valve
ii) Four way spring centered three position manually actuated valve
iii) Pressure relief valve
iv) Pressure reducing valve. (08 Marks)
b. Sketch and explain unloading valve. (06 Marks)
c. Explain with sketch working of pressure compensated flow control valve. (06 Marks)
- 4 a. Sketch and explain hydraulic sequencing circuit. (10 Marks)
b. Explain with circuit diagram included accumulator as leakage compensator. (10 Marks)

PART – B

- 5 a. What are the properties of hydraulic fluid? Explain them. (10 Marks)
b. What are the different materials that are used for seals? Explain. (06 Marks)
c. Explain : i) Gasket ii) O-Ring. (04 Marks)
- 6 a. Explain advantages and disadvantages of pneumatic system over hydraulic system. (04 Marks)
b. Explain rodless cylinder construction and working. (06 Marks)
c. Explain end cushion arrangement in double acting cylinder with a neat sketch. (10 Marks)
- 7 a. Sketch and explain five port spool valve. (08 Marks)
b. Connected to pneumatic system explain with a sketch :
i) AND
ii) OR
iii) NOT. (12 Marks)
- 8 a. Explain with sketch air filter for pneumatic system. (06 Marks)
b. Explain steps involved in cascading method of design of a pneumatic system. (08 Marks)
c. Explain relays used in pneumatic system with a neat sketch. (06 Marks)

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10AU81

Eighth Semester B.E. Degree Examination, June/July 2016
Earth Moving Equipment and Tractors

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, selecting atleast TWO questions from each part.
2. Sketches should be drawn with pencil only.

PART – A

- 1 a. Enlist the different types of earth moving equipments. Briefly explain their applications. (08 Marks)
- b. How do you classify the scrapers? Sketch and explain the working of a scraper. (12 Marks)
- 2 a. Write a brief note on :
 i) Automatic Injection Timer ii) Turbochargers. (10 Marks)
- b. Sketch and explain the working of motor grader. (10 Marks)
- 3 a. With a neat sketch, explain the undercarriage component of a crawler. (10 Marks)
- b. With the help of line diagrams, compare the construction and working of wheeled and crawler tractors. (10 Marks)
- 4 a. What are the types of Final drivers? Sketch and explain any one type of final drive. (10 Marks)
- b. What are the types of PTO shafts? Sketch and explain any one of them. (10 Marks)

PART – B

- 5 a. Sketch and explain the hydraulic systems with basic components. (10 Marks)
- b. With a neat sketch, explain the hydraulic depth control mechanism used in tractors. (10 Marks)
- 6 a. Sketch and explain the clutch / brake steering system. (10 Marks)
- b. Sketch and explain the construction and working of Disc brakes used in tractors. (10 Marks)
- 7 a. What are the objectives of maintenance? Explain the various functions and advantages of preventive maintenance. (10 Marks)
- b. With the help of block diagram, explain the organization set up in maintenance department. (10 Marks)
- 8 a. Discuss the various methods used to select the equipments. (10 Marks)
- b. List the factors on which the output of bulldozer depends. Also discuss the calculation of output of a bulldozer in detail. (10 Marks)

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