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BACHELOR OF VOCATION
Automotive Manufacturing
Automotive Mechatronics
Subject: Applied Physics
Subject Code: BSC-103
Semester: First
September 2020
Theory (External): 35 Marks
Time: 03 hours

INSTRUCTIONS TO THE STUDENTS

1. Read the questions carefully and write the answers in the answer sheets.

2. Wherever necessary, the diagram drawn should be neat and properly labelled.

3. This questions paper comprises of 6 questions out of which student need to attempt any 3 questions.

4. All questions carry equal marks.

5. The time allotted will be 3 hours for examinations including time of downloading of question paper to emailing of answer books to the concerned Dean/IC.

ESSAY TYPE QUESTIONS

1. (a) How do you find the resolution of a vector? Explain with example.
   (b) State the principle of homogeneity of dimensions.

2. (a) Check the correctness of physical equation, $v = u + at$.
   (b) Prove that kinetic energy of an object is equal to the net work done.

3. (a) Explain magnetic flux and flux density.
   (b) Elaborate that in any closed loop network, the total voltage around the loop is equal to the sum of all the voltage drops within the same loop.

4. (a) Explain with an example the motion of a charged particle inside a uniform magnetic field.
   (b) A car starts from rest moving along a line, first with acceleration a= $2m/s2$, then uniformly and finally decelerating at the same rate and comes to rest. The total time of motion is 10 sec. The average speed during this time is 3.2m/s. How long does the car move uniformly? (in seconds)

5. Derive an expression for the force acting on a current carrying straight conductor placed in a uniform magnetic field.

6. Explain the following
   (a) Coulomb's Laws in Magnetism
   (b) Motion along a Straight Line

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