



## سوالات درگ مطلب آزمون زبان دکتری وزارت علوم (MSRT)

بهمن ماه ۱۳۹۸



## Passage 1

Most sports entail an element of personal risk. The main function of a safety helmet is to protect the human skull and its **fragile** contents by absorbing as much as possible of the kinetic energy that is violently transferred during a collision. The three principal damaging consequences of sudden impact are fracture of the skull, linear acceleration of the brain relative to the skull, and rotational acceleration of the brain. Although linear and rotational acceleration may occur at the same time, many mechanical testing procedures for helmets concentrate upon linear acceleration and use it as a **criterion** of protection in specifications.

A typical helmet consists of an outer shell and a foam liner. The shell is usually made from a strong, durable and rigid material that is capable of spreading and redistributing the impacting forces without suffering brittle fracture. This reduction in pressure lessens the risk of skull fracture. The foam liner has a cellular structure that absorbs energy when crushed by impact.

Specialized designs of helmets are used in cycling, horse riding, canoeing, mountaineering, skiing, skate boarding, ice hockey, etc. Some designs are quite **rudimentary** and offer minimal protection. In general, the wearer expects the helmet to be comfortable to wear, lightweight, not restrict **peripheral** vision, unduly and be reasonably compact and/or aerodynamic.

Production costs should be low. Increasing the liner thickness is beneficial but, if the use of helmets is to be **promoted**, there are size constraints. Thus, for a cricket helmet, acceptable shell and liner thicknesses are about 2-3 mm and 15 mm, respectively. Strong and tough helmet shells have been produced from ABS and GRP. The great majority of shock-absorbent foam linings are made from polystyrene, polypropylene and polyurethane are also used.

### 1. What is the passage mainly discuss?

- 1) Function and form of safety helmets 2) Speed limits in racing sports
- 3) Element of risk in sports 4) Safety measures in cycling and hockey

### 2. A safety helmet protects the head by ...

- 1) Moving violently during a collision 2) Absorbing kinetic energy in a collision
- 3) Absorbing the contents of the skull 4) Transferring the kinetic energy to the skull

### 3. When manufacturing a helmet, the most important damage factor usually considered is:

- 1) fracture of the skull 2) linear acceleration of the brain
- 3) sudden impact 4) sudden impact

### 4. To absorb the energy of the impact the foam liner is made of ...

- 1) a rigid material 2) a durable material
- 3) a material with brittle fractures 4) a material with cellular structure

### 5. according to paragraph 5 the most common material used in helmet linings is ...

- 1) ABS 2) GRP 3) Polystyrene 4) Polyurethane

### 6. The word "fragile" in paragraph 1 is closest meaning to:

- 1) Delicate 2) Expensive 3) restricted 4) elastic

### 7. The word "criterion" in paragraph 1 is closest meaning to:

- 1) Excuse 2) Benchmark 3) Analysis 4) Exception



**8. The word "rudimentary" in paragraph 3 is closest meaning to:**

- 1) Comfortable 2) **Basics** 3) Profound 4) Distinct

**9. The word "peripheral" in paragraph 3 is closest meaning to:**

- 1) Mental 2) Hind 3) **outlying** 4) superior

**10. The word "promoted" in paragraph 4 is closest meaning to:**

- 1) Estimated 2) **Encouraged** 3) Banned 4) Granted

## Passage 2

Private managers are free to advance the interests of their firms as they see fit, as long as their actions are not specifically prohibited by law. Public managers, by contrast, are free to act only within the scope of their lawfully delegated authority and in accordance with externally imposed systems of rules and procedures. Consequently, public managers encounter many more constraints and enjoy much less freedom of choice than their private sector **counterparts**. This limits their ability to pursue organizational objectives in a purposeful and deliberate fashion.

