

TOSSUPS – BLIND ROUND #5**MOC MASTERS 2004 -- UT-CHATTANOOGA**

Questions by Caltech's Jordan Boyd-Graber and Xiao Peng with strays from Ray Luo, Paul Lujan, Jerry Vinokurov, Adam Brosius, Amanda Hartman, Matthew Marjan, Brett McArthur, Marcy LaViollette, Kelvin Haire, Tom Bole, Joel Grus, Andrew Lim, and Paul Trevillion

1. Adding one of these to an edge of a disc can create three surfaces: the Boy surface, the cross-cap, or the Roman surface. The Tietze graph shows that any graph embedded on this surface is six-colorable. If you cut a Klein bottle in half, the result is either one or two of these. Like the cylinder, it is not technically a surface itself but rather a surface with a boundary. FTP identify this non-orientable surface with Euler characteristic zero obtained by gluing together the ends of a twisted strip.

Answer: Möbius Strip (or loop or band, etc.)

2. His priceless veil is embroidered with parrots and turtledoves, he wears a diamond studded crown, and his symbol is the pentangle. The eldest son of King Lot of Orkney, he is Arthur's nephew and Mordred's half-brother. He exchanges - in total - six kisses for venison, a boars head, and the skin of a fox, but withholds a green girdle given to him by Morgan le Fay, causing Bertilak to nick his neck. FTP name this hero who gets his comeuppance from the Green Knight.

Answer: Sir Gawain

3. Poor eyesight prevented this Irish-American from fighting in World War II. However, he was recruited into the OSS after meeting the director, William Donovan, at a cocktail party. A longtime supporter of Ronald Reagan, this man picked up with the cloak and dagger in the mid 80s, when Oliver North tied him to the Iran-contra scandal. FTP, name this former CIA director.

Answer: William Casey

4. The Jockey Club, through the use of boos and cat calls at three Paris performances, got this work thrown out of Paris. Invited by Napoleon III, its composer made the role of Venus more ornate for its presentation at the Opéra. A conflation of two separate medieval legends of a singing contest on the Wartburg and the tale of a crusading knight from Franconia, this is - FTP- which Richard Wagner work?

Answer: Tannhäuser und der Sängerkrieg auf Wartburg

5. For states with specific values of n , l , and j , the individual states with different m 's of j will be evenly spaced with separations μ of B times the magnetic field times m of j times g , the Landé factor. It was first observed in a Bunsen sodium flame by means of Rowland's grating and an applied magnetic field. Its investigator, along with Lorentz, was awarded the 1902 Nobel Prize in physics. FTP identify this broadening of spectral lines, the magnetic analog of the Stark effect.

Answer: Zeeman effect

6. Its change due to heating is the heat capacity times log of the ratio of temperatures, regardless of the path. Its change due to phase transitions is the enthalpy divided by the transition temperature. The 3rd law of thermodynamics allows us to estimate its absolute value, which is zero for a perfect crystalline substance at zero Kelvin. FTP name this measure of disorder.

Answer: entropy

7. In 1945, this popular book was turned into a movie starring Dorothy McGuire and Peggy Ann Garner. The plot revolves around a young girl coming of age at the turn of the century in New York. The Nolan family includes her alcoholic father, hard-working mother, and basically good brother. For ten points, name the book by Betty Smith, which opens with Francie Nolan observing a tree-of-heaven climbing up her balcony.

Answer: A Tree Grows in Brooklyn

8. This World War I flying ace won the Iron Cross before he was 20 years old and succeeded Manfred von Richthofen, the Red Baron, as commander of the Flying Circus squadron. During the Second World War, however, he played a more prominent but less noble role, confiscating many works of art and generally indulging his luxurious conceits. For ten points, name this man, captured by the U.S. Seventh Army on 9 May 1945, and was sentenced to death by hanging at Nuremberg for his leadership of the Luftwaffe.

Answer: Hermann Goering

9. It opened on Broadway at the Imperial Theatre on April 28th, 1988 but closed after just 68 performances, having lost \$6 million. However, this musical spawned a hit single which topped the charts in 11 countries and reached #9 in the US and #12 in the UK. Written by Tim Rice, Benny Anderson and Bjorn Ulvaeus, this musical tells the story of a romantic triangle set against the backdrop of the cold war and contains the hit single "I Knew Him So Well." For ten points, name the musical that gave the world "One Night in Bangkok."

Answer: Chess

10. The majority of his series *Industry and Idleness* were formerly owned by Horace Walpole. His *The Gate of Calais* is an anti-French print illustrating his anger after being arrested on suspected espionage charges, during a return trip from Paris. FTP, name this political satirist who gained fame for his *Emblematic Print on the South Seas Scheme*, and in other works such as *Gin Lane*, *Beer Street* and *The Harlot's Progress*.

Answer: William **Hogarth**

11. First discovered in nerve cells, it is found scattered throughout the cytoplasm in plants, fungi, and invertebrates. The cis region receives protein-containing vesicles and sends the protein through the lumen of the medial region into the trans region where the phosphorylated protein binds to a receptor in the membrane and pinches off as a vesicle to be delivered to the proper address. FTP name this complex of membranous structures named after an Italian biologist.

