wec01's SSSS Fossils Test 2019

Team Name: _____KEY_____ Team Number: ___KEY___

Team Members: _____KEY_____, _____KEY_____

This test consists of 18 stations with a total of 200 points. Each answer is worth one point except where specified otherwise. You are only given 2 ½ minutes with the specimens at each station, however you can work on any station's questions at any time.

Scoring	
Station 1: ___10___ / 10	Station 10: ___12___ / 12
Station 2: ___10___ / 10	Station 11: ____9___ / 9
Station 3: ___11___ / 11	Station 12: ___11___ / 11
Station 4: ___10___ / 10	Station 13: ___10___ / 10
Station 5: ___10___ / 10	Station 14: ___10___ / 10
Station 6: ____9___ / 9	Station 15: ___12___ / 12
Station 7: ____9___ / 9	Station 16: ____9___ / 9
Station 8: ___10___ / 10	Station 17: ___10___ / 10
Station 9: ____9___ / 9	Station 18: ___29___ / 29
Total: __200___ / 200	

Station 1: Dinosaurs (10 pt)

1.	Identify the genus of specimen A	*Tyrannosaurus* **(1 pt)**
2.	Identify the genus of specimen B	*Stegosaurus* **(1 pt)**
3.	Identify the genus of specimen C	*Allosaurus* **(1 pt)**
4.	Which specimen(s) (A, B, or C) are Saurischians?	A, C **(1 pt)**
5.	Which two specimens (A, B, or C) lived at the same time?	B, C **(1 pt)**
6.	Identify the genus of specimen D	*Velociraptor* **(1 pt)**
7.	Identify the genus of specimen E	*Coelophysis* **(1 pt)**
8.	Which specimen (D or E) is commonly found in Ghost Ranch, New Mexico?	E **(1 pt)**
9.	Which specimen (A, B, C, D, or E) would specimen F have been found on?	D **(1 pt)**
10.	What is specimen F commonly called?	Killing claw **(1 pt)**

Station 2: Arthropods (10 pt)

1.	Identify the genus of specimen A	*Eldredgeops* **(1 pt)**
2.	Identify the genus of specimen B	*Cryptolithus* **(1 pt)**
3.	Identify the genus of specimen C	*Elrathia* **(1 pt)**
4.	Which specimen (A, B, or C) appeared first?	C **(1 pt)**
5.	Which specimen (A, B, or C) was likely predatory?	A **(1 pt)**
6.	Which specimen (A, B, or C) had genal spines longer than its body?	B **(1 pt)**
7.	Identify the class of specimen D	Insecta **(1 pt)**
8.	Which period is known for especially large specimens of this class (specimen D)?	Carboniferous **(1 pt)**
9.	Identify the order of specimen E	Eurypterida **(1 pt)**
10.	What is the name of the circled feature on specimen E?	Telson **(1 pt)**

Station 3: Echinoderms (11 pt)

1.	Identify the class of specimen A and B	Echinoidea **(1 pt)**
2.	Which specimen (A or B) is regular?	B **(1 pt)**
3.	Which specimen (A or B) burrowed?	A **(1 pt)**
4.	Identify the class of specimen C	Crinoidea **(1 pt)**
5.	Which genus of gastropod is often found fossilized with specimens of specimen C?	*Platyceras* **(1 pt)**
6.	Identify the **class** of specimen D	Blastoidea **(1 pt)**
7.	Which specimen (A/B or C) is specimen D more closely related to?	C **(1 pt)**
8.	During which mass extinction did specimen D go extinct?	End Permian **(1 pt)**
9.	Identify the class of specimen E	Crinoidea **(1 pt)**
10.	What is the common name of specimen E?	Feather star **(1 pt)**

11. Which fossil specimen (A, B, C, or D) is sometimes called St Cuthbert's Beads?	C **(1 pt)**

Station 4: Mollusks (10 pt)

