



BAMR11

HARYANA VISHWAKARMA SKILL UNIVERSITY

(Established under the Government of Haryana Act of Legislation No 25/2016)

Course : B.Voc. (Automotive Mechatronics)
Subject : Basics of Mechatronics
Semester : 2nd
Subject Code : ABME-106
Duration : 3 Hours
Maximum Marks : 35

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. **Section A** comprises ten questions of objective type in nature. All questions are compulsory. Each question carries one mark.
3. **Section B** comprises six essay type questions out of which students need to do any five. Each question carries five marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled.

Roll Number

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1 P.T.O /

SECTION-A (OBJECTIVE TYPE QUESTIONS)

(10×1=10 Marks)

Q1 The mechatronics is an interdisciplinary field in which the disciplines those act together are

- a) Mechanical systems and Electronic systems
- b) Mechanical systems and Information technology
- c) Electronic systems and Information technology
- d) Mechanical systems, Electronic systems and Information technology

Q2 Which of the following functions can a control system carry out?

- a) The system output can be controlled to some desired particular value for particular input
- b) If certain conditions are satisfied, it can give a particular sequence of output, corresponding to given input
- c) Either a. or b.
- d) None of the above

Q3 A group of components which can complete certain tasks or achieve certain desired results in a desired manner while working together is called as

- a) Output system
- b) Sequence system
- c) Control system
- d) All of the above

Q4 In which system does the output not affect the process in any way?

- a) Open loop system
- b) Closed loop system
- c) Both a. and b.
- d) None of the above

Q5 Which of the following cannot be an input that is given to the PLC?

- a) Manual switches
- b) Relays
- c) Sensors
- d) None of the above

Q6 The PLC is used in

- a) Machine tools
- b) Automated assembly equipment
- c) Moulding and extrusion machines
- d) All of the above

Q7 What is the formula for thermal capacitance?

- a) $(\text{Change in heat stored}) / (\text{Change in heat transfer rate})$
- b) $(\text{Change in heat stored}) / (\text{Change in thermal resistance})$
- c) $(\text{Change in heat stored}) / (\text{Change in temperature})$
- d) Unpredictable

Q8 Heat in thermal system is analogous to _____ in electrical energy.

- a) Current
- b) Potential difference
- c) Resistance
- d) Charge

Q9 In which stage the measurement system comes in contact with the measurand or the quantity to be measured?

- a) Transducer Stage
- b) Signal Processor Stage
- c) Output Stage
- d) None of the above

Q10 Which of the following is/are characteristic/s of mechatronic products and systems?

- a) Functional interaction between mechanical, electronic and information technologies
- b) Special interaction of subsystems in one physical unit
- c) Intelligence related to the control functions of the mechatronics system
- d) All of the above

SECTION-B (EASSY ANSWER TYPE QUESTIONS)

(5×5= 25 Marks)

- Q11** Describe the role of mechatronics in industries.
- Q12** State advantages and applications of LVDT.
- Q13** State the working principle of Bourdon tube.
- Q14** Describe the PLC programming techniques.
- Q15** Explain the principles of operation of the variable reluctance stepper motor.
- Q16** Describe the basic details of
- a) A poppet valve.
 - b) A shuttle valve.

-----**END OF PAPER**-----

THE UNIVERSITY OF CHICAGO

PH.D. THESIS

BY

[Name]

IN

THE FIELD OF

[Field]

19[Year]

[Institution]

CHICAGO, ILL.