Answer: Golgi apparatus or complex

12. She was employed by King Celeus and Queen Metaneira to nurse their infant son Demophoön. While in Eleusis, she also bestowed the secret of cultivating the fig tree on her lover Phytalus. A daughter of Cronus and Rhea, she declared that the Eleusinian mysteries should be performed in her honor when her daughter by Zeus was restored to her there. FTP identify the Greek goddess of agriculture, the mother of Persephone.

Answer: **Demeter** [Don't accept Ceres after ``Cronus"]

13. After the Civil War, he worked in salt furnaces and coal mines, and later as a janitor to earn his room and board. This life provided him with the background to comment, in such works as *The Future of the American Negro*, on his belief that African Americans would not gain social equality before they had attained economic equality. The organizer of the National Negro Business League, he often found himself in opposition to W.E.B. Dubois. FTP, name this author of *Up From Slavery*, who, in 1881, was chosen to organize a normal and industrial school in Tuskegee, Alabama.

Answer: Booker Taliaferro **Washington**

14. The protagonist of this work calls herself Elly Higginbottom from Chicago when she and Doreen go out for drinks after finishing their day at a fashion magazine, *Ladies Day*. Esther doesn't get into a summer writing program and, after learning the news, visits her father's grave. Dr. Gordon suggests shock therapy, but does nothing to ease Esther's depression or prevent her eventual suicide attempt using sleeping pills. FTP identify this semi-autobiographical work of Sylvia Plath.

Answer: The Bell Jar

15. Carlos Tevez currently occupies his shirt at the Bombonera, or Chocolate Box stadium, which he still visits regularly as a fan of his beloved Boca Juniors. Although his professional career glittered and reached a glorious peak during a spell at Napoli, he was even then beset by the drug problems which have recently sent him to close friend Fidel Castro's Cuba for treatment. For ten points, name this soccer player perhaps best known for two goals against England in the 1986 World Cup, one of which he claimed at the time had been punched in by the 'Hand of God.'

Answer: Diego Armando Maradona

16. Proposed by a naturalist born the youngest of 11 children in the mid-18th century, this theory dominated Soviet genetics from 1940 to the 1960s. Devised to explain how an organism can gain advantage over its parents, this theory claimed that characteristics acquired during the lifetime of an organism can be transmitted to its offspring. For ten points, name this discredited mechanism for evolution that bears the name of its French inventor.

Answer: Lamarckism (or Lamarckian evolution)

17. The main opposition to this movement came from Cyril, the archbishop of Alexandria, while the supporters of the movement were centered around Antioch. When Theodosius II called an ecumenical council for Pentecost in 431 at Ephesus, the bishops decided not to wait for the delegation from Antioch and declared these teachings a heresy. FTP identify this heresy that asserted that Christ possessed two natures, one human and the other Godly.

Answer: Nestorian

18. He was a poet from Teos in Asia Minor, who wrote of drinking and revelry, and according to Pliny, he died in 488 BC from choking on a grape. He is credited with a satire about the inventor of a throwing machine, Artemon Periforetos, who was so anxious for his security that he always had his slaves carry him around close to the ground in case he should fall out. FTP, give the name of this poet who is *In Heaven* when he hears the *Star Spangled Banner*.

Answer: Anacreon

19. His name literally means "King of the World". The grandson of Akbar and the father of Aurunzeb, this emperor tried unsuccessfully to depose his father in 1622 and upon his later ascension to the throne, killed all his brothers to prevent future coups. FTP, name this Mughal emperor so devoted to his wife Mumtaz that upon her death he built, as her tomb, the magnificent Taj Mahal.

Answer: Shah Jehan

20. Described by scientists at the Smithsonian Tropical Research Institute as "perhaps the single most important natural history event since the death of the dinosaurs," the formation of this geographical feature was completed 3 million years ago. Having been entirely absent 12 million years beforehand, this feature was formed by a combination of volcanic activity and sediment deposition. For ten points, name the physical feature that drastically altered the world's climate by disrupting the flow of water between the Pacific and Atlantic oceans.

Answer: The Isthmus of Panama

21. A reproduction of this masterwork commissioned by Nelson Rockefeller and donated to the United Nations in 1985 was covered during a speech by a senior member of the Bush administration. The original was painted for the Spanish pavilion of the Paris Exposition of 1937. For ten points, name this commemoration of a Basque town bombed by Luftwaffe in the Spanish Civil War, painted by Pablo Picasso.

Answer: Guernica

22. These particles were originally called the tau and the theta, and the eponymous tau-theta puzzle was the fact that these particles had identical masses and lifetimes, but different parity; this was resolved with the discovery that the tau and theta were actually the different parity eigenstates of these particles. Cronin and Fitch further extended this to observe CP violation in these particles, the first such observation. Composed of a down quark and a strange antiquark, or the opposite, for ten points, what are these lightest strangeness-carrying mesons?

Answer: K⁻⁰ or neutral kaons

23. His circumcision is the reason that most Muslims are circumcised. His name is derived from Samia, to hear, because Allah had heard his father's prayer for a son. Sura 37 describes the Lord's demand that he, the firstborn of Sarrah and Ibrahim, must be sacrificed. Like Jacob in the Bible, he is the father of twelve sons, the ancestors of twelve tribes, and Muslims trace their lineage to Ibrahim through him. FTP identify this wanderer whose name is the third word of *Moby Dick*.

Answer: Isma'il or Ishmael