DTEMS PAST PAPERS
TECHNICAL

SIR ARTHUR LEWIS COMMUNITY COLLEGE
DIVISION OF TECHNICAL EDUCATION AND MANAGEMENT STUDIES

EXAMINATION SESSION	:	End of Semester 2 Examination
TUTORS	:	Mr. K. Harris, Mr. J. Preville, Mr. Danielle
PROGRAM TITLE	:	Computer Systems Engineering, Electronics Service and Communications Engineering, Architectural Technology, Construction Engineering, Quantity Surveying Automotive Engineering, DTEEA Mechanical Engineering
PROGRAM CODE	:	3BD-ART-AD, 3BD-CON-AD, 3BD-QUS-AD, 3EE-CMS-AD, 3EE-ESC-AD, 3ME-AUT-AD, 3ME-MEC-AD, DTEEA
COURSE TITLE	:	Credit Physics
COURSE CODE	:	PHY101
CLASS	:	
DATE	:	9th May 2005
COMMENCEMENT TIME	:	9:00 AM
DURATION	:	2-1/2 Hr.
ROOM	:	TRT-R1, TRT- R2
INVIGILATOR(S)	:	S. Toussaint, K. Harris

#P9

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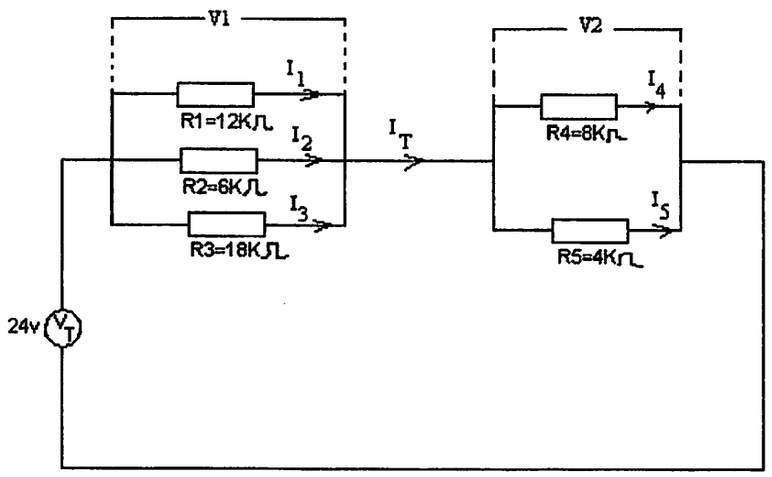
RESERVE
21 AUG 2006

INSTRUCTIONS

1. **This Exam consists of 30 multiple choice questions. You should not spend more than 30 minutes on this section.**
2. **You should attempt ALL five (5) Questions;**
3. **All working must be shown in a neat and orderly fashion.**
4. **Diagrams must be accompanied where necessary.**
5. **Scientific Calculators are allowed (CELL PHONES ARE NOT ALLOWED).**

1. Calculate: RT, IT, I1, 12, 13, 14, 15, V1, V2



***Total* 20 marks**

2. a) Calculate the diameter of a 3.0m length of copper wire of resistivity $1.8\times10^{-22}\Omega m$ and a resistance of 6 ohms. **(5 marks)**
   b) Define static electricity. Give 3 ways in which static electricity can be used. **(4 marks)**
   c) Define Retentivity and permeability. **(2 marks)**
   d) What is an electromagnet **(1 mark)**
   e) Draw the electric fields produced by the following

i. N N

ii. N S

(6 marks)
Total 20 marks

3. A truck of mass 2000 kg moving was traveling at a speed of 15 ms^{-1} collides with a car of mass 1000 kg moving in the opposite direction. This head on crash, which locks the vehicles together, brings them to rest on the spot.

   a) What is the S.I. unit of momentum? **(1 mark)**
   b) Calculate the momentum of the car before the collision. **(3 marks)**
   c) Calculate the momentum of the car before the collision, in terms of '*v*' **(5 marks)**
   d) State the law of conservation of momentum **(2 marks)**
   e) Calculate the speed of the car **(3 marks)**
   f) In the collision the van comes to rest in 0.5 seconds
      (i) Calculate the deceleration of the van **(3 marks)**
      (ii) Calculate the force of the van while it is stopping **(3 marks)**

Total 20 marks

4. a) Define the term Wave **(2 marks)**

b) Define the following terms Diffraction, Refraction, Interference and Refection as it pertains to waves **(8 marks)**

c) What is constructive interference use diagrams to explain the effect. **(6 marks)**

d). Define the terms Amplitude and Wave length. **(4 marks)**

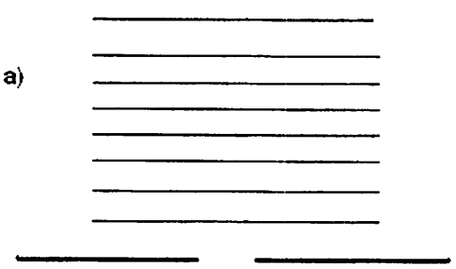
Total 20 marks

5. a) Clearly distinguish between Transverse and Longitudinal waves. **(4 marks)**

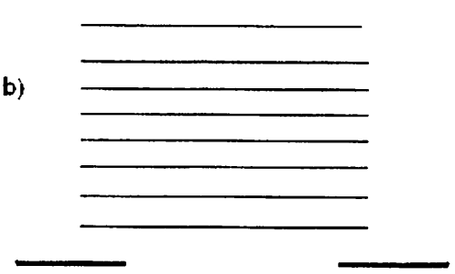
b) List the two main types of waves explaining how they are produced and giving an example of each. **(8 marks)**

c) Copy and complete the figure below to show what happens to the waves in each of the circumstances.

a)



b)



(8 marks)

Total 20 marks

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