1. Identify the genus of specimen A	*Baculites* **(1 pt)**
2. What type of suture (goniatitic, ceratitic, or ammonitic) does specimen A have?	Ammonitic **(1 pt)**
3. Identify the genus of specimen B	*Belemnitella* **(1 pt)**
4. What mineral is specimen B composed of?	Calcite **(1 pt)**
5. Identify the genus of specimen C	*Cypraea* **(1 pt)**
6. What body part do modern members of this genus keep wrapped over their shells?	Mantle **(1 pt)**
7. Identify the genus of specimen D	*Turritella* **(1 pt)**
8. Identify the genus of specimen E	*Dactylioceras* **(1 pt)**
9. Which specimen (A, B, C, D, or E) is known as a steinkern?	D **(1 pt)**
10. Which specimen (A, B, C, D, or E) is specimen F a section of?	A **(1 pt)**

Station 5: Sponges, Corals, and Bryozoans (10 pt)

1. Identify the genus of specimen A	*Astraeospongia* **(1 pt)**
2. What mineral are the spicules of specimen A composed of?	Calcite **(1 pt)**
3. Identify the genus of specimen B	*Hydnoceras* **(1 pt)**
4. What mineral are the spicules of specimen A composed of?	Silicate **(1 pt)**
5. Identify the genus of specimen C	*Archimedes* **(1 pt)**
6. What feature in specimen C is rarely found preserved?	Zooecium **(1 pt)**
7. Identify the genus of the coral in specimen D	*Septastraea* **(1 pt)**
8. What type of coral is in specimen D (rugose, tabulate, or scleractinian)?	Scleractinian **(1 pt)**
9. What is the coral in specimen D encrusting?	Snail shell **(1 pt)**
10. What period is specimen E from?	Carboniferous (Mississippian) **(1 pt)**

Station 6: Foraminifera (9 pt)

1. Which epoch was specimen A most common in?	Eocene **(1 pt)**
2. Which mass extinction did specimen B go extinct during?	End Permian **(1 pt)**
3. What part of foraminifera is readily fossilized?	Test **(1 pt)**
4. Isotopes of which two elements are often examined in Foraminifera for paleoclimatology and paleoceanography?	Carbon and Oxygen **(1 pt)**

5. What are three aspects of foraminifera make them good index fossils?	1. Abundant 2. Diversifies quickly 3. Readily fossilizes 4. Wide distribution **(1 pt each up to 3 pt)**
6. What type of stone are foraminifera common in?	Limestone **(1 pt)**
7. What is the chemical formula of the mineral these fossils are composed of?	$CaCO_3$ **(1 pt)**

Station 7: Cartilaginous Fish (9 pt)

1. Which specimen (A, B, C, or D) represents Batoidea?	A **(1 pt)**
2. Which specimen (A, B, C, or D) represents *Carcharodon*?	C **(1 pt)**
3. Which specimen (A, B, C, or D) represents *C. megalodon*?	D **(1 pt)**
4. Which specimen (A, B, C, or D) represents *Carcharocles* but **not** *C. megalodon*?	B **(1 pt)**
5. True or False: *C. megalodon* is an ancestor of the great white shark	False **(1 pt)**
6. What species under the genus *Carcharodon* is believed to be a transitional species between modern great whites and their ancestors?	*C. hubbelli* **(1 pt)**
7. Mako sharks have long, pointed teeth. What does this suggest about their diet?	Eat small fish **(1 pt)**
8. Great whites have short serrated teeth. What does this suggest about their diet?	Eat larger, fatter animals like seals **(1 pt)**
9. Specimen E has red-orange sediments on it. What substance does this suggest the presence of?	Iron or rust **(1 pt)**

Station 8: Bony and Armored Fish (10 pt)