Having identified appropriate courses of action, public managers find it much more difficult to put their decisions into effect. The use of rules and procedures to constrain managerial discretion reflects the emphasis placed on accountability in a democratic state. Because public officials exercise the coercive powers of the state and spend tax dollars, democratic norms require that they be held accountable for their actions. As noted earlier, where accountability cannot be achieved by setting clear goals and monitoring results, the apparent alternative is to replace managerial discretion with rules.

Historically, legislative bodies have relied upon centralized control systems to prevent fraud, waste, and misuse of authority, and to ensure fairness in hiring employees, distributing benefits, and awarding contracts. Merit-based personnel systems were **instituted** to safeguard the merit principle against the **intrusions** of patronage and to protect employees from arbitrary, capricious, or discriminatory treatment; line-item budgets and standardized accounting procedures to ensure that funds are expended for their authorized purposes and in a fiscally responsible manner; and purchasing and bidding systems to ensure that supplies and equipment are obtained at the best available price and that contracts are awarded in a fair and **unbiased** manner. Not only do these systems specify the rules and procedures that managers must follow but they are also enforced by central personnel, budget, and purchasing offices that demand strict **compliance**.

The problem with centralized control systems is that "constraining people from doing anything wrong often simultaneously constrains them from doing anything right. This was a major theme in Vice President Gore's 1993 National Performance Review, which described "structures of over control and micromanagement" in the federal government that leave "good people trapped in bad systems. Although much red tape can be eliminated, operating in a democratic system of governance means that public managers are and will continue to be

subject to a degree of accountability that is far more detailed and **pervasive** than that in the private sector.



**12. what is the passage mainly discusses?**

- 1) Financial rules in public organization 2) **Constrains on public managers**
- 3) Control system in private sector 4) Role of government in economy

**13. In comparison with managers in the public sector, private managers ...**

- 1) **Can pursue organizational objectives more easily**
- 2) Encounter may more constraints
- 3) Have much less freedom of choice
- 4) Are specifically prohibited by law in many regards

**14. In the public sector, the emphasis placed an accountability in a democratic state translate into:**

- 1) **Less coercive powers**
- 2) Line-item budget and accounting procedure
- 3) Merit-based personal system
- 4) IT monitoring and communication systems

**15. It can be inferred from paragraph 3 that, in public organization, the merit principles is enforced by ...**

- 1) **The central personal office** 2) The central budget office
- 3) The central purchasing office 4) The central research and development office

**16. The word "counterpart" in paragraph 1 is closest meaning to:**

- 1) Relatives 2) Clients 3) Competitors 4) **Equivalent**

**17. The word "instituted" in paragraph 3 is closest meaning to:**

- 1) **Interference** 2) Interchanges 3) Interpretations 4) Introduction

**18. The word "unbiased" in paragraph 3 is closest meaning to:**

- 1) Undetermined 2) Unidentified 3) **Impartial** 4) improper

**19. The word "compliance" in paragraph 3 is closest meaning to:**

- 1) Consistency 2) **Obedience** 3) Teamwork 4) Investigation

**20. The word "pervasive" in paragraph 4 is closest meaning to:**

- 1) Offensive 2) Occasional 3) Official 4) **extensive**

### Passage 3

We think of the popular moralist in Persian literature, indeed one of the famous of all Persian poets, not as a stern mentor but as a jovial, laughing person, with perhaps a glimmer of good-humored roguishness. That is at any rate the kind of person who emerges from his works. The biographical facts that have been handed down contribute little towards this portrait. And even Sa'di's own words cannot altogether be trusted; they cannot be taken literally and this makes it extremely hazardous to base a reconstruction of his life on the many which he tells, presumably only to entertain and instruct. There is no contemporary information about him; uncertainties **abound** at every point.

Both his own works and tradition confirm that he was born in Shiraz, a town to which he remained most **movingly** loyal throughout his life and for which, no doubt, he longed



passionately when travelling abroad. Thanks largely to the considerable culture of his father, Sa'di received a careful education from an early age. His mother continued the same routine after his father died. When Sa'di was only about twelve.

