

2023 USESO – Practical Exam

Total ___/113

Name: KEY

Station 1 _____/7

- 1) ___ Granite _____
- 2) ___ property of 1 _____
- 3) ___ Basalt _____
- 4) ___ property of 3 _____
- 5) ___ ~43% _____
- 6) ___ Basalt/Gabbro (~½ pyroxene, ½ Plag) _____
- 7) ___ Partially melting the original rock, removing that melt, and crystallizing it would form a basalt. _____

Station 2 _____/6

- 8) ___ Pyrite _____
- 9) ___ property of 8 _____
- 10) ___ Quartz _____
- 11) ___ property of 10 _____
- 12) ___ Bottom (dark) _____
- 13) **A B C D**

Station 3 _____/8

- 14) ___ Scoria _____
- 15) ___ property of 14 _____
- 16) ___ Rhyolite _____
- 17) ___ property of 16 _____
- 18) **A B C D**
- 19) ___ Quickly _____
- 20) ___ The crystals are small _____
- 21) ___ Obsidian _____

Station 4 _____/6

- 22) ___ Pegmatite _____
- 23) ___ Property of 22 _____
- 24) ___ Pumice _____
- 25) ___ Property of 24 _____
- 26) ___ Felsic _____
- 27) **A B C D**

Station 5 _____/6

- 28) ___ Diorite _____
- 29) ___ property of 28 _____
- 30) ___ Obsidian _____
- 31) ___ Property of 30 _____
- 32) ___ 28 _____
- 33) ___ 30 _____

Station 6 _____/6

- 34) ___ Schist _____
- 35) ___ property of 34 _____
- 36) ___ Gneiss _____
- 37) ___ property of 36 _____
- 38) **A B C D**
- 39) **A B C D**

Station 7 _____/6

- 40) ___ Quartzite _____
- 41) ___ property of 40 _____
- 42) ___ Marble _____
- 43) ___ property of 42 _____
- 44) **A B C D E**
- 45) ___ Limestone/carbonates _____

Station 8 _____/6

- 46) __ Slate _____
- 47) __property of 46 _____
- 48) __Biotite _____
- 49) __property of 48 _____
- 50) __It should be nonfoliated (no aligned grains). It forms at lower pressures meaning less deviatoric stress. _____
- 51) __Greenschist _____

Station 9 _____/5

- 52) __ Garnet (almandine) _____
- 53) __property of 52 _____
- 54) __Migmatite _____
- 55) __property of 54 _____
- 56) **A B C D**

Station 10 _____/4

- 57) **A B**
- 58) __B shows alignment/foliation of grains while A does not. _____
- 59) **A B C D**
- 60) __A pure limestone does not explain the diopside nor does alteration. The silicates must have been present in the limestone when it formed. _____

Station 11 _____/6

- 61) __ Sandstone _____
- 62) __property of 61 _____
- 63) __Conglomerate _____
- 64) __property of 63 _____
- 65) **A B C D E**
- 66) **A B C D E**

Station 12 _____/6

- 67) __ Shale _____
- 68) __property of 67 _____
- 69) __Limestone _____
- 70) __property of 69 _____
- 71) __Sea levels rose (transgression) _____
- 72) __The top must be a carbonate which suggests a deeper ocean that the shale at the base. Thus, sea level must have gone up. _____

Station 13 _____/5

- 73) __ Breccia _____
- 74) __property of 73 _____
- 75) __Coquina _____
- 76) __property of 75 _____
- 77) **A B C D E**

Station 14 _____/5

- 78) __ Halite _____
- 79) __property of 78 _____
- 80) __Selenite/gypsum _____
- 81) __property of 80 _____
- 82) **A B C D**

Station 15 _____/5

- 83) __ Fluorite _____
- 84) __ Calcite _____
- 85) **A B C D**
- 86) **A B C D E**
- 87) __Oxides and Sulfides (1/2 each) _____

Station 16 _____/5

- 88) __ Beryl _____
- 89) __property of 88 _____
- 90) __ Topaz _____
- 91) __Hexagonal _____
- 92) __ 8 _____

Station 17

___/6

- 93) ___ Olivine would have crystallized and settled out of the melt before quartz can form. OR Quartz and olivine are not stable when in contact and react to form another mineral (pyroxene) _____
- 94) ___ Higher silica has more silicate bonds (polymerization) which opposes flow. OR Felsic lava can exist at a lower temperature, viscosity increases as temperature decreases.
- 95) ___ Silicate bonds are extremely strong. As minerals approach quartz the number of bonds increases, increasing their stability _____

Station 18

___/5

- 96) ___ Copper _____
- 97) ___ property of 96 _____
- 98) ___ Pyrite _____
- 99) ___ Greenish-black to black _____
- 100) **A B C D E**

Station 19

___/6

- 101) ___ Tourmaline _____
- 102) ___ property of 101 _____
- 103) ___ Kyanite _____
- 104) ___ Orthoclase/microcline _____
- 105) **A B C**
- 106) **A B C D**

Station 20

___/4

- 107) ___ Oolitic Limestone _____
- 108) ___ Hornblende (amphibole OK) _____
- 109) ___ Shale _____
- 110) ___ Aragonite _____