

MIZORAM PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATIONS FOR JUNIOR GRADE OF M.E.S. (AE/SDO) UNDER PUBLIC HEALTH ENGINEERING DEPARTMENT, MARCH, 2017.

GENERAL ENGLISH

Time Allowed : 3 hours

FM : 100

*The figures in the margin indicate full marks for the questions.
Attempt all questions.*

1. Comprehension: Read the following passage carefully and answer the following questions:

Biomimetics is the billion-dollar industry which draws inspiration from nature to solve problems in engineering, medicine, and other fields. While human beings have always had a natural propensity to observe and try to copy the ingenuity of nature, it is only recently that biomimetics has taken off as a field of its own. The Renaissance genius Leonardo da Vinci dedicated himself to observing and recording natural phenomena half a millennium ago. His superb graphic renditions of plausible flying machines are based on his direct observations of birds in flight. His renowned *Codex Atlanticus*, along with smaller codices, includes renderings of animal musculature, revealing a fascination with movement. His erudite studies of flowing hair and water manifest his contemplation of the movement of waves in nature.

However, without modern technology, early inventors like da Vinci were unable to implement their biomimetic insights. On the other hand, contemporary biomimeticists have access to the technology and nanotechnology essential to the industry. One tool of enormous utility to today's biomimetics is the electron microscope. Being able to see and comprehend the nanoscale construction of natural structures is crucial to synthesizing those miniscule formations. One person who has taken on the challenge of biomimetics is Robert Fearing, a professor of electrical engineering at the University of California, Berkeley. A modern-day echo of da Vinci's work, Fearing's current challenge is to create a bio-robotic fly which is small, swift, and maneuverable enough to deploy on surveillance or rescue missions. Fearing does not aspire to replicate the fly. Rather, he hopes to isolate the enigmatic natural structures which give it flight, and perhaps find a simpler solution than the 20 muscles which power a fly's wing. Those 20 muscles allow it to make a 90-degree turn from straight-line flight in under 50 milliseconds, something even the most advanced planes are not able to accomplish. "*Some things are just too mysterious and complicated to be able to replicate,*" says Fearing.

- (a) What is biomimetics? (5)
- (b) What are the achievements of da Vinci mentioned in the passage? (5)
- (c) What is the function of the electron microscope? (5)
- (d) What is the current challenge faced by Fearing? (5)

2. **Précis:** Re-write the following passage into S! of its length giving a suitable title: **(20)**

Not until the nineteenth century did canning become a part of food preservation. Until then, foods were dried, salted, or smoked. In 1795, during the Napoleonic Wars, the French government offered a reward to the first person who could preserve food satisfactory for military use. In 1809, M. Nicholas Appert won the 12,000 francs and earned recognition as the father of canning. Although he used glass bottles, sealed with cork and processed in a hot-water bath, he did not know why his process worked. Ultimately, Louis Pasteur determined why improperly processed foods spoil. Micro organisms found in the air, and on all objects, cause spoilage as soon as they come in contact with food. Only proper sterilization, found Pasteur, could kill these microorganisms. Prior to 1850, the only sterilization method known to farm women called for canning—first in tin cans and later in glass jars, both of which had a groove around the top, into which a tin lid fit. Hot food, placed in hot cans or jars and topped with a hot lid, was sealed with hot sealing wax—a hard red wax, quite unlike today’s paraffin. When dry, the brittle wax seal was broken only by pelting the wax with a blunt object, usually a knife handle. In 1858, John L. Mason invented a glass jar that could receive a screw-on zinc lid sealed by a rubber gasket. For the first time, home canning became easy, economical, and popular. By 1903, Alexander H. Kerr perfected the two-piece lid, a snap lid and a ring, still in use nearly 90 years later. Home canning literally snapped forth a new option for homemakers.

3. Write an essay on **any one** the following topics: **(20)**

- Harvesting ambient energy
- Environmental resource management
- Effects of demonetization

4. Choose the correct form of the verb : **(10)**

- (a) One should not _____ before elders. (*lie, lay*)
- (b) The Principal _____ my application for leave. (*declined, denied*)
- (c) Some people are _____ great. (*born, borne*)
- (d) When did you _____ up this morning? (*woke, waked*)
- (e) We celebrated our college’s _____ day today. (*raising, rising*)
- (f) The _____ of the disease is severe. (*affects, effects*)
- (g) My friend _____ my goggles this morning. (*took, take*)
- (h) The moon _____ brightly in the night. (*shine, shines*)
- (i) I _____ to get through my exams with flying colours. (*hope, expect*)
- (j) The speeding car _____ abruptly in front of me. (*stop, stopped*)

5. Choose the correct definition for the word given: **(10)**

- (a) Autocracy
 - (i) Government by one person
 - (ii) Government by the wealthy
 - (iii) Government by the people
- (b) Bigamy
 - (i) the practice of having two maids at a time
 - (ii) the practice of having two mistress at a time
 - (iii) the practice of having two wives/husbands at a time
- (c) Effeminate
 - (i) a person who worships woman
 - (ii) a person who loves all women
 - (iii) a person who is womanish

- (d) Epicure
 - (i) one, who is devoted to the pleasure of eating and drinking
 - (ii) one, who is devoted to the pleasure of dancing and music
 - (iii) one, who is devoted to the pleasure of reading and books
- (e) Fatalist
 - (i) one, who believes in chance
 - (ii) one, who believes in destiny
 - (iii) one, who believes in fate
- (f) Gregarious
 - (i) animals which live in herds
 - (ii) animals which live in flocks
 - (iii) animals which live in colony
- (g) Honorary
 - (i) holding office without any confirmation
 - (ii) holding office without any remuneration
 - (iii) holding office without any dedication
- (h) Illegible
 - (i) incapable of being read
 - (ii) incapable of being translated
 - (iii) incapable of being examined
- (i) Itinerant
 - (i) one, who loves planning
 - (ii) one, who journeys from place to place
 - (iii) one, who hates travelling
- (j) Loquacious
 - (i) one, who talks languidly
 - (ii) one, who talks continuously
 - (iii) one, who talks tenderly

6. Make sentences with the following pair of words to show their difference: **(10)**

- (a) Boar/Boer
- (b) Censor/Sensor
- (c) Complement/Compliment
- (d) Site/Cite
- (e) Trooper/Trouper
- (f) Vain/Vane
- (g) Waive/Wave
- (h) Sole/Soul
- (i) Wright/Write
- (j) Precedence/Precedents

7. Explain and make sentences with **any five (5)** of the given idioms and phrases: **(10)**

- (a) Barking up the wrong tree
- (b) It takes two to tango
- (c) Not playing with a full deck
- (d) Take with a grain of salt
- (e) Cut corners
- (f) Elvis has left the building
- (g) Jump on the bandwagon

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