Traditional **maintains** that he was sent to Baghdad where he was supported by the Salghurid atabeg of Shiraz; but he certainly cannot have gone there as early as 592, since it is said that he studied at the famous university, the Nezamiyeh. Moreover, it is scarcely credible that the atabeg would have accorded such a favor to a boy of humble **albeit** educated background.

After completing his studies, he set off on travels. The many impossible ingredients in the story of how he destroyed the infamous idol in temple of Somnal exclude the likelihood Kashghar, which, if true, would suggest that even before the completion of the Golestan his fame as a poet had spread to such remote areas. This objection is **corroborated** by the fact that the best Persian Ars Poetica, al-Mujam (630) by Shams-e Qais, contains no quotations from Sa'di, though there are a great many from other poets of that period.

**21. Based on what we find about him in his own works, Sa'di could best be described as ...**

- 1) an unethical man
- 2) an insignificant poet
- 3) a joyful person
- 4) a serious mentor

**2. All of the following are true about Sa'di EXCEPT ...**

- 1) His father was man of culture
- 2) His mother continued with his education after his father died
- 3) His father died when he was 12
- 4) He Stayed in Shiraz throughout his lifetime

**22. Sa'di's education at the Nezamiyeh of Baghdad may not have been supported by atabeg of Shiraz because:**

- 1) Sa'di wasn't educated enough to receive such support
- 2) Sa'di didn't come from an aristocratic family
- 3) Sa'di was too young to have studied there
- 4) Sa'di Baghdad was a dangerous place at that time

**23. All of the following biographical information about Sa'di are most probably false Except:**

- 1) he set off on travels after finishing his studies
- 2) he visited India
- 3) he destroyed the idol in the temple of Somnat
- 4) he was in Baghdad by 592

**24. The author suspects that Sa'di's story of meeting with a boy is hasgar in not based on the life events because then it would mean that:**

- 1) books could reach remote areas in very short periods of time
- 2) Sa'di was well-known even before writing Golestan
- 3) Sa'di was the true author of al-mujam
- 4) verified the quotations in shams-e Qais al-mujam

**25. the word "abound" in paragraph 1 is closest meaning to:**



- 1) are dubious 2) **numerous** 3) are fake 4) are contradictory

**26. the word "movingly" in paragraph 2 is closest meaning to:**

- 1) cautiously 2) randomly 3) **touchingly** 4) shakily

**27. The word "maintains" in paragraph 2 is closest meaning to:**

- 1) claims 2) **retains** 3) arranges 4) alerts

**28. The word "albeit" in paragraph 2 is closest meaning to ...**

- 1) **although** 2) altogether 3) definitively 4) broadly

**29. The word "corroborated" in paragraph 3 is closest meaning to:**

- 1) merged 2) announced 3) disputed 4) **verified**

## Passage 4

The central processing unit of the laptop computer you use on daily basis resides in a thin sliver of silicon, about 1 square centimeter in area. This small chip contains over 100,000,000 Si MOSFETs-Metal-Oxide-Semiconductor Field-Effect Transistors-, each about a thousand times smaller than the diameter of a human hair!

He slender computer that you **nonchalantly** stuff into your backpack has more computing power than the vacuum-tube computers that occupied an entire room when I was a student over 40 years ago. When you are reading this book, you may be distracted by an incoming call on your cell 'phone. That may get you wondering what's inside your sleek 'mobile'. If you opened it up, and knew where to look, you'd find some GaAsHBTs - Heterojunction Bipolar Transistors-. These transistors can operate at the frequencies required for local-area-network telecommunications, and they can deliver the power necessary for the transmission of signals. Of course, a cell 'phone nowadays is no longer just a replacement for those clunking, **tethered**, hand-sets of not so long ago: it is also a camera and a juke box. The immense storage requirements of these applications are met by Flash memory, comprising more millions of Si MOSFETs. Your cell 'phone is really a PDA,<sup>3</sup> and probably also allows internet access, in which case you may wonder how signals from around the globe find their way into your machine. Somewhere in the communications chain there's probably a low-noise amplifier to receive tiny signals and not add undue noise to them. GaAs HBTs are good for this, but even better are InP HEMTs.<sup>4</sup> If satellites are involved, then the base station will employ high-power transistors, possibly lateral-diffused Si MOSFET<sup>5</sup>, or may began HJFETs-Heterojunction Field-Effect Transistors.