1. Identify the order of specimen A	Coelacanthiformes **(1 pt)**
2. Identify the class of specimen B	Actinopterygii **(1 pt)**
3. Which Lagerstätte is specimen B found in?	Green River, Wyoming **(1 pt)**
4. Which specimen (A or B) is more closely related to amphibians?	A **(1 pt)**
5. Identify the genus of specimen C	*Dunkleosteus* **(1 pt)**
6. What was the diet of specimen C?	Predator (ammonites, placoderms, etc.) **(1 pt)**
7. Identify the genus of specimen D	*Bothriolepis* **(1 pt)**
8. What was the diet of specimen D?	Detritivore (detritus in mud) **(1 pt)**
9. What period is often called 'The Age of Fishes'?	Devonian **(1 pt)**

10. During which mass extinction did armored fish go extinct?	Late Devonian **(1 pt)**

Station 9: Reptiles and Amphibians (9 pt)

1. Identify the family of specimen A and B	Mosasauridae **(1 pt)**
2. What do specimen A's teeth suggest about its diet?	Ate animals with shells **(1 pt)**
3. What are two similarities between the skulls of specimen A/B and those of snakes?	1. Double-hinged jaw 2. Paired fenestrae in palates 3. Flexible skull 4. Double rows of teeth **(1 pt each up to 2 pt)**
4. Identify the genus of specimen C	*Acanthostega* **(1 pt)**
5. Identify the genus of specimen E	*Tiktaalik* **(1 pt)**
6. Identify the genus of specimen F	*Eryops* **(1 pt)**
7. Order specimens C, D, E, and F based on the transition from fish to tetrapod	D, E, C, F **(1 pt)**
8. During what period did the transition from fish to tetrapod happen?	Devonian **(1 pt)**

Station 10: Synapsids (12 pt)

1. Identify the genus of specimen A	*Dimetrodon* **(1 pt)**
2. What advantage did specimen A have over temnospondyls in the arid late Permian?	Amniotic eggs (laid eggs on land) **(1 pt)**
3. What are two possible functions for specimen A's sail?	1. Thermoregulation 2. Attracting mates 3. Intimidation **(1 pt each up to 2 pt)**
4. Identify the genus of specimen B	*Lystrosaurus* **(1 pt)**
5. Which mass extinction did specimen B survive?	End Permian **(1 pt)**
6. What are three adaptations that helped specimen B survive this extinction?	1. Large chest/lungs 2. Burrowing 3. Migration 4. Large size **(1 pt each up to 3 pt)**
7. What period was specimen B predominant during?	Triassic **(1 pt)**
8. Which specimen (A or B) is a therapsid?	B **(1 pt)**
9. Which specimen is more closely related to mammals?	B **(1 pt)**

Station 11: Mammals (9 pt)

1. Identify the genus of specimen A	*Equus* **(1 pt)**
2. Identify the genus of specimen B	*Mesohippus* **(1 pt)**
3. Identify the genus of specimen C	*Basilosaurus* **(1 pt)**
4. Which specimen(s) are artiodactyls?	C **(1 pt)**

5.	Which specimen(s) are perissodactyls?	A, B **(1 pt)**
6.	At the end of which epoch did specimen A go extinct in North America?	Pleistocene **(1 pt)**
7.	The ingestion of what two substances are thought to have led to the development of hypsodont teeth in New World mammals?	1. Grass 2. Gritty soil **(1 pt each up to 2 pt)**
8.	What vestigial structure on specimen C suggests terrestrial heritage?	Hindlimbs **(1 pt)**

Station 12: Megafauna (11 pt)

1.	Identify the genus of specimen A	*Mammuthus* **(1 pt)**
2.	Identify the genus of specimen B	*Mammut* **(1 pt)**
3.	Which specimen (A or B) is more closely related to modern elephants?	A **(1 pt)**
4.	Name a species of specimen A which exhibits insular dwarfism	*M. exilis* or *M. creticus* **(1 pt)**
5.	On which continent did the Woolly Mammoth (*M. primigenius*) originate?	Asia **(1 pt)**
6.	What are the two leading hypotheses for the cause of the extinction of the megafauna?	1. Climate change 2. Human hunting **(1 pt each up to 2 pt)**
7.	Identify the genus of specimen C	*Smilodon* **(1 pt)**
8.	Which Lagerstätte is specimen C commonly found in?	La Brea Tar Pits, California **(1 pt)**
9.	What is a predator trap? How does it work? (2 pt)	A hazard such as a tar pit which traps more predators than prey. **(1 pt)** Predators are attracted to animals that have become entrapped inside and, in the process, become entrapped themselves. **(1 pt)**

