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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VI SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2018

SUBJECT: ERGONOMICS IN AUTOMOTIVE DESIGN [AAE 4026]

REVISED CREDIT SYSTEM

(30/11/2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

- 1A.** Briefly explain the three approaches adopted for automotive ergonomics. **(04)**
- 1B.** List and explain the types of research studies available in ergonomics filed. **(03)**
- 1C.** Explain the anthropometry and human information processing capabilities. **(03)**

- 2A.** Discuss the seat design consideration with respect to driver accommodation. **(05)**
- 2B.** With an example show the use of method “third class of lever” utilized for calculating the force/pressure developed on the nerves or muscles. **(03)**
- 2C.** What is CTD? What causes CTD? **(02)**

- 3A.** Briefly explain the utilization of HPM. **(03)**
- 3B.** Explain the following **(03)**
i) H11 ii) H25 and iii) L33
- 3C.** What are the challenges faced in the H-Point measurement. **(02)**
- 3D.** Explain the procedure for maximum hand reach as per the SAE J287 standard. **(02)**

- 4A.** List and explain the basic design consideration for designing the driver interface. **(04)**
- 4B.** What are the advantages and disadvantages of touch screen display used in the vehicles? **(04)**
- 4C.** With a simple sketch explain the procedure to generate the cone for the human eye. **(02)**

- 5A.** With a neat sketch explain the procedure for determining the driver field of view through mirror. **(05)**
- 5B.** With a neat sketch explain the running board design. **(03)**
- 5C.** Briefly explain the wiper sweep area for the windshield. **(02)**