So, without **straying** very far from where you are sitting as you read this, you have tangible evidence of the dramatic influence electronics has on the way many of us conductor business and recreation. All the different transistors mentioned above are described in this book, and are grouped according to their ability perform: in high-speed digital logic; at high frequencies; with low noise; at high output power; in semiconductor memory. Of course, our electronics-oriented activities would not be possible if the supply of electricity were **curtailed**. This could happen, either by the exhaustion of the Earth's store of fossil fuels, or by the threat to our habitable environment that the extraction and use of them **entails**.



**30. The size of silicon MOSFET is ...**

- 1) 1.000 millimeters in diameter
- 2) 10-8 of centimeter
- 3) about 1 cm<sup>2</sup> in area
- 4) **10-3 of possible for a mobile phone to transmit signals**

**31. Heterojunction Bipolar Transistors ...**

- 1) still use the vacuum-tube technology
- 2) **make it possible for a mobile phone to transmit signals**
- 3) make a lot of noise when they work
- 4) used to occupy an entire room 50 years ago.

**32. It is implied in paragraph 3 that much of cell phone memory storage is used up by**

...

- 1) camera and music applications 2) **flash memory applications**
- 3) communication applications 4) had-set amplifiers

**33. It can be inferred from paragraph 4 that to continue using electronic device we are ultimately dependent on ...**

- 1) **fossil fuels** 2) habitable environments
- 3) the eastern countries 4) electrical applications

**34. All of the following are some kind of transistors Except:**

- 1) HBT5 2) **PDAs** 3) HEMTs 4) HJFET5

**35. The word "nonchalantly" in paragraph 2 is closest meaning to:**

- 1) unexpectedly 2) forcefully 3) **causally** 4) nervously

**36. The word "tethered" in paragraph 3 is closest meaning to:**

- 1) weighty 2) dull 3) **tied** 4) bulky

**37. The word "straying" in paragraph 4 is closest meaning to:**

- 1) pretending 2) **drifting** 3) aligning 4) enquiring

**38. The word "straying" in paragraph 4 is closest meaning to:**

- 1) destroyed 2) stretched 3) replaced 4) **decreased**

**39. The word "entails" in paragraph 4 is closest meaning to:**

- 1) **involves** 2) explores 3) survive 4) supplements

### پاسخنامه کلیدی

| پاسخ | شماره سوال | پاسخ | شماره سوال |
|------|------------|------|------------|
| ۳    | ۱۶         | ۳    | ۱          |
| ۱    | ۱۷         | ۱    | ۲          |
| ۳    | ۱۸         | ۳    | ۳          |
| ۴    | ۱۹         | ۳    | ۴          |
| ۲    | ۲۰         | ۲    | ۵          |
| ۱    | ۲۱         | ۳    | ۶          |
| ۱    | ۲۲         | ۲    | ۷          |
| ۲    | ۲۳         | ۳    | ۸          |
| ۴    | ۲۴         | ۲    | ۹          |
| ۲    | ۲۵         | ۳    | ۱۰         |
| ۲    | ۲۶         | ۴    | ۱۱         |
| ۲    | ۲۷         | ۴    | ۱۲         |
| ۳    | ۲۸         | ۱    | ۱۳         |
| ۴    | ۲۹         | ۲    | ۱۴         |
| -    | ۳۰         | ۲    | ۱۵         |