

**FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI**  
**SCHOOL OF HEALTH TECHNOLOGY**  
**DEPARTMENT OF OPTOMETRY**  
**2015/2016 HARMATTAN SEMESTER EXAMINATION**  
**OPT 301 – OPHTHALMIC OPTICS 1 - 3 UNITS**  
**TIME ALLOWED: 3 HRS**

**INSTRUCTION: Answer 5 questions, 2 from each section and any other**

**SECTION A**

1. (a) List 5 specifications and requirements for an eye wear to be classified as
  - (i) A dress wear
  - (ii) Safety wear
  - (iii) Sports wear(15 marks)  
(b) Write short note on any named lens material (5 marks)
  
2. (a) What are the effects of ultraviolet radiation to the eye (15 marks)  
(b) State 5 troublesome lens reflections (5 marks)
  
3. Write short notes on the following:
  - (a) Photochromic lenses
  - (b) Glare control lenses
  - (c) Control of UV absorption
  - (d) Hazards of tinted glasses
  - (e) Sunglasses(20 marks)

**SECTION B**

4. (a) What are the important characteristics of ophthalmic lens materials? Write short notes on 4 of them. (15 marks)  
(b) The lens prescription -3.50DS is to be produced in a meniscus form on a glass of refractive index 1.60 and front surface radius of 114.3 mm. Determine the front and back surface powers of the lens. (10 marks)
  
5. (a) Mention 2 methods of spectacle glass manufacture and describe one of them. (10 marks)  
(b) What are the impurities that may be observed on a lens surface as a result of the manufacturing process. Explain how these impurities can be avoided. (10 marks)
  
6. (a) Ophthalmic prisms are useful tools in the correction of vision problems. Discuss. (8 marks)  
(b) Explain the term lens decentration and give reasons for decentration. (4 marks)  
(c) Given that a patient with interpupillary distance (IPD) of 60 mm is to wear an optical lens prescription of -4.50DS on a frame with eyesize 50 mm and bridge width 18 mm. Determine the decentration necessary for comfortable vision. (8 marks)
  
7. (a) Describe a step by step practical procedure for identifying and differentiating between the following:
  - (i) Plus and minus lenses
  - (ii) Spherical and cylinder lenses(7 marks each)  
  
(b) A lensometer gave the power of a lens as -1.75D @ 90 and +1.50D @ 180. Write out a prescription for the lens. (6 marks)