Station 13: Plants (10 pt)

1.	Identify the genus of specimen A	*Glossopteris* **(1 pt)**
2.	Which supercontinent does specimen A provide evidence of?	Gondwana **(1 pt)**
3.	Identify the genus of specimen B	*Metasequoia* **(1 pt)**
4.	Identify the genus of specimen C	*Lepidodendron* **(1 pt)**
5.	During which period was specimen C predominant?	Carboniferous **(1 pt)**
6.	Identify the genus of specimen D	*Calamites* **(1 pt)**
7.	Which Lagerstätte is specimen D commonly found in?	Mazon Creek, Illinois **(1 pt)**
8.	Identify the genus of specimen E	*Ginkgo* **(1 pt)**
9.	In which country is specimen E still found in the wild?	China **(1 pt)**
10.	Which specimen is considered a Lazarus taxon?	B **(1 pt)**

Station 14: Trace Fossils (10 pt)

1.	Identify the **class** of specimen A	Bivalvia **(1 pt)**
2.	What created the hole in specimen A?	Snail **(1 pt)**
3.	Identify the class of organism that created specimen B	Trilobita **(1 pt)**
4.	What type of rock is specimen B?	Sandstone **(1 pt)**
5.	Identify the order of organism that created specimen C	Eurypterida **(1 pt)**
6.	How many limbs was the organism that created specimen C walking on?	6 **(1 pt)**
7.	Specimen D was created by a small theropod assigned to the ichnogenus *Minisauripus*. What is an ichnogenus?	A genus known only from trace fossils **(1 pt)**
8.	The footprint on specimen D is 1 inch long. Approximately how long was the leg of the dinosaur that left it?	4 inches **(1 pt)**
9.	What left the circular imprint circled on specimen D?	Raindrop **(1 pt)**
10.	Was specimen E created by an Ornithischian or Saurischian?	Ornithiscian **(1 pt)**

Station 15: Extinctions (12 pt)

1.	Which mass extinction is labeled A?	Ordivician-Silurian **(1 pt)**
2.	Which mass extinction is labeled B?	Late Devonian **(1 pt)**
3.	Which mass extinction is labeled C?	Permian-Triassic **(1 pt)**
4.	Which mass extinction is labeled D?	Triassic-Jurassic **(1 pt)**
5.	Which mass extinction is labeled E?	Cretaceous-Paleogene **(1 pt)**
6.	Which mass extinction is depicted in pictured A?	Permian-Triassic **(1 pt)**
7.	Which mass extinction is depicted in pictured B?	Cretaceous-Paleogene **(1 pt)**
8.	During which mass extinction did trilobites go extinct?	Permian-Triassic **(1 pt)**
9.	During which mass extinction did non-avian dinosaurs go extinct?	Cretaceous-Paleogene **(1 pt)**
10.	Which mass extinction led to the rise of mammals?	Cretaceous-Paleogene **(1 pt)**
11.	Which mass extinction led to the rise of dinosaurs?	Triassic-Jurassic **(1 pt)**
12.	Which mass extinction is called 'The Great Dying'?	Permian-Triassic **(1 pt)**

Station 16: Geologic Timeline (9 pt)

1.	Which period is depicted in is picture A?	Devonian **(1 pt)**
2.	Which period is depicted in is picture B?	Triassic **(1 pt)**
3.	Which period is depicted in is picture C?	Ediacaran **(1 pt)**

