

FEDERAL UNIVERSITY OF TECHNOLOGY, DWERRI
SCHOOL OF HEALTH TECHNOLOGY
DEPARTMENT OF OPTOMETRY

RAIN SEMESTER EXAMINATION

2018/2019 SESSION

OPT 302: OPHTHALMIC OPTICS 11

3 UNITS TIME: 3 HOURS

INSTRUCTIONS: ANSWER 5 QUESTIONS IN ALL, AT LEAST 2 FROM EACH SECTION

SECTION A

1. A meniscus lens of refractive index 1.376 and center thickness 0.5mm is bounded by air on the front surface and on the back surface by a medium of refractive index 1.335. If the radius of curvature of the front surface is +7.7mm and that of the back surface is +6.5mm, determine the following using appropriate formula.
- a. Front surface power
b. Back surface power
c. Nominal power
d. Equivalent Power
- 5 marks each
- 2a. Write short notes on the following: - i. Neutralizing power ^{7 marks} ii. Back vertex power - ^{7 marks}
iii. Positional effective power - ^{6 marks} ~~20 marks~~
- 3a. What is an Ophthalmic Prism? Illustrate with a diagram(s) 10 marks
b. What is a ~~lens~~ ^{lens} thickness and how is it different from a thin lens? 10marks
- 4a. What are the different types of Ophthalmic Prisms and their uses? 20marks

SECTION B

- 5a. Describe the two types of spherical lenses 10marks
- 1b. Rewrite the following prescription as cross cylinders.
- i. -1.00/ +2.00 X 090
ii. +2.50/ -3.50 X 130
iii. +1.00/ -1.50 X 096
iv. +2.00/ -3.00 X 060
v. -1.00/-0.75 X 140
- 10marks
- 6a. when a lens is hand neutralized with a -2.50D lens on the vertical meridian, and an extra -4.00D lens on the horizontal meridian. What is the R_x of the unknown lens? 5marks
- ii. The image movement on the 90 degree meridian of an unknown lens is neutralized when it is sandwiched with a +1.00 lens. When the same lens is sandwiched with only a -2.00 lens, the movement is neutralized on the 180 degree meridian. What is the prescription of the unknown lens? 5marks
- b. i. A lens has a nominal power of +4.50D and a front surface of +8.25D, what is the back surface power? 5marks
ii. A lens has a back surface power of +1.00D and a nominal power of +10.25D. What is the front surface power? 5marks
7. Write short notes on ^{different types of} multifocal lenses 20 marks.