4.	During what period did the Carnian Pluvial Event happen?	Triassic **(1 pt)**
5.	How many million years ago did the Cambrian period start?	541 **(1 pt)**
6.	How many million years ago was the Permian extinction?	252 **(1 pt)**
7.	During what period was the Paleocene-Eocene Thermal Maximum?	Tertiary or Paleogene **(1 pt)**
8.	From what eon is the earliest fossil evidence of life?	Archean **(1 pt)**
9.	On which boundary (between periods) did the Hangenberg event occur?	Devonian-Carboniferous **(1 pt)**

Station 17: Ecology (10 pt)

1.	The Mesozoic Marine Revolution involved the appearance of many shell-crushing predators. What are two such orders of marine predators?	1. Icthyosauria 2. Plesiosauria **(1 pt each up to 2 pt)**
2.	What event involved the appearance of nearly all animal phyla?	Cambrian Explosion **(1 pt)**
3.	What is the process through which organisms rapidly fill newly empty niches after an extinction?	Adaptive Radiation **(1 pt)**
4.	Ichthyosaurs diversified to fill many different niches. What are three different feeding methods/habits that different Ichthyosaurs may have used?	1. Killing large prey 2. Durophagy; crushing shellfish 3. Suction feeding 4. Ram feeding **(1 pt each up to 3 pt)**
5.	What class of animals fills a similar niche to and possibly outcompeted brachiopods?	Bivalvia **(1 pt)**
6.	What genus of large predator moved from South America to North America during the Great American Interchange where it went extinct partly due to competition?	*Titanis* **(1 pt)**
7.	What behavior did trilobites employ similarly to many modern isopods to defend against predators?	enrolling **(1 pt)**

Station 18: Identification (29 pt)

1.	Identify the genus of specimen A	*Atrypa* **(1 pt)**
2.	Identify the genus of specimen B	*Worthenia* **(1 pt)**
3.	Identify the genus of specimen C	*Conus* **(1 pt)**
4.	Identify the genus of specimen D	*Diplodocus* **(1 pt)**
5.	Identify the genus of specimen E	*Mesohippus* **(1 pt)**
6.	Identify the genus of specimen F	*Metasequoia* **(1 pt)**
7.	Identify the genus of specimen G	*Calamites* **(1 pt)**
8.	Identify the genus of specimen H	*Exogyra* **(1 pt)**

9. Identify the genus of specimen I	*Gryphaea* **(1 pt)**
10. Identify the genus of specimen J	*Platyceras* **(1 pt)**
11. Identify the genus of specimen K	*Platystrophia* **(1 pt)**
12. Identify the genus of specimen L	*Smilodon* **(1 pt)**
13. Identify the genus of specimen M	*Equus* **(1 pt)**
14. Identify the genus of specimen N	*Diplocaulus* **(1 pt)**
15. Identify the genus of specimen O	*Nautilus* **(1 pt)**
16. Identify the genus of specimen P	*Hexagonaria* **(1 pt)**
17. Identify the genus of specimen Q	*Iguanodon* **(1 pt)**
18. Identify the genus of specimen R	*Acanthostega* **(1 pt)**
19. Identify the genus of specimen S	*Iguanodon* **(1 pt)**
20. Identify the genus of specimen T	*Mesohippus* **(1 pt)**
21. Identify the genus of specimen U	*Mammuthus* **(1 pt)**
22. Identify the class of specimen V	Crinoidea **(1 pt)**
23. Identify the class of specimen W	Crinoidea **(1 pt)**
24. Identify the class of specimen X	Ophiuroidea **(1 pt)**
25. Identify the class of specimen Y	Graptolithina **(1 pt)**
26. Identify the genus of specimen Z	*Pentremites* **(1 pt)**
27. Which body part (of a bird) is specimen AA from?	Toe (phalanx) **(1 pt)**
28. Which body part (of a shark) is specimen AB from?	Spine (vertebrae) **(1 pt)**
29. Which hip bone (from a dinosaur) is specimen AC?	Ischium **(